Promoting Communication Strategies for Seniors during Pandemics

Sandikonda E. Tambala

Edson College of Nursing and Health Innovation, Arizona State University

Author Note

Sandikonda Tambala is now at Edson College of Nursing and Health Innovation, Arizona

State University

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Correspondence concerning this paper should be addressed to Sandikonda Tambala,

Health North Suite 301, PO Box 873020, Tempe, AZ 85287-3020. Email: tambala@asu.edu

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Abstract

Purpose: The COVID-19 pandemic government regulations and mandates have caused feelings of overload, isolation, anxiety, depression, and loneliness. This project aimed to evaluate the level of impact of social distancing and homestay mandates on seniors during the COVID-19 pandemic. The knowledge from the data guided the implementation of Information Communication Technology (ICT) as a focused intervention to address loneliness, social isolation, and depression among seniors.

Methods: Quantitative reviews were employed to assess the impact of ICT on lonely seniors. A convenience sample of 5 seniors aged 65 and up from a local church congregating in worship center located in southwestern United States enrolled in this voluntary pre-and post-educational intervention project. Participants were informed of the confidentiality of the study and that the study had no known risks on participants. The participants willingly signed a consent for the study. The attendees received two one-hour education sessions on how to use WhatsApp and Zoom as communication strategies. The pre-and post-loneliness scale scores were collected using the Revised UCLA Loneliness Scale as a tool. Results were compared before and after the educational intervention using a paired Wilcoxon signed-rank test.

Results: The results indicate significant reductions in reported loneliness from pre to post intervention ($z = -2.02$, $p = 0.043$). These results indicate that using ICT can help address loneliness in the seniors.

Conclusion: Implementing communication strategies such as WhatsApp and Zoom effectively addresses social isolation and loneliness in seniors. The data reveals that integrating electronic

communication in the life of the seniors can manage the social isolation problem. Future nursing practices may benefit from the project's data to address loneliness in the seniors.

Keywords: Seniors, COVID-19 pandemic, Information Communication Technology (ICT), Revised UCLA Loneliness Scale.

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Background and Significance

Description of the problem

The COVID-19 pandemic has had a significant impact on people's lives. Feelings of overload, isolation, tension, and anxiety have all been linked to depression and loneliness. Quarantine and homestay requirements have caused social and living patterns to be disrupted. This disruption has been having unanticipated consequences for people's physical and emotional health all over the world. Nwachukwu, 2020 states that the government homestay mandates programs have protected the seniors from the coronavirus. It has also become known that interventions are needed to promote mental wellbeing in seniors while practicing social isolation mandates during pandemics.

Purpose & rationale statement

The purpose of this project was to evaluate the impact of social distancing and homestay orders on the seniors during COVID-19 pandemic. Senior people are at risk for anxiety, depression, and suicide when not socializing with family and friends. Previously, religious support has been an ally for dealing with daily stresses but with the COVID-19 pandemic, these religious institution-based resources have been restricted leaving most older church members experiencing isolation and loneliness and at increased risk for anxiety, depression, and suicides (Dutra & Rocha, 2021). Therefore, the knowledge from the evaluation of the impact of social distancing and homestay orders guided the implementation of focused interventions to address loneliness, isolation, and depression among the seniors.

Epidemiological data to support the significance

According to the Centers for Disease Control and Prevention (CDC) (2021), social isolation raises a person's risk of dying young. It is linked to a 50 percent higher risk of dementia and a 29% increased risk of heart disease, and a 32% increased stroke risk. Loneliness was found to be related to a 29% increase in the risk of heart disease and a 32% increase in stroke risk. Consequently, action to fix the problem was needed to promote social cohesion and the seniors' mental wellbeing.

Internal evidence to support the project

The worship center located in southwestern United States and has been there for a long time; about 75% of the congregation are seniors. Most of them do not have families, while others have few family members remaining. Many have turned to this church and its members as part of the family to cope with loss and grief. The church assembles on Saturdays and Wednesday evenings for bible study. This type of gathering has been a tradition until the covid-19 pandemic came into play. In following the state's rules and regulations on how to conform to the pandemic guidelines, the church had to close until the pandemic was under control. This act affected the members who have always taken church gatherings to socialize and entertainment; they found themselves staying at home alone without anybody visiting or interacting with them.

The church pastor indicated that the closure has led to many senior members becoming lonely and depressed and that some have thoughts of ending their lives. Currently, there are no interventions to address the issue. The suggested interventions include virtual visitations through video calls, periodic phone calls, prayer time by phone, getting involved in exercises, and eating a balanced diet. Sepulveda-Loyola (2020) states that social distancing measure set to prevent the spread of the COVID-19 pandemic affects the seniors, as many places where activities for the seniors were held have closed and that older adults are having restrictions on how family

members can visit them. Therefore, this has led to decreased social interaction that could cause

an adverse effect on mental and physical health in older people.

PICOT question

Therefore, this inquiry has led to the PICOT question, among seniors 65 or older who are

lonely due to social isolation caused by avoiding contracting COVID-19 and not socially

interacting with other church members in worship centers, does the online educational

intervention on how to use the information and communications technologies (ICT) to

communicate with fellow church members, family, and friends reduce the risk of loneliness?

Evidence Synthesis:

The search strategy and narrative literature review

To answer the PICOT question, three electronic databases: CINAHL, PsycINFO, and

PubMed, were systematically searched using a single approach for quantitative and qualitative

studies published in English between 2016 and 2021 on the efficacy of ICT-mediated social

isolation approaches for older adults. The results of the established studies were interpreted using

narrative synthesis. Suicide risk factors for adults, treatments for seniors with isolation, and

obstacles to adopting interventions for seniors with depression, loneliness, suicidal thinking, or

attempt were among the keywords used in the database searches.

PsychINFO Search Strategy

In PyschINFO's initial search, the phrases "barriers to ICT," "implementation of ICT," and

"loneliness Referral Rates" were used. The following electronic search technique has been used

for papers published in the PsychINFO database since 2016: (Isolation's impact) [All Fields] OR

(Isolation Prevention) [All Fields] OR (Loneliness Interventions) [All Fields] OR (Loneliness

Referral Rates) [All Fields] AND (ICT Barriers) [All Fields]. A total of 72 observations were found. Other filters, such as English language, peer-reviewed, qualitative, systematic study, and meta-analysis, were used to reduce articles to 12.

PubMed Search Strategy

The keywords used in the PubMed database search were risk factors for depression and suicide, prevention of depression in the seniors, and prevention of loneliness and depression in the seniors. An electronic search strategy for published studies in the PubMed database since 2016 is as follows: (senior isolation) AND (risk of suicide) OR (isolation) [Includes all fields] For the search, there were 82 results. Additional filters such as English language, meta-analysis, qualitative, systematic review, and peer-reviewed articles limited the search to 12 results.

CINAHL Search Strategy

The original CINAHL search included key terms like suicide prevention, systematic analysis, and suicide intervention education. [All Fields] (elderly) OR (senior) AND [All Fields] (elderly) OR (senior) AND [All Fields] (Elderly) OR (senior) AND [All Fields] (Elderly) OR (senior) AND [All Fields] (El (suicide risk assessment). Publication dates from 2016 to 2021, English language, and peer-reviewed journal publication filters were used to narrow down the findings. This yielded a total of 15 results. The search terms risk factors of loneliness, and daily exercise were also added, reducing the number of publications on the subject to seven.

A grey literature review was conducted using a combination of search terms and meanings extracted from a Google Scholar search of electronic reference databases to look for unpublished research. The top 30 results were reviewed for articles that met the inclusion criteria. The websites of the Centers for Disease Control and Prevention (CDC) were also searched and reviewed. The findings of peer-reviewed publications published in English with people aged 65

and up from 2016 to 2021 were also included and this yielded a total of 11 results seven with

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Critical Appraisal and Synthesis

Melnyk and Fineout-Overholt's (2019) rapid critical appraisal was used to evaluate the

quality and strength of the ten articles selected for this literature review. All ten studies presented

high-level evidence and were carried out in an outpatient setting. The systematic review

conducted by Chen & Schulz (2016) included twenty-five publications studied in an outpatient

setting. Four of the studies were deemed to be analyzed thoroughly. Most research looked at

individual dimensions of ICT rather than social isolation to determine its efficacy.

ICT use has been shown to consistently impact social support and positive relationships

with social isolation in people in a positive way. Four of the ten articles reported their funding

source, and two possible bias was recognized in the studies. All the ten studies had an adequate

sample size, and the number of articles was more significant than or equal to ten in their

systematic reviews. The literature review included an intercontinental sampling with all ten

studies originating globally. Age and social isolation were listed as risk factors for loneliness in

all ten studies. One of the ten studies identified the female gender as a risk factor for loneliness.

This inconsistency in whether the female gender is a risk factor may be due to an interaction

between sex and age. Only one of the ten studies conducted in a systematic literature search

proved that physical exercise could improve outcomes for social isolation and promote the

seniors' well-being.

Most of the interventions across the studies included recognizing social isolation as a risk

factor for depression, anxiety, and suicide. Measurement tools and intervention designs were

heterogeneous across all ten studies. However, ICT has shown to be a valuable tool for

addressing social isolation amongst the elderly. Thus, leading to decreased rates of depression, anxiety, and suicide. Also, 8 of 10 studies were helpful to the PICOT since similar concepts were discussed during educating the elderly on the risk factors for depression and how to increase the implementation rate of ICT, thereby decreasing mortality and morbidity associated with social isolation. Strong reliability and validity can be assumed for all the ten studies due to the priori research designs, comprehensive search of electronic databases, duplicate study selection, quality assessment of measurement tools, methodology, and statistically significant results.

Theoretical Framework & Implementation Framework:

Theoretical Framework

The Chronic Care Model (CCM) was selected as the project's conceptual structure. Even though loneliness has no physical symptoms and is diagnosed solely based on the patient's history and mental status assessment, recent research has shown that therapies can successfully treat loneliness in people. As a result, it is fair to think of loneliness as a condition that necessitates long-term treatment or intervention. Given the persistent nature of loneliness and its high medical and psychological comorbidity, it is critical to have ongoing treatment that includes screening, early intervention, support, and supervision.

When coping with chronic disease treatment, the CCM model of care can be beneficial by providing proactive, patient-centered, multidisciplinary care, community resource use, and evidence-based approaches to structurally improve the way people with chronic illnesses and loneliness are cared for, as well as encouraging healthcare providers and patients to participate in their care. The six main elements that interact to facilitate quality treatment for patients with chronic disease are included within this model. A health system or community groups,

association, clinical data analytics, decision support, execution system design, self-management support, and patient care are only a few services available in six components. Patient protection, cultural competency, care planning, regional policy, and case management are other topics covered in the current CCM (Grover & Joshi, 2014). Through offering tools for collaboration and integration of treatment for patients with loneliness, CCM will ensure a multidisciplinary and team-based approach. The CCM tends to be a valuable method for achieving evidence-based therapy for loneliness with the same care team and how other chronic diseases are managed.

Implementation Framework

The project's implementation was likewise guided by the Iowa model. The Iowa Model assists nurses in utilizing research findings to improve patient care, identifying concerns through research, developing solutions, and implementing Evidence-Based Practice (EBP) adjustments to promote health care excellence. An evidence-based paradigm, according to a recent study by Moullin et al. (2017), increases the depth and breadth of application, produces aligned measures, and broadens user networks.

Implementing evidence-based practice (EBP) adjustments is a necessary but difficult stage in the EBP approach. The Iowa Model guided the project through the steps of identifying a clinical issue, studying literature, evaluating evidence, analyzing, and addressing the existing problem, and reviewing results using EBP. The model was appropriate for the project because it enhanced people's happiness. The project site also decided to use EBP to solve problems and make changes in their organization.

Methods:

Ethical considerations and human subject protection

The Institutional Review Board (IRB) approval was obtained through the Arizona State University on October 30, 2022. All willing participants enrolled to participate in the study for 4-6 weeks if they matched the eligibility requirements. Participants had no foreseeable risks to participating in the study other than completing the education and discomfort from learning how to use modern technology. After obtaining consent the participants received a conference call invitation and the student provided two Zoom presentation sessions, each lasting one hour on ICT. Thereafter the data collection process started using the UCLA Loneliness Scale screening tool as a first-line loneliness screening tool. Those individuals with potential loneliness were asked to complete pre-and post-intervention survey questionnaires to measure their level of loneliness.

Participants completed and returned the survey within seven days of receiving it. Students obtained permission from Dr. D. Russell, the author of loneliness scale to use it as a tool for pre-and post-intervention surveys instruments to run statistics and validate the results. The outcome measurement was based on a statistical significance comparison of pre-and post-intervention on those who showed loneliness symptoms. The collected documents, such as recruitment papers, signed consent forms, pre, and post-intervention questionnaires, and participant replies, were filed and labeled separately.

The data obtained was saved on a Dropbox server, with just the student and the student's mentor having access connection to the data. To identify participants, an identity code was established and used on all questions. Participants created their IDs by combining their birth year and the last four digits of their phone number. The data was preserved in a lockable filing cabinet folder then will be destroyed in May 2022 after the project was completed.

Description of population and setting

The project took place in a church in southwestern of the United States. Many of the church's core beliefs are of Early Christianity, including acknowledging the Bible's authority, confessing the human sin of the need for redemption, and confidence in Christ's atoning work. The broader church, Congregation, congregant families, community, staff, staff families, volunteers, volunteer families, ministries, and outreach recipients were all church stakeholders that benefited from the project.

The expected impact of the project and the relationship to the system

When applied to the project site, data collection partnerships between the seniors and the church were crucial, and individuals who required intervention were addressed individually. The collection of data necessitated the assistance of church staff's involvement in all stages of the project to ensure the completion promptly. After collecting all the essential data, the student performed data analysis. Data on barriers to ICT implementation, including the resources required and how barriers differ depending on the environment, was also collected.

Identify the body of knowledge that will be impacted by this project

This organization was working on researching, developing, and implementing sustainable health intervention programs for their community and the members of the church to address the issue. In collaboration with the community, the organization planned to implement and evaluate Information and Communications Technology (ICT) at their facility. The project aimed to equip church staff, and direct support professionals with the knowledge and resources to confidently deliver inclusive health education and interventions to prevent social isolation to socially isolated, lonely, and depressed people.

Instrumentation, data collection, and data analysis plan

People consented to participate in the study for an approximate time of 4-6weeks once they matched the eligibility requirements. After potential participants accepted the invitation, a consent form was issued to them along with a request for a phone conversation to discuss the project and go through the permission form to ensure they understood the objective of the research and what was expected of them. The phone conversation also allowed the student and participants to review the consent form and address any questions or concerns. What was expected of the participants was explained. The student provided pre-intervention surveys to participants to measure ICT knowledge and attitudes. Pre-intervention questionnaires took 15 minutes to complete. Participants returned the survey within 7 days of receipt. The student sent an invite to two Zoom sessions, each lasting one hour. The first session covered how to use Zoom. And in the second session, covered how to use Skype and WhatsApp. All was in PowerPoint form. Participants who could not join the Zoom meeting were provided a recording of the meeting. Participants who received the recorded presentation were contacted to see if they watched it. Those participants received a follow-up email after a week after receiving the recorded presentation. The student then conducted a post-intervention survey one week later to measure participants' knowledge and attitudes towards social isolation and loneliness management. The student also collected subjective data about their educational experience. Post-intervention questionnaires took about 15 minutes to complete.

Budget and any funding received

The following items budgeted for this project: Designing and printing informed consent forms, information on social information, and depression scales; Flash drive to store participants private information and all documentation related to the research was stored in a secured locked cabinet; A Projector for PowerPoint presentation on how the screening, brief intervention,

referral, and treatment tools were used; Gas purchase to drive to and from the project site; Pens

were provided for participants to complete the depression assessment scales and Intellectus

software was used to run the data analysis and statistician was hired to help in data review. No

funding from the outside source was received, personal funding was used for the project.

Results:

Five seniors participated in the project. All participants were 65 years or older. The

PICOT question was tested using a paired Wilcoxon signed rank test to compare the participants'

responses on the Revised UCLA Loneliness Scale prior to and after the educational intervention.

The results shown in Table 1 indicate that there were significant reductions in reported loneliness

from before to after the intervention (z = -2.02, p = 0.043). These results are further illustrated in

Figure 1.

Comparison of pre- versus post-intervention Loneliness Scale scores

Loneliness Score	Mean	SD	z*	p
Pre-intervention	43.80	6.94	-2.02	0.043
Post-intervention	33.60	5.18		
Paired Differences	-10.20	2.39		
95% CI of the Difference	-13.16 to -7.24			

- * z = standardized Wilcoxon signed rank test
- * p = 0.043 which indicated statistically significant.
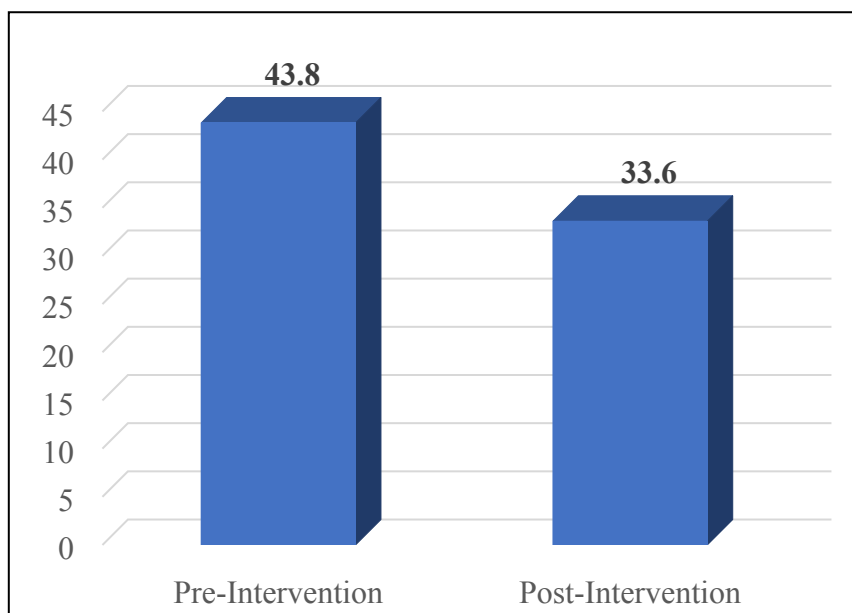
Outcomes:

Seniors' mental and physical well-being benefitted from education on loneliness and ICT strategies and loneliness in seniors were reduced by adopting ICTs in clinical and social settings where people are likely to feel lonely. The project intervention was sustained by facility adoption of quarterly reminders on how to use ZOOM and WhatsApp via the already prepared PowerPoint presentation.

Discussion:

The sample size of five participants, convenience sampling, singular site location, no variation, and limited to a specific population are all limitations of this study. As a result, the results may not apply to other situations. Despite these shortcomings, the study points to important research directions for the future, including evaluating the impact of educating elders on loneliness and the effects of ICT interventions in reducing loneliness using larger sample sizes from multiple locations with diverse populations.

The study results back up previous studies by Talmage et al. (2021), who found in their research that ICT use decreases loneliness and social disconnectedness in older adults. And Casanova et al. (2021) indicated that the analysis of the studies they reviewed confirms the

existence of a beneficial effect of ICT use on the well-being of older people in terms of reduced loneliness.

In conclusion, this project has demonstrated the efficacy of educational initiatives in enhancing seniors mental and physical well-being in this project. Educating seniors about loneliness and adopting ICTs have shown to be effective in reducing loneliness. The literature review has also demonstrated that ICT education reduces loneliness. And this project adds to the evidence for making this a part of care for those with loneliness.

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Appendix A

Table 1

Budget

Phase	Activities	Quantity needed	Cost per item	Subtotal	Total
Preparation	Design and print assessment tools and handouts	50	$0.50	$25.00	
	Creating a PowerPoint presentation, the church staff on how to assess for depression and how to apply Information and communications technology intervention (ICT) for those isolated and depressed	1	$0.00 (Self)	$0.00	
	1 flash drive 16 GB	1	$14.99	$14.99	
	Pencils	6 boxes of 12 each	$0.80 (Per box)	$4.80	
	Gas for travel to and from the project site.	15gallons	$3.25	$48.75	
Delivery	Hall for Information and communications technology intervention (ICT) implementation training	3 days	$0.00 (Church will provide)	$0.00	
Delivery	Drinks and snacks	3 days	$30.00	$90.00	
	Lunch (30 people)	3 days	$15.00	$1350.00	
	Projector for PowerPoint presentation	3 days	$0.00 (Church will provide)	$0.00	
Evaluation	Time spent to email call 50 church members reminding them to complete surveys post		$30	$180.00	

Appendix B

Table 1

Quantitative Studies Evaluation Table

Citation	Theory/ Conceptual Framework	Design/ Method	Sample/ Setting	Major Variables & Definitions	Measurement/ Instrumentation	Data Analysis	Findings/ Results	Level/Quality of Evidence; Decision for practice/ application to practice.
Author: Chen & Schulz **Year**: 2016 **Title:** The Effect of Information Communication Technology Interventions on Reducing Social Isolation in the Elderly: A Systematic Review. **Countries:** The reviewed studies were conducted in Austria,	Inferred to be the Cognitive-Behavioral Frame of Reference	**Design:** Systematic review of literature. **Purpose:** The objective of the systematic review was to gain a synthesis of the evident effects of ICT interventions on social isolation in the seniors.	N= 424 records identified from database search. 235 abstracts assess for eligibility. Final sample n= 25 articles included in quantitative synthesis. **Demographics:** Studies of humans aged 55years of age or older. **Setting:** Articles were accessed from PsycINFO, PubMed, MEDLINE,	**IV1: Age** **IV2: Gender** **IV3: Nationality** **DV1:** The effect of ICT on social isolation. **DV2:** The impact of ICT on social support **DV3:** The impact of ICT on social connectedness	**Tools used to Measure variables:** Two independent researchers screened abstracts and titles for eligibility. If the information provided by a title or abstract was insufficient for determination, the full paper was screened by two researchers who documented the reasons leading to the exclusion of full texts.	**Statistical Tests used to analyze data.** **(ANOVA, Fisher Exact, Chi Sq):** I-squared statistic-Data coding and quality appraisal were conducted by the first author and a research assistant, reaching an intercoder reliability of .91. Any inconsistencies	**IV1:** ICT studies show decreases social isolation. **IV2:** ICT increases social support. **IV3:** ICT increases social connectedness ICT was found to alleviate the seniors' social isolation through four mechanisms: connecting to the outside world, gaining social support, engaging in	**LOE:** Level 1 **Strengths:** The comprehensive search strategy and the inclusion of studies of all designs increased the likelihood of including all relevant studies in the field. **Weakness:** The heterogeneity of studies included

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Canada, Finland, Israel, Netherlands, New Zealand, Norway, Slovenia, Sweden, Taiwan, United Kingdom, and United States. **Funding:** No funding **Bias:** None			EBSCO, and SSCI databases **Inclusion criteria:** (1) publications must be in English. (2) studies must empirically investigate the effects of ICTs on one or more attributes of social isolation among the seniors; and (3) study participants must be aged 55 years or older. **Exclusion criteria:** Any study that did not meet the inclusion criteria. **Attrition:** None		The EPHPP tool was used because of its suitability for assessing such research with various study designs. The criteria proposed by Salmon were used to evaluate the qualitative research: theoretical framework, the value of study, data collection, participant description, data analysis, and data interpretations.	between the reviewers were discussed between the 2 authors to achieve agreement.	activities of interests, and boosting self-confidence.	in the review limits the comparability and generalizability of the study results. **Feasibility:** Results of such research can facilitate innovative and effective practice of ICT-based social isolation interventions for senior people.
Author: Hidalgo et al, **Date:** 2020 **Title:** The Psychological Consequences of	**Conceptual/ Theoretical framework:** Grounded Theory	**Design/Method.** Mixed research methodology-combining qualitative and quantitative methods to approach complex	**Sample** N=167 n=40 Demographic: adult population (18 years or over) Setting**:** **Inclusion criteria:**	**IV1:** Gender **IV2:** Age **IV1:** Social Economic **DV1:** General	**Instruments used:** Questionnaires and online surveys.	**Statistics used:** Percentages of change and Chi-square statistical tests	**Findings/Resul ts:** Showed relevantly changes in attitudes and mood swings compared to the period prior to	**LOE:** II **Strengths:** It allows for people's experiences to be transferred to the panel survey.

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COVID-19 and Lockdown in the Spanish Population: An Exploratory Sequential Design **Funding:** No external funding. **Conflicts/bias:** No bias reported **Country:** Spain		phenomena **Purpose of the study:** To analyze the psychological impact of the COVID-19 pandemic and of lockdown in the Spanish population and to identify what population profiles were most affected.	**Exclusion Criteria:** Because the quota for the autonomous community has already been met, because they accessed the survey after the deadline and due to surveys being incomplete. **Attrition:** Not reported	psychological distress **DV2:** Difficulty concentrating **DV3** Panic attacks			lockdown. **Report: %** **ES:** Not known **CI:** Not known **p-value:** < 0.001	Furthermore, the data come from a large sample collected with international quality criteria to be representative of the Spanish population. **Weaknesses:** Does not allow for establishing causal or predictive relationships based on the data found and the data collection procedure was based on subjective self-reported measures based on subjects' assessment of their own condition **Feasibility:** The findings of the study may serve as a basis for detecting needs and providing psychological

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								support, as the symptoms detected as the most common are key for the processes of screening at-risk individuals.
Author: Kelly et al. **Date:** 2017 **Title:** The impact of social activities, social networks, social support and social relationships on the cognitive functioning of healthy older adults: a systematic review **Funding:** No funding **Conflicts/bias:** High Risk of Bias **Country:** Ireland	**Conceptual/ Theoretical framework:** Inferred Health Promotion	**Design/Method.** Systematic Reviews and Meta-Analysis **Purpose of the study:** The impact of social activities, social networks, and social support on the cognitive functioning of healthy older adults (50+) and examine the differential effects of aspects of social relationships on various cognitive domains.	**Sample** N=17959 n=107 **Description:** Healthy older adults 50yrs and up	**IV1:** Social activities **IV2:** Social Networks **IV1:** Social support **DV1:** Cognitive functioning **DV2:** Reasoning **DV3:** Attention	**Instruments used:** The STROBE assessment tool was used to assess the quality of reporting in cohort studies	**Statistics used:** literature reviews were used to provide a comprehensive overview of research on social relationships and cognitive function in older adults.	**Findings/Results** The results support prior conclusions that there is an association between social relationships and cognitive function, but the exact nature of this association remains unclear. **Report: %** Not Provided **ES:** Not Provided **CI:** Not Provided **p value:** Not Provided	**LOE: I** **Strengths:** It set up a foundation for future research to consider the impact of technology, internet and social media on social relationships, particularly feelings of social support. **Weaknesses:** It was difficult to identify RCTs that included social relationships as either intervention or active control components and Loneliness was not considered in the current review. While previous meta-

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								analyses and reviews have investigated loneliness and social isolation together **Feasibility:** The study shows us that loneliness is often experienced as a psychological phenomenon which is not entirely contingent on social engagement but instead at least partly attributable to factors such as maladaptive social cognitions [96] and feelings of physical security
Author: Malcolm et al. **Year:** 2019 **Title:** Loneliness and social isolation causal association with	Inferred to be a discursive Theoretical. approach	**Design:** Systematic Reviews **Purpose:** To assess the extent and causal nature of associations	**Demographics:** Older adult aged 50 and older. **Setting:** Collections electronic studies relevant to the	**IV1:** Seniors **IV2:** Social Isolation **IV3:** Loneliness	**Tools used to Measure variables:** Bradford-Hill criteria and Newcastle-Ottawa Scale	**Statistical Tests used to analyze data:** narrative synthesis	**IV1: lower** physical activity **IV2:** alcohol misuse **IV3:**) Smoking **Findings/Resul**	**LOE:** Level I **Strengths:** Clear definitions and inclusion criteria, transparent systematic approach to

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health-related lifestyle risk in older adults: a systematic review and meta-analysis protocol **Country:** United Kingdom **Funding:** The study was funded as part of principal author's doctorate research study by University of Stirling. **Bias:** Not Known .		between loneliness/social isolation and health-related behaviors among older adults.	publication. **Inclusion criteria:** any interventional or observational study that quantitatively assesses the associations of loneliness/social isolation and selected health-related behaviors and the evidence of causation **Exclusion criteria:** Any interventional or observational study that quantitatively assesses the associations of loneliness/social isolation and selected health-related behaviors and the evidence of causation and non-English language studies. Also, studies that do not test for empirical associations between loneliness or social isolation and the specified health-related				ts Socio-demographic trends fueling loneliness and social isolation among older adults to the extent it has become an acknowledged public health challenge.	searching, screening, assessing and extracting which utilizes standardized forms and independent review wherever possible. **Weakness:** Lacked statistical information of the significance of the study. **Feasibility:** It helps in understanding the association and causal pathways between loneliness/social isolation and ill-health will be important for developing interventions and strategies to combat loneliness and social isolation with 95% confidence

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			lifestyle behaviors will be excluded. **Attrition:** not specified				intervals (CIs).
Author: Noone et al., **Year: 2020** **Title:** Video calls for reducing social isolation and loneliness in older people: a rapid review **Country:** Taiwan **Funding:** Not Known **Bias:** not enough data to assess reporting biases.	Inferred to the Social Engagement and Attachment Theory	**Design:** Randomized controlled trials (RCTs) and quasi-RCTs **Purpose:** to assess the effectiveness of video calls for reducing social isolation and loneliness in older adults and to address the effectiveness of video calls on reducing symptoms of depression and improving quality of life.	**Demographics:** Older Adults over the age of 65 years. N=201 Participants. **Setting:** Comparison between studies conducted in nursing homes and studies conducted in home settings. **Inclusion criteria:** Mean age of at least 65 years whether they were experiencing symptoms of loneliness or social isolation. **Exclusion criteria:** Articles in non-English languages, studies where the mean age of the participants was under the age of 65	**IV1:** Loneliness **IV2:** Social Isolation	**Tools used to Measure variables:** UCLA Loneliness Scale and Geriatric Depression Scale	**Statistical Tests used to analyze data:** Chi-Squared test for heterogeneity	**IV1:** Symptoms of depression (95% CI −0.90 to 1.72) **IV2:** Quality of life emotional role (MD −7.18, 95% CI −16.23 to 1.87) **IV3:** Quality of life emotional role mental health (MD 9.19, 95% CI 0.36 to 18.02) **Findings/Results** Videoconferencing interventions compared with usual care for reducing loneliness	**LOE:** Level 1 **Strengths:** Set foundation for future studies in the investigation of the effectiveness of video calls for reducing social isolation and loneliness in older adults. **Weakness:** The study lacked precision and was very indirect. Also, the study had high possibility of publication bias **Feasibility:** The study is truly relevant as it focuses in finding solutions to

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			years, studies that included participants with major neurocognitive disorders, or sight and hearing impairments. interventions that did not use video calls or used video calls to deliver telemedicine. **Attrition:** None					reduce social isolation and loneliness in older people
Author: Omari **Date:** 2020 **Title:** Stress among Youth at the Time of COVID-19: Online Cross-Sectional Multicountry Study **Funding:** The Omani Research Council **Conflicts/bias:** Potential selection bias in terms of recruiting.	**Conceptual/ Theoretical framework:** Inferred to the linear regression model.	**Design/Method:** A cross-sectional, descriptive design **Purpose of the study:** The purpose of this study was to explore the prevalence of DAS among youth from six Middle Eastern countries and to identify the extent to which some COVID-19-related variables could predict DAS among them.	**Sample** N= 1,057 **Demographics** Middle and late adolescence of age 15 to 24 years, **Setting:** WhatsApp and Facebook were the main social media platforms used in the study settings. **Inclusion criteria:** Those willing to Participate, being 15 to 24 years old at the time of the study, ability to read and type in Arabic and residing in one of the countries included	**IV1:** Age **IV2:** Gender **IV1:** Country **DV1:** Depression **DV2:** Anxiety **DV3:** Stress	**Instruments used:** Structured Questionnaire, Anxiety scale, Stress scale.	**Statistics used:** One-way ANOVA and independent t-test	**Findings/Results** The results show that COVID-19 is an epidemiological crisis that is casting a shadow on youths' DAS. The restrictions and prolonged lockdowns imposed by COVID-19 are negatively impacting their level of DAS. **Report:** Statistical power is 80% **ES:** Not provided	**LOE:** II **Strengths:** It set foundation for future studies and recommends to a larger sample and include youth who do not have access to the internet. **Weaknesses:** The sample composition restricts the potential generalisability of the findings. **Feasibility:** It shows Healthcare

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Country: Oman Jordan Saudi Arabia Iraq Egypt UAE			in the study at the time of the survey**.** **Exclusion Criteria:** Explanatory variables which were not significant were excluded. **Attrition:** Not provided					**CI:** Not Provided **p value**=0.05	organizations, in collaboration with various sectors, are recommended to apply psychological first aid and design appropriate educational programs to improve the mental health of youth.
Author: Ozdin & Ozdin **Date:** 2020 **Title:** Levels and predictors of anxiety, depression and health anxiety during COVID-19 pandemic in Turkish society: The importance of gender **Funding:** No financial support for the research	**Conceptual/ Theoretical framework:** Inferred to the Social Engagement and Attachment Theory	**Design/Method.** Online questionnaire **Purpose of the study:** To investigate the levels of depression, anxiety and health anxiety in Turkish society during the COVID-19 pandemics.	**Sample** N= 343 **Demographic:** Individuals aged above 18 **Setting:** Individuals living in various provinces of Turkey. **Inclusion criteria:** Individuals with Internet and able or willing to use smartphones or email were included in the study. **Exclusion Criteria:** Individuals without	**IV1:** age **IV2:** gender **IV1:** place of residence **DV1:** Working after pandemic **DV2:** Living with an individual aged above 65 **DV3:** Friends or relatives with COVID	**Instruments used:** HADS and HAI	**Statistics used:** Mann–Whitney U-test and Kolmogorov–Smirnov test	**Findings/Resul ts** Found that women, and individuals living in urban areas, with a COVID+ patient among friends or relatives, previously or currently in receipt of psychiatric treatment and with at least one accompanying chronic disease, were more severely affected. **Report: %** **ES:**	**LOE:** II **Strengths:** The study measured the public psychological state during the pandemic. **Weaknesses:** It is difficult to draw any conclusions regarding its long-term effect **Feasibility:** It suggests priorities for future psychiatric planning.

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Conflicts/bias: Possibility of selection bias since the study was performed with an online questionnaire. **Country:** Turkey			Internet and unable or unwilling to use smartphones or email could not be included in the study. **Attrition:** Not Provided				Not Provided **CI:** 95% **p value:** < .05	
Author: Sepulveda-Loyola et al. **Date:** 2020 **Title:** To review the impact of social isolation during COVID-19 pandemic on mental and physical health of older people and the recommendations for patients, caregivers, and health professionals **Funding:** European Regional Development Funds	**Conceptual/ Theoretical framework:** Inferred to the social signal transduction theory of depression	**Design/Method.** Narrative review **Purpose of the study:** To review the impact of social isolation during COVID-19 pandemic on mental and physical health of older people and the recommendations for patients, caregivers, and health professionals	**Sample:** N=605 n=41 **Demographic:** People over 65 **Setting:** Non-institutionalized community-living people. **Inclusion criteria:** Studies with people sixty and older were included. **Exclusion Criteria:** Studies with people younger than 65 were excluded. **Attrition:** None reported	**IV1:** Age **IV2:** Social Isolation **IV3:** Depression **DV1:** Irritability **DV2:** Stress **DV3**: Depression	**Instruments used:** SCORARE GA	**Statistics used:** Summary data	**Findings/Results** The study reports increased anxiety, depression, poor sleep quality and physical inactivity during the isolation period. **Report:** **ES:** Not provided **CI:** Not Provided **p value:** Not Provided	**LOE:** II **Strengths:** It sets foundation for future investigations should in a longitudinal or cross-sectional design in older individuals, with larger sample size and different outcomes related to mental and physical health. **Weaknesses:** Studies included in this review were cross-sectional design and not specific

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Conflicts/bias: None Reported **Country:** China, Italy, Spain, Paraguay, and France								in senior population and there is a lack of evidence regarding the most appropriate psychological and physical recommendations and most of the interventions suggested are based on expert opinions and not on high evidence studies. **Feasibility:** It provides recommendation that keeping quarantine as short as possible, and giving as much information as possible and providing adequate supplies reduces stress
Author: Taylor **Date:** 2019 **Title:**	**Conceptual/ Theoretical framework:** The Evolutionary	**Design/Method:** Rotational study design **Purpose of the study:**	**Sample** N = 6962 **Description:** Adults aged 50 and above living in the	**IV1:** Social isolation (n = 367) **IV2:** Gender	**Instruments used:** The Hughes loneliness scale	**Statistics used:** Multivariate regression model	**Findings/Resul ts** **Report: %** Not Provided	**LOE:** III **Strengths:** It provides results showing

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Social Isolation's Influence on Loneliness Among Older Adults **Funding:** Provided by National Institute on Aging **Conflicts/bias:** Social desirability bias **Country**: USA	Theory of Loneliness	To examine social isolation's overall influence on loneliness and how specific social isolation indicators influence loneliness.	United States of America **Setting: clinical settings** **Attrion**	**IV1:** Race **DV1:** Loneliness (n = 231) **DV2:** Employment status **DV3**: Education			**ES:** Not Provided **CI:** Not Provided **p value:** Not Provided The study illustrates the effects social isolation has on loneliness, and showing these conditions, while often correlated with each other, are unique constructs.	that there is high prevalence rate of both loneliness (57% had experienced at least moderate or severe loneliness) and several types of social isolation (ranging from 19 to 39%) throughout the older adult population. **Weaknesses:** The current study is cross-sectional; therefore, causality between social isolation and loneliness cannot be assessed and the Evolutionary Theory of Loneliness was not able to determine how social isolation and loneliness affect each other over time.

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								Feasibility: It sets stage for future studies to utilize a longitudinal study design which would allow for disentangling temporal precedence between social isolation and loneliness.
Author: Williams et al. **Date:** 2021 **Title:** Interventions to reduce social isolation and loneliness during COVID-19 physical distancing measures: A rapid systematic review **Funding:** No funding **Conflicts/bias:** low risk of bias **Country:** United Kingdom	**Conceptual/ Theoretical framework:** Inferred Theories of loneliness and social integration	**Design/Method.** Systematic reviews **Purpose of the study:** To identify effective interventions to reduce social isolation and loneliness that are compatible with COVID-19 shielding and social distancing measures.	**Sample:** n-159 **Description:** Participants of any age in a non-hospital setting **Setting:** Non-hospital setting	**IV1:** Age **IV2:** Gender **IV1:** Race **DV1:** Social isolation **DV2:** Social isolation **DV3:** Social Support.	**Instruments used:** Downs and Black tool for Quality assessment and Questionnaires when assessing loneliness; and Loneliness scale and the De Jong Gierveld Loneliness scale;	**Statistics used:** Narrative synthesis of evidence and Morris' 2008, Eq 8	**Findings/Results** **Report: %** Not Provided **ES:** Not Provided **CI:** Not Provided **p value:** Not Provided The review presents the current evidence for interventions targeting social isolation or loneliness that may be compatible with	**LOE: 1** **Strengths:** The use of official March 2020 UK government guidance on shielding. And many interventions could also be delivered without modification as restrictions are eased. **Weaknesses:** many studies were found to be of "Fair" quality when assessing risk of

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							social distancing measures. Most effective interventions for loneliness either involved cognitive or educational components, or facilitated communication, and networking between peers.	bias and the extent to which our findings can be applied to the entire population is unclear. **Feasibility:** This review presents the current evidence for interventions targeting social isolation or loneliness that may be compatible with shielding/social distancing measures.

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Appendix C

Table 1

Synthesis Table

Author	Chen & Schultz.	Hidalgo et al.	Kelly et al.	Malcolm et al.	Noone et al.	Omari	Ozdin & Ozdin	Sepulveda-Loyola et al	Taylor	Williams et al.
Year	2016	2020	2017	2019	2020	2020	2020	2020	2019	2021
Design	SR	SR	SR	SR	SR	SR	SR	SR	SR	SR
LOE	I	II	I	I	I	II	II	I	III	I
Theory/Conceptual Framework										
Cognitive-Behavioral Frame of Reference	X									
Grounded Theory		x								
Theory of Health Promotion			X							
Discursive Theoretical. approach				X						
Social Engagement and Attachment Theory					X		x			

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Linear regression model						X				
The Evolutionary Theory of Loneliness									X	
Theory of loneliness and social integration										X
Social signal transduction theory of depression							X			
Study Characteristics										
Outpatient	X	X	X	X	X	X	X	X	X	X
SR of adults only	X	X	X	X	X	X	X	X	X	X
Number of studies included in the SR	25	40	107	NG	201	1057	343	41	6962	159
Validity & Reliability										
Reliability of Instruments	X	X	X	X	X	X	X	X	X	X
Setting										
Austria	X									
Canada	X									
Finland	X									
Israel	X									
Netherlands	X									
Norway	X									
Slovenia	X									

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Sweden	X									
Taiwan	X				X					
United Kingdom	X			X						X
United States.	X								X	
Spain		X						X		
Ireland			X							
UAE						X				
Oman						X				
Jordan						X				
Saudi Arabia						X				
Iraq						X				
Egypt						X				
Turkey							X			
China								X		
Italy								X		
Paraguay								X		
France								X		
Independent Variables										
Any current or previous anxiety and depression	X	X	X	X	X	X	X	X	X	X
Social Isolation	X	X	X	X	X	X	X	X	X	X
Age greater than 18	X	X	X	X	X	X	X	X	X	X
Dependent Variables										
Effect of ICT on Social Isolation	X									
Effect of ICT on Social Support	X									

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|										
General Psychological distress		X								
Cognitive Functioning			X							
Depression & Anxiety						X				
Living with an seniors person							X			
Friends or Relatives with COVID-19							X			
Irritability and stress								X		
Education									X	
Loneliness									X	
Social Support										X
Social Isolation										X
Findings										
Communication and networking between peers										↑
Anxiety, depression, poor sleep quality and physical inactivity during the isolation period.		↓							↑	
Engagement in social activities	↑									
Social loneliness				↓						

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|									
Impact of COVID-19 on DAS					↑				
Effect of COVID-19 on those with other Chronic Diseases						↑			
Attentional bias		↑						↑	
Funding			X		X		X	X	

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Appendix D

Models and Frameworks

Figure 1

The Chronic Care Model
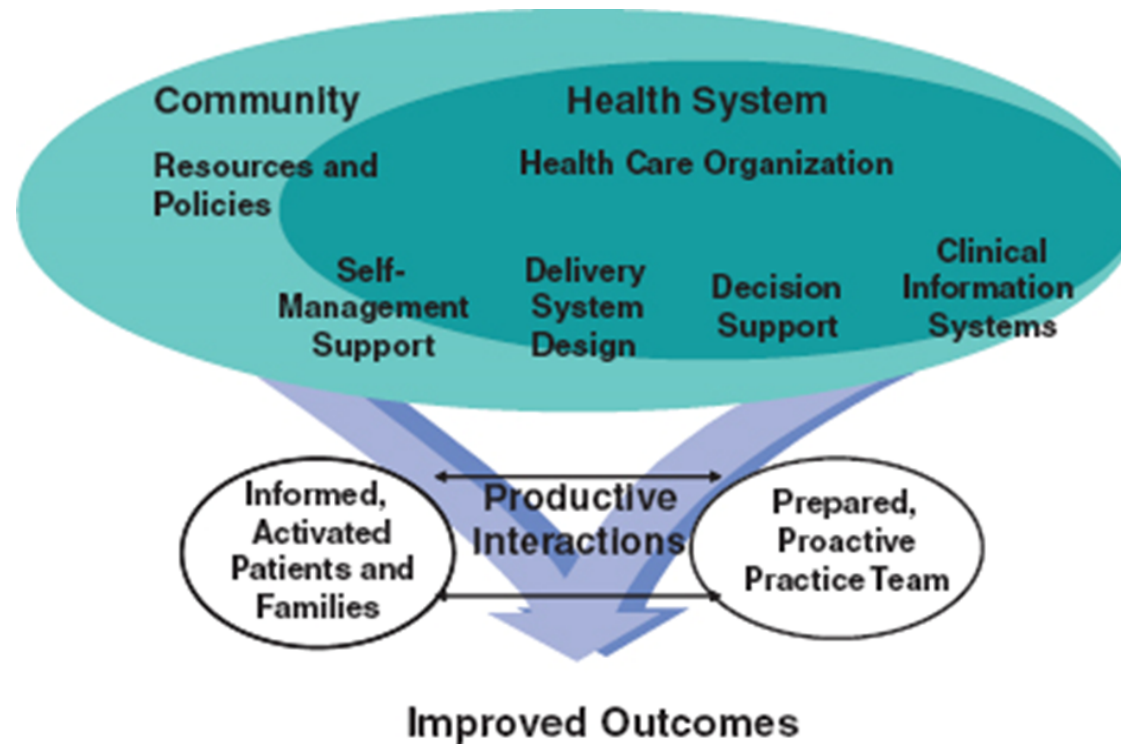
Key: **CI**-Confidence Interval; **ICT-** Information and Communication Technology; **IV**-Independent Variable; **DV**-Dependent Variable; **LOE**-Level of Evidence; **RCTs-** Random Control Trials **N**=number of studies; **n**- number of participants; **NOS**: Newcastle-Ottawa Scale; **GRADE** (Grades of Recommendation; **ES**-effect sizes; **DAS**=Depression, Anxiety and Stress; SCORARE GA= Assessment tools for geriatric population; HADS=Hospital Anxiety and Depression Scale; **HAI**=Health Anxiety Inventory; EPHPP= Effective Public Health Practice Project; **SR**=Systematic Review; **UK**-United Kingdom **USA**-United States of America; **NG**-Not Given; ↑=increased; ↓=Decreased; **UAE**= United Arab Emirates

Figure 2

Hubs and Spokes Model

Hubs
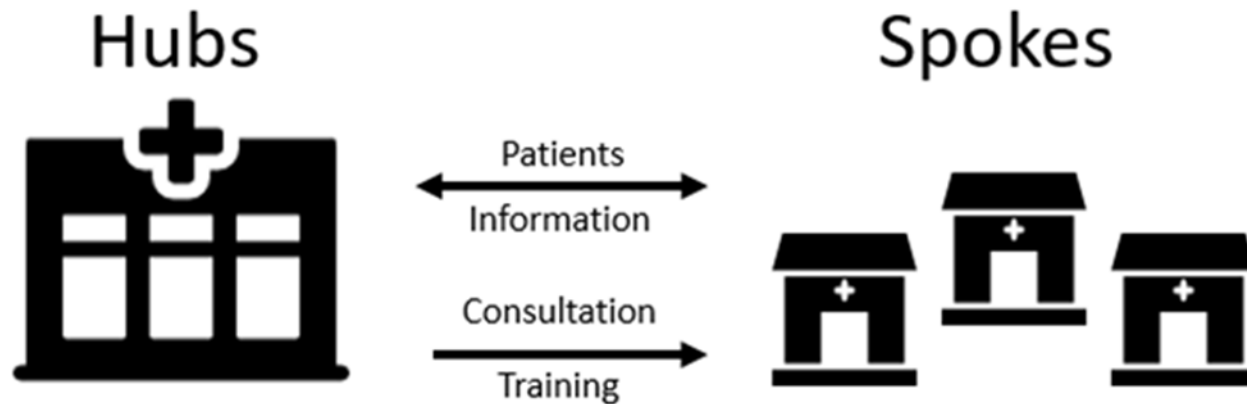
- High intensity ICT-mediated social isolation interventions: Telephone befriending programs, computer, and Internet, communication programs (using landline phones, smartphones, iPads, emailing, and online chat rooms or forums).
- If depression is worse, patient will be receiving inpatient treatment.

Spokes

- Maintenance ICT-mediated social isolation interventions: Telephone befriending programs, computer, and Internet, communication programs (using landline phones, smartphones, iPads, emailing, and online chat rooms or forums).
- In community setting. Maintenance of depression treatment by local providers

Patients Information

Consultation Training

Department of Vermont Health (2021)

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