

Supplementary Material

Digital Technologies to Prevent Social Isolation and Loneliness in Dementia: A Systematic Review

Supplementary Table 1. PubMed History December 11, 2020.

Search	PubMed Query – December 11, 2020	Items found
#4	#1 AND #2 AND #3	1,441
#3	"Computers, handheld"[Mesh] OR "Mobile Applications"[Mesh] OR "Internet"[Mesh] OR "Robotics"[Mesh] OR "Technology"[Mesh] OR "Wearable Electronic Devices"[Mesh] OR "technolog*"[tiab] OR "mobile health*"[tiab] OR "mhealth*"[tiab] OR "m-health*"[tiab] OR "telehealth*"[tiab] OR "tele-health"[tiab] OR "digital health"[tiab] OR "app"[tiab] OR "apps"[tiab] OR "smartphone*"[tiab] OR "phone application*"[tiab] OR "telephone application*"[tiab] OR "mobile application*"[tiab] OR "health application*"[tiab] OR "internet*"[tiab] OR "world wide web*"[tiab] OR "ipad"[tiab] OR "ipads"[tiab] OR "laptop*"[tiab] OR "palmtop*"[tiab] OR "palm top*"[tiab] OR "personal digital assistant*"[tiab] OR "interactive voice response*"[tiab] OR "multimedia"[tiab] OR "Mhapps"[tiab] OR "mobile phone*"[tiab] OR "iphone*"[tiab] OR "android"[tiab] OR "game*"[tiab] OR "gaming"[tiab] OR "gamification"[tiab] OR "whatsapp*"[tiab] OR "e-coach*"[tiab] OR "wearable*"[tiab] OR "smartwatch"[tiab] OR "social media"[tiab] OR "online social network*"[tiab] OR "exergam*"[tiab] OR "serious gam*"[tiab] OR "chatbox*"[tiab] OR "chat*"[tiab] OR "robot*"[tiab]	1,133,161
#2	"Loneliness"[Mesh] OR "Social Isolation"[Mesh] OR "Social Participation"[Mesh] OR "Community Participation"[Mesh] OR "Quality of Life"[Mesh] OR "Independent Living"[Mesh] OR "loneliness"[tiab] OR "lonely"[tiab] OR "social isolation"[tiab] OR "social engagement"[tiab] OR "social inclusion"[tiab] OR "participation"[tiab] OR "involvement"[tiab] OR "quality of life"[tiab] OR "life qualit*"[tiab] OR "living qualit*"[tiab] OR "quality of living"[tiab] OR "qol"[tiab] OR "hrql"[tiab] OR "hrqol"[tiab] OR "wellbeing"[tiab] OR "well-being"[tiab] OR "independent liv*"[tiab]	1,071,051
#1	"Dementia"[Mesh] OR "dementi*"[tiab] OR "alzheimer*"[tiab] OR "mild cognitive impair*"[tiab] OR "MCI"[tiab]	275,064

Supplementary Table 2. Embase.com History December 11, 2020.

Search	Embase.com Query – December 11, 2020	Items found
#5	#4 NOT ('chapter'/it OR 'conference abstract'/it OR 'conference review'/it OR 'letter'/it OR 'note'/it)	1,669
#4	#1 AND #2 AND #3	2,476
#3	'personal digital assistant'/exp OR 'mobile application'/exp OR 'Internet'/exp OR 'robotics'/exp OR 'technology'/exp OR 'wearable computer'/exp OR technolog*:ab,ti,kw OR 'mobile health*':ab,ti,kw OR mhealth*:ab,ti,kw OR m-health*:ab,ti,kw OR telehealth*:ab,ti,kw OR tele-health:ab,ti,kw OR 'digital health':ab,ti,kw OR app:ab,ti,kw OR apps:ab,ti,kw OR smartphone*:ab,ti,kw OR 'phone)application*':ab,ti,kw OR 'telephone application*':ab,ti,kw OR 'mobile application*':ab,ti,kw OR 'health application*':ab,ti,kw OR internet*:ab,ti,kw OR 'world wide web*':ab,ti,kw OR ipad:ab,ti,kw OR ipads:ab,ti,kw OR laptop*:ab,ti,kw OR palmtop*:ab,ti,kw OR 'palm top*':ab,ti,kw OR 'personal digital assistant*':ab,ti,kw OR 'interactive voice response*':ab,ti,kw OR multimedia:ab,ti,kw OR Mhapps:ab,ti,kw OR iphone*:ab,ti,kw OR 'mobile phone*' OR android:ab,ti,kw OR game*:ab,ti,kw OR gaming:ab,ti,kw OR gamification:ab,ti,kw OR whatsapp*:ab,ti,kw OR e-coach*:ab,ti,kw OR wearable*:ab,ti,kw OR smartwatch*:ab,ti,kw OR 'social media':ab,ti,kw OR 'online social network*':ab,ti,kw OR exergam*:ab,ti,kw OR 'serious gam*':ab,ti,kw OR chatbox*:ab,ti,kw OR chat*:ab,ti,kw OR robot*:ab,ti,kw	1,151,046
#2	'loneliness'/exp OR 'social isolation'/exp OR 'social participation'/exp OR 'community participation'/exp OR 'quality of life'/exp OR 'independent living'/exp OR loneliness:ab,ti,kw OR lonely:ab,ti,kw OR 'social isolation':ab,ti,kw OR 'social engagement':ab,ti,kw OR 'Social inclusion':ab,ti,kw OR participation:ab,ti,kw OR involvement:ab,ti,kw OR (quality NEAR/2 (life OR living)):ab,ti,kw OR qol:ab,ti,kw OR hrql:ab,ti,kw OR hrqol:ab,ti,kw OR wellbeing:ab,ti,kw OR well-being:ab,ti,kw OR 'independent living':ab,ti,kw OR home-dwelling:ab,ti,kw OR 'aging in place':ab,ti,kw OR 'at home':ab,ti,kw	1,601,182
#1	'dementia'/exp OR dementi*:ab,ti,kw OR alzheimer*:ab,ti,kw OR 'mild cognitive impairment*':ab,ti,kw OR MCI:ab,ti,kw	451,427

Supplementary Table 3. Cinahl (Ebsco) History December 11, 2020.

Search	Cinahl (Ebsco) Query – December 11, 2020	Items found
S5	S4 Limiters – Peer Reviewed; Academic Journals	850
S4	S1 AND S2 AND S3	922
S3	MH ("Computers, Hand-Held" OR "Mobile Applications" OR "Cellular Phone" OR "Internet+" OR "Robotics" OR "Technology+" OR "Wearable Sensors+" OR "Exergames") OR TI (technolog* OR “mobile health*” OR mhealth* OR m-health* OR telehealth* OR tele-health OR “digital health” OR app OR apps OR smartphone* OR “phone application*” OR “telephone application*” OR “mobile application*” OR “health application*” OR internet* OR “world wide web*” OR ipad OR ipads OR laptop* OR palmtop* OR “palm top*” OR “personal digital assistant*” OR “interactive voice response*” OR multimedia OR Mhapps OR iphone* OR “mobile phone*” OR android OR game* OR gaming OR gamification OR whatsapp* OR e-coach* OR wearable* OR smartwatch* OR “social media” OR “online social network*” OR exergam* OR “serious gam*” OR chatbox* OR chat* OR robot*) OR AB (technolog* OR “mobile health*” OR mhealth* OR m-health* OR telehealth* OR tele-health OR “digital health” OR app OR apps OR smartphone* OR “phone application*” OR “telephone application*” OR “mobile application*” OR “health application*” OR internet* OR “world wide web*” OR ipad OR ipads OR laptop* OR palmtop* OR “palm top*” OR “personal digital assistant*” OR “interactive voice response*” OR multimedia OR Mhapps OR iphone* OR “mobile phone*” OR android OR game* OR gaming OR gamification OR whatsapp* OR e-coach* OR wearable* OR smartwatch* OR “social media” OR “online social network*” OR exergam* OR “serious gam*” OR chatbox* OR chat* OR robot*)	396,137
S2	MH ("Loneliness" OR "Social Isolation+" OR "Social Participation" OR "Quality of Life+" OR "Psychological Well-Being") OR TI (loneliness OR lonely OR “social isolation” OR “social engagement” OR “Social inclusion” OR participation OR involvement OR (quality N2 (life OR living)) OR qol OR hrql OR hrqol OR wellbeing OR well-being OR “independent living” OR home-dwelling OR “aging in place” OR “at home”) OR AB (loneliness OR lonely OR “social isolation” OR “social engagement” OR “Social inclusion” OR participation OR involvement OR (quality N2 (life OR living)) OR qol OR hrql OR hrqol OR wellbeing OR well-being OR “independent living” OR home-dwelling OR “aging in place” OR “at home”)	495,196
S1	(MH "Dementia+") OR TI(dementi* OR alzheimer* OR “mild cognitive impairment*” OR MCI) OR AB (dementi* OR alzheimer* OR “mild cognitive impairment*” OR MCI)	97,273

Supplementary Table 4. APA PsycInfo (Ebsco) December 11, 2020.

Search	APA PsycInfo (Ebsco) Query – December 11, 2020	Items found
S5	S4 Limiters – Peer Reviewed	674
S4	S1 AND S2 AND S3	745
S3	DE ("Mobile Health" OR "Mobile Technology" OR "Mobile Applications" OR "Mobile Technology" OR "Wearable Devices" OR "Digital Gaming" OR "Mobile Devices" OR "Mobile Phones" OR "Tablet Computers" OR "Technology" OR DE "Assistive Technology" OR "Information and Communication Technology" OR "Digital Technology" OR "Computer Applications" OR "Computer Games" OR "Electronic Communication" OR "Robotics" OR "Social Media" OR "Online Social Networks" OR "Text Messaging" OR "Internet") OR TI (technolog* OR “mobile health*” OR mhealth* OR m-health* OR telehealth* OR tele-health OR “digital health” OR app OR apps OR smartphone* OR “phone application*” OR “telephone application*” OR “mobile application*” OR “health application*” OR internet* OR “world wide web*” OR ipad OR ipads OR laptop* OR palmtop* OR “palm top*” OR “personal digital assistant*” OR “interactive voice response*” OR multimedia OR Mhapps OR iphone* OR “mobile phone*” OR android OR game* OR gaming OR gamification OR whatsapp* OR e-coach* OR wearable* OR smartwatch* OR “social media” OR “online social network*” OR exergam* OR “serious gam*” OR chatbox* OR chat* OR robot*) OR AB (technolog* OR “mobile health*” OR mhealth* OR m-health* OR telehealth* OR tele-health OR “digital health” OR app OR apps OR smartphone* OR “phone application*” OR “telephone application*” OR “mobile application*” OR “health application*” OR internet* OR “world wide web*” OR ipad OR ipads OR laptop* OR palmtop* OR “palm top*” OR “personal digital assistant*” OR “interactive voice response*” OR multimedia OR Mhapps OR iphone* OR “mobile phone*” OR android OR game* OR gaming OR gamification OR whatsapp* OR e-coach* OR wearable* OR smartwatch* OR “social media” OR “online social network*” OR exergam* OR “serious gam*” OR chatbox* OR chat* OR robot*) OR KW (technolog* OR “mobile health*” OR mhealth* OR m-health* OR telehealth* OR tele-health OR “digital health” OR app OR apps OR smartphone* OR “phone application*” OR “telephone application*” OR “mobile application*” OR “health application*” OR internet* OR “world wide web*” OR ipad OR ipads OR laptop* OR palmtop* OR “palm top*” OR “personal digital assistant*” OR “interactive voice response*” OR multimedia OR Mhapps OR iphone* OR “mobile phone*” OR android OR game* OR gaming OR gamification OR whatsapp* OR e-coach* OR wearable* OR smartwatch* OR “social media” OR “online social network*” OR exergam* OR “serious gam*” OR chatbox* OR chat* OR robot*)	254,486

Search	APA PsycInfo (Ebsco) Query – December 11, 2020	Items found
S2	DE ("Social Isolation" OR "Loneliness" OR "Well Being" OR "Quality of Life") OR TI (loneliness OR lonely OR “social isolation” OR “social engagement” OR “Social inclusion” OR participation OR involvement OR (quality N2 (life OR living)) OR qol OR hrql OR hrqol OR wellbeing OR well-being OR “independent living” OR home-dwelling OR “aging in place” OR “at home”) OR AB (loneliness OR lonely OR “social isolation” OR “social engagement” OR “Social inclusion” OR participation OR involvement OR (quality N2 (life OR living)) OR qol OR hrql OR hrqol OR wellbeing OR well-being OR “independent living” OR home-dwelling OR “aging in place” OR “at home”) OR KW (loneliness OR lonely OR “social isolation” OR “social engagement” OR “Social inclusion” OR participation OR involvement OR (quality N2 (life OR living)) OR qol OR hrql OR hrqol OR wellbeing OR well-being OR “independent living” OR home-dwelling OR “aging in place” OR “at home”)	482,637
S1	DE ("Dementia" OR "Alzheimer's Disease") OR TI(dementi* OR alzheimer* OR “mild cognitive impairment*” OR MCI) OR AB (dementi* OR alzheimer* OR “mild cognitive impairment*” OR MCI) OR KW (dementi* OR alzheimer* OR “mild cognitive impairment*” OR MCI)	107,140

Supplementary Table 5. Scopus History December 11, 2020.

Search	Scopus Query – December 11, 2020	Items found
#5	Exclude: (EXCLUDE (DOCTYPE , "ch") OR EXCLUDE (DOCTYPE , "cr") OR EXCLUDE (DOCTYPE , "no") OR EXCLUDE (DOCTYPE , "le") OR EXCLUDE (DOCTYPE , "bk"))	2,533
#4	#1 AND #2 AND #3	2,720
#3	TITLE-ABS-KEY (technolog* OR “mobile health*” OR mhealth* OR m-health* OR telehealth* OR tele-health OR “digital health” OR app OR apps OR smartphone* OR “phone application*” OR “telephone application*” OR “mobile application*” OR “health application*” OR internet* OR “world wide web*” OR ipad OR ipads OR laptop* OR palmtop* OR “palm top*” OR “personal digital assistant*” OR “interactive voice response*” OR multimedia OR Mhapps OR iphone* OR “mobile phone*” OR android OR game* OR gaming OR gamification OR whatsapp* OR e-coach* OR wearable* OR smartwatch* OR “social media” OR “online social network*” OR exergam* OR “serious gam*” OR chatbox* OR chat* OR robot*)	5,296,494
#2	TITLE-ABS-KEY (loneliness OR lonely OR “social isolation” OR “social engagement” OR “Social inclusion” OR participation OR involvement OR (quality W/2 (life OR living)) OR qol OR hrql OR hrqol OR wellbeing OR well-being OR “independent living” OR home-dwelling OR “aging in place” OR “at home”)	1,942,439
#1	TITLE-ABS-KEY (dementi* OR alzheimer* OR “mild cognitive impairment*” OR {MCI})	362,848

Supplementary Table 6. MMAT ratings of the included studies.

	Baker et al., 2020 [29]	Bruil et al., 2017 [24]	Demiris et al., 2017 [26]	D'Onofrio et al., 2019 [20]	Fields et al., 2021 [21]	Goodman-Casanova et al., 2020 [27]	Gustafsson et al., 2015 [23]	Lauriks et al., 2018 [28]	Moyle et al., 2014 [22]	Zamir et al., 2020 [25]
Qualitative studies										
1.1	Yes		Can't tell			Yes	Yes		Yes	Yes
1.2	Yes		Yes			No	Yes		Yes	Yes
1.3	Yes		Can't tell			Yes	Yes		Yes	Yes
1.4	Yes		Can't tell			No	Can't tell		Yes	Yes
1.5	Yes		Can't tell			Yes	Yes		Yes	Yes
Randomized controlled trials										
2.1								Can't tell		
2.2								Yes		
2.3								No		
2.4								No		
2.5								Can't tell		
Non-randomized controlled trial										
3.1		Can't tell	No	Yes	Yes				No	
3.2		Yes	Yes	Yes	Yes				Yes	
3.3		No	No	Yes	Yes				No	
3.4		No	Can't tell	Can't tell	Can't tell				Can't tell	
3.5		Can't tell	Can't tell	Yes	Yes				Yes	
Quantitative descriptive studies										
4.1						Yes	No			
4.2						Can't tell	No			
4.3						Yes	Yes			
4.4						Can't tell	Yes			
4.5						Yes	Can't tell			
Mixed methods studies										
5.1			Can't tell			No	Yes		Yes	
5.2			No			Can't tell	Yes		Yes	
5.3			Can't tell			Yes	Yes		Yes	
5.4			Can't tell			Can't tell	Yes		Yes	
5.5			No			Can't tell	Can't tell		Can't tell	

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