

**Supplement 1.** Search string.**PUBMED****CONCEPT 1: "chronic arthritis"**

("Ankylosis"[Mesh] OR "Arthritis, Juvenile"[Mesh] OR "Arthritis, Psoriatic"[Mesh] OR "Arthritis, Rheumatoid"[Mesh] OR "Gout"[Mesh] OR "Osteoarthritis"[Mesh] OR "Spondylarthritis"[Mesh] OR "ankylosis"[tiab] OR "juvenile arthritis"[tiab] OR "juvenile rheumatoid arthritis"[tiab] OR "juvenile chronic arthritis"[tiab] OR "Still's disease"[tiab] OR "Still disease"[tiab] OR "juvenile oligoarthritis"[tiab] OR "juvenile psoriatic arthritis"[tiab] OR "psoriatic arthropathy"[tiab] OR "gout\*"[tiab] OR "degenerative arthritis"[tiab] OR "spinal arthritis"[tiab] OR "spondyl\*"[tiab] OR "rheumatoid arthritis"[tiab] OR "osteoarthritis"[tiab] OR "psoriatic arthritis"[tiab])

**CONCEPT 2: "eHealth"**

("Telemedicine"[MeSH Terms] OR "Telenursing"[MeSH Terms] OR "User-Computer Interface"[MeSH Terms] OR "Mobile Applications"[MeSH Terms] OR "Cell phone"[MeSH Terms] OR "Cell Phone Use"[MeSH Terms] OR "computers, handheld"[MeSH Terms] OR "Wearable Electronic Devices"[MeSH Terms] OR "Microcomputers"[Mesh] OR "Internet"[Mesh] OR "ehealth\*"[Title/Abstract] OR "e health\*"[Title/Abstract] OR "mhealth\*"[Title/Abstract] OR "m health\*"[Title/Abstract] OR "mobile health\*"[Title/Abstract] OR "digital health"[Title/Abstract] OR "remote consult\*"[tiab] OR "tele consult\*"[tiab] OR "remote monitoring"[tiab] OR "app"[Title/Abstract] OR "apps"[Title/Abstract] OR "smartphone\*"[Title/Abstract] OR "smart phone\*"[Title/Abstract] OR "smartwatch\*"[Title/Abstract] OR "smart watch\*"[Title/Abstract] OR "phone application\*"[Title/Abstract] OR "telephone application\*"[Title/Abstract] OR "watch application\*"[Title/Abstract] OR "mobile application\*"[Title/Abstract] OR "mobile technolog\*"[Title/Abstract] OR "mobile device\*"[Title/Abstract] OR "smart device\*"[Title/Abstract] OR "health application\*"[Title/Abstract] OR "ipad"[Title/Abstract] OR "ipads"[Title/Abstract] OR "iphone\*"[Title/Abstract] OR "i pad"[Title/Abstract] OR "i pads"[Title/Abstract] OR "i phone\*"[Title/Abstract] OR "wearable\*"[Title/Abstract] OR "cell phone\*"[Title/Abstract] OR "cellular phone\*"[Title/Abstract] OR "mobile phone\*"[Title/Abstract] OR "computer tablet\*"[Title/Abstract] OR "tablet computer\*"[Title/Abstract] OR "tablet device\*"[Title/Abstract] OR "electronic device\*"[Title/Abstract] OR "telemonitor\*"[Title/Abstract] OR "tele monitor\*"[Title/Abstract] OR "telemedicine"[tiab] OR "tele nursing"[tiab] OR "telenursing"[tiab] OR "internet"[tiab] OR "web-based"[tiab] OR "world wide web"[tiab])

**CONCEPT 1 AND 2: 3357 hits (Update: additional 1044 hits)**

**CINAHL (Via EBSCO)****Concept 1: "chronic arthritis"**

(MH "Arthritis, Rheumatoid+") OR (MH "Arthritis, Psoriatic") OR (MH "Spondylarthritis") OR (MH "Arthritis, Juvenile Rheumatoid")

AB ("ankylosis" OR "juvenile arthritis" OR "juvenile rheumatoid arthritis" OR "juvenile chronic arthritis" OR "Still's disease" OR "Still disease" OR "juvenile oligoarthritis" OR "juvenile psoriatic arthritis" OR "psoriatic arthropathy" OR "gout\*" OR "degenerative arthritis" OR "spinal arthritis" OR "spondyl\*" OR "rheumatoid arthritis" OR "osteoarthritis" OR "psoriatic arthritis")

TI ("ankylosis" OR "juvenile arthritis" OR "juvenile rheumatoid arthritis" OR "juvenile chronic arthritis" OR "Still's disease" OR "Still disease" OR "juvenile oligoarthritis" OR "juvenile psoriatic arthritis" OR "psoriatic arthropathy" OR "gout\*" OR "degenerative arthritis" OR "spinal arthritis" OR "spondyl\*" OR "rheumatoid arthritis" OR "osteoarthritis" OR "psoriatic arthritis")

**Concept 2: "eHealth"**

(MH "Telehealth") OR (MH "Telemedicine+") OR (MH "Telenursing") OR

AB ("ehealth\*" OR "e health\*" OR "mhealth\*" OR "m health\*" OR "mobile health\*" OR "digital health" OR "remote consult\*" OR "tele consult\*" OR "remote monitoring" OR "app" OR "apps" OR "smartphone\*" OR "smart phone\*" OR "smartwatch\*" OR "smart watch\*" OR "phone application\*" OR "telephone application\*" OR "watch application\*" OR "mobile application\*" OR "mobile technolog\*" OR "mobile device\*" OR "smart device\*" OR "health application\*" OR "ipad" OR "ipads" OR "iphone\*" OR "i pad" OR "i pads" OR "i phone\*" OR "wearable\*" OR "cell phone\*" OR "cellular phone\*" OR "mobile phone\*" OR "computer tablet\*" OR "tablet computer\*" OR "tablet device\*" OR "electronic device\*" OR "telemonitor\*" OR "tele monitor\*" OR "telemedicine" OR "tele nursing" OR "telenursing" OR internet OR web-based)

TI ("ehealth\*" OR "e health\*" OR "mhealth\*" OR "m health\*" OR "mobile health\*" OR "digital health" OR "remote consult\*" OR "tele consult\*" OR "remote monitoring" OR "app" OR "apps" OR "smartphone\*" OR "smart phone\*" OR "smartwatch\*" OR "smart watch\*" OR "phone application\*" OR "telephone application\*")

OR "watch application\*" OR "mobile application\*" OR "mobile technolog\*" OR "mobile device\*" OR "smart device\*" OR "health application\*" OR "ipad" OR "ipads" OR "iphone\*" OR "I pad" OR "I pads" OR "I phone\*" OR "wearable\*" OR "cell phone\*" OR "cellular phone\*" OR "mobile phone\*" OR "computer tablet\*" OR "tablet computer\*" OR "tablet device\*" OR "electronic device\*" OR "telemonitor\*" OR "tele monitor\*" OR "telemedicine" OR "tele nursing" OR "telenursing" OR internet OR web-based)

**CONCEPT 1 AND 2: 520 hits (Update: additional 82 hits)**

### Web of Science Core Collection

#### **Concept 1: "chronic arthritis"**

TI=("rheumatic disease\*" OR "rheumatism" OR "spondyl\*" OR "osteoarthritis" OR "Stills Disease" OR "still disease" OR "still s disease" OR "ankylosis" OR "polyarthritis" OR "degenerative arthritis")

AB=("rheumatic disease\*" OR "rheumatism" OR "spondyl\*" OR "osteoarthritis" OR "Stills Disease" OR "still disease" OR "still s disease" OR "ankylosis" OR "polyarthritis" OR "degenerative arthritis")

#### **Concept 2: "eHealth"**

AB=("ehealth\*" OR "e health\*" OR "mhealth\*" OR "m health\*" OR "mobile health\*" OR "digital health" OR "remote consult\*" OR "tele consult\*" OR "remote monitoring" OR "app" OR "apps" OR "smartphone\*" OR "smart phone\*" OR "smartwatch\*" OR "smart watch\*" OR "phone application\*" OR "telephone application\*" OR "watch application\*" OR "mobile application\*" OR "mobile technolog\*" OR "mobile device\*" OR "smart device\*" OR "health application\*" OR "ipad" OR "ipads" OR "iphone\*" OR "I pad" OR "I pads" OR "I phone\*" OR "wearable\*" OR "cell phone\*" OR "cellular phone\*" OR "mobile phone\*" OR "computer tablet\*" OR "tablet computer\*" OR "tablet device\*" OR "electronic device\*" OR "telemonitor\*" OR "tele monitor\*" OR "telemedicine" OR "tele nursing" OR "telenursing" OR internet OR web-based)

TI=("ehealth\*" OR "e health\*" OR "mhealth\*" OR "m health\*" OR "mobile health\*" OR "digital health" OR "remote consult\*" OR "tele consult\*" OR "remote monitoring" OR "app" OR "apps" OR "smartphone\*" OR "smart phone\*" OR "smartwatch\*" OR "smart watch\*" OR "phone application\*" OR "telephone application\*" OR "watch application\*" OR "mobile application\*" OR "mobile technolog\*" OR "mobile device\*" OR "smart device\*" OR "health application\*" OR "ipad" OR "ipads" OR "iphone\*" OR "I pad" OR "I pads" OR "I phone\*" OR "wearable\*" OR "cell phone\*" OR "cellular phone\*" OR "mobile phone\*" OR "computer tablet\*" OR "tablet computer\*" OR "tablet device\*" OR "electronic device\*" OR "telemonitor\*" OR "tele monitor\*" OR "telemedicine" OR "tele nursing" OR "telenursing" OR internet OR web-based)

**CONCEPT 1 AND 2: 744 hits (Update: additional 214 hits)**

### Cochrane CENTRAL

#### **Concept 1: "chronic arthritis"**

"Ankylosis" OR "juvenile arthritis" OR "Psoriatic arthritis" OR "rheumatoid arthritis" OR "Gout\*" OR "Osteoarthritis" OR "Spondylarthritis" OR "juvenile arthritis" OR "juvenile rheumatoid arthritis" OR "juvenile chronic arthritis" OR "Still disease" OR "juvenile oligoarthritis" OR "juvenile psoriatic arthritis" OR "psoriatic arthropathy" OR "degenerative arthritis" OR "spinal arthritis"

#### **Concept 2: "eHealth"**

"ehealth\*" OR "e health\*" OR "mhealth\*" OR "m health\*" OR "mobile health\*" OR "digital health" OR "remote consult\*" OR "tele consult\*" OR "remote monitoring" OR "app" OR "apps" OR "smartphone\*" OR "smart phone\*" OR "smartwatch\*" OR "smart watch\*" OR "phone application\*" OR "telephone application\*" OR "watch application\*" OR "mobile application\*" OR "mobile technolog\*" OR "mobile device\*" OR "smart device\*" OR "health application\*" OR "ipad" OR "ipads" OR "iphone\*" OR "I pad" OR "I pads" OR "I phone\*" OR "wearable\*" OR "cell phone\*" OR "cellular phone\*" OR "mobile phone\*" OR "computer tablet\*" OR "tablet computer\*" OR "tablet device\*" OR "electronic device\*" OR "telemonitor\*" OR "tele monitor\*" OR "telemedicine" OR "tele nursing" OR "telenursing" OR "internet" OR "web-based"

**CONCEPT 1 AND 2: 495 hits (Update: additional 143 hits)**

### Embase

#### **Concept 1: "chronic arthritis"**

'ankylosis'/exp OR 'psoriatic arthritis'/exp OR 'rheumatoid arthritis'/exp OR 'gout'/exp OR 'spondylarthritis'/exp OR 'juvenile arthritis'/exp OR 'juvenile rheumatoid arthritis'/exp OR 'juvenile chronic arthritis'/exp OR 'systemic juvenile idiopathic arthritis'/exp OR 'juvenile oligoarthritis' OR 'juvenile psoriatic arthritis'/exp OR 'psoriatic arthropathy'/exp OR 'osteoarthritis'/exp OR 'spinal arthritis' OR 'still disease'/exp OR 'ankylosis':ti,ab,kw OR 'psoriatic arthritis':ti,ab,kw OR 'rheumatoid arthritis':ti,ab,kw OR 'gout\*':ti,ab,kw

OR 'spondylarthritis':ti,ab,kw OR 'juvenile arthritis':ti,ab,kw OR 'juvenile rheumatoid arthritis':ti,ab,kw  
 OR 'juvenile chronic arthritis':ti,ab,kw OR 'systemic juvenile idiopathic arthritis':ti,ab,kw OR 'juvenile  
 oligoarthritis':ti,ab,kw OR 'juvenile psoriatic arthritis':ti,ab,kw OR 'psoriatic arthropathy':ti,ab,kw  
 OR 'osteoarthritis':ti,ab,kw OR 'spinal arthritis':ti,ab,kw OR 'still disease':ti,ab,kw

#### **Concept 2: "eHealth"**

'telemedicine'/exp OR 'telemedicine' OR 'telenursing'/exp OR 'telenursing' OR 'user-computer interface'/exp  
 OR 'user-computer interface' OR 'mobile applications'/exp OR 'mobile applications' OR 'mobile phone'/exp OR  
 'mobile phone' OR 'cell phone use'/exp OR 'cell phone use' OR 'computers, handheld'/exp OR 'computers,  
 handheld' OR 'wearable electronic devices'/exp OR 'wearable electronic devices' OR 'microcomputers'/exp OR  
 'microcomputers' OR 'ehealth\*' OR 'e health\*' OR 'mhealth\*' OR 'm health\*' OR 'mobile health'/exp OR 'mobile  
 health' OR 'digital health'/exp OR 'digital health' OR 'remote consult\*' OR 'tele consult\*' OR 'remote  
 monitoring'/exp OR 'remote monitoring' OR 'app' OR 'apps' OR 'smartphone'/exp OR 'smartphone' OR 'smart  
 phone\*' OR 'smartwatch'/exp OR 'smartwatch' OR 'smart watch\*' OR 'phone application\*' OR 'telephone  
 application\*' OR 'watch application\*' OR 'mobile application\*' OR 'mobile technolog\*' OR 'mobile device'/exp  
 OR 'mobile device' OR 'smart device'/exp OR 'smart device' OR 'health application\*' OR 'ipad'/exp OR 'ipad' OR  
 'ipads' OR 'iphone\*' OR 'i pad' OR 'i pads' OR 'i phone\*' OR 'wearable\*' OR 'cell phone\*' OR 'cellular phone\*' OR  
 'mobile phone\*' OR 'computer tablet\*' OR 'tablet computer'/exp OR 'tablet computer' OR 'tablet device\*' OR  
 'electronic device\*' OR 'telemonitor\*' OR 'tele monitor\*' OR 'internet'/exp OR 'internet' OR 'web-based' OR  
 'world wide web'/exp OR 'world wide web' OR 'telemedicine':ti,ab,kw OR 'telenursing':ti,ab,kw OR 'user-  
 computer interface':ti,ab,kw OR 'mobile applications':ti,ab,kw OR 'mobile phone':ti,ab,kw OR 'cell phone  
 use':ti,ab,kw OR 'computers, handheld':ti,ab,kw OR 'wearable electronic devices':ti,ab,kw OR  
 'microcomputers':ti,ab,kw OR 'ehealth\*':ti,ab,kw OR 'e health\*':ti,ab,kw OR 'mhealth\*':ti,ab,kw OR 'm  
 health\*':ti,ab,kw OR 'mobile health':ti,ab,kw OR 'digital health':ti,ab,kw OR 'remote consult\*':ti,ab,kw OR 'tele  
 consult\*':ti,ab,kw OR 'remote monitoring':ti,ab,kw OR 'smartphone':ti,ab,kw OR 'smart phone\*':ti,ab,kw OR  
 'smartwatch':ti,ab,kw OR 'smart watch\*':ti,ab,kw OR 'phone application\*':ti,ab,kw OR 'telephone  
 application\*':ti,ab,kw OR 'watch application\*':ti,ab,kw OR 'mobile application\*':ti,ab,kw OR 'mobile  
 technolog\*':ti,ab,kw OR 'mobile device':ti,ab,kw OR 'smart device':ti,ab,kw OR 'health application\*':ti,ab,kw OR  
 'ipad\*':ti,ab,kw OR 'iphone\*':ti,ab,kw OR 'i pad\*':ti,ab,kw OR 'i phone\*':ti,ab,kw OR 'wearable\*':ti,ab,kw OR  
 'cell phone\*':ti,ab,kw OR 'cellular phone\*':ti,ab,kw OR 'mobile phone\*':ti,ab,kw OR 'computer tablet\*':ti,ab,kw  
 OR 'tablet computer':ti,ab,kw OR 'tablet device\*':ti,ab,kw OR 'electronic device\*':ti,ab,kw OR  
 'telemonitor\*':ti,ab,kw OR 'tele monitor\*':ti,ab,kw OR 'internet':ti,ab,kw OR 'web-based':ti,ab,kw OR 'world  
 wide web':ti,ab,kw

**Concept 1 AND 2: 3341 hits (Update: additional 1720 hits)**

#### **Clinicaltrials.gov**

"ehealth" OR "mhealth" OR "telehealth" OR "apps" OR "mobile health" OR "telemedicine" OR "remote  
 monitoring" OR "mobile applications" OR "handheld computer" OR "internet" OR "tablet" OR "telenursing" OR  
 "user-computer interface" OR "digital health" | "Ankylosis" OR "juvenile arthritis" OR "psoriatic arthritis" OR  
 "rheumatoid arthritis" OR "Gout" OR "Osteoarthritis" OR "Spondylarthritis"

**232 hits (Update: additional 269 hits)**

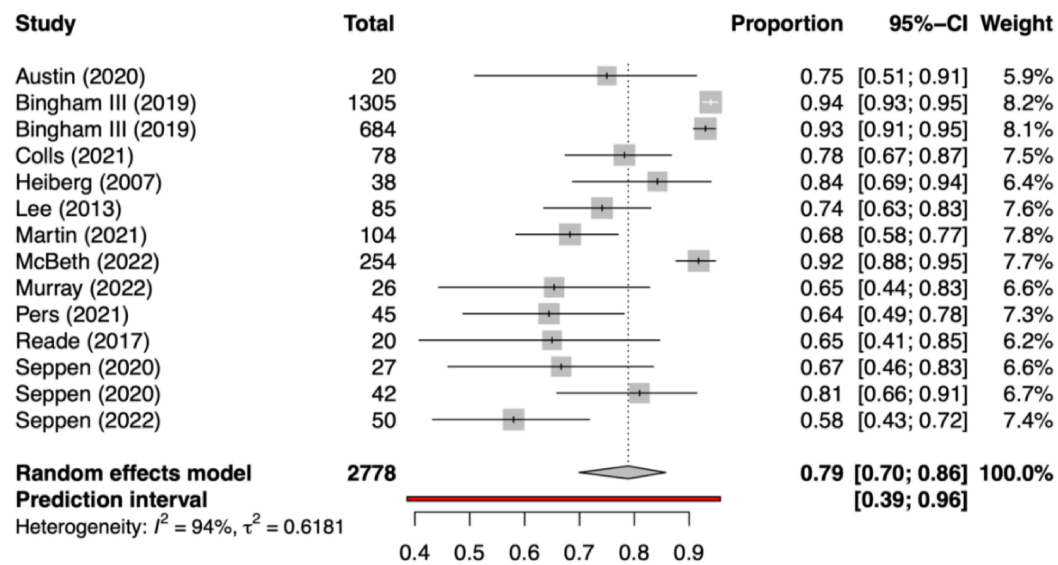
#### **ICTRP**

("ankylosis" OR "juvenile arthritis" OR "juvenile rheumatoid arthritis" OR "juvenile chronic arthritis" OR "Still's  
 disease" OR "Still disease" OR "juvenile oligoarthritis" OR "juvenile psoriatic arthritis" OR "psoriatic  
 arthropathy" OR "gout" OR "degenerative arthritis" OR "spinal arthritis" OR "spondyl" OR "rheumatoid  
 arthritis" OR "osteoarthritis" OR "psoriatic arthritis") AND ("ehealth" OR "e health" OR "mhealth" OR "m  
 health" OR "mobile health" OR "digital health" OR "remote consult" OR "tele consult" OR "remote monitoring"  
 OR "app" OR "apps" OR "smartphone" OR "smart phone" OR "smartwatch" OR "smart watch" OR "phone  
 application" OR "telephone application" OR "watch application" OR "mobile application" OR "mobile  
 technology" OR "mobile device" OR "smart device" OR "health application" OR "ipad" OR "ipads" OR "iphone"  
 OR "i pad" OR "i pads" OR "i phone" OR "wearable" OR "cell phone" OR "cellular phone" OR "mobile phone"  
 OR "computer tablet" OR "tablet computer" OR "tablet device" OR "electronic device" OR "telemonitor" OR "tele  
 monitor\*" OR "telemedicine" OR "tele nursing" OR "telenursing" OR internet OR web-based)

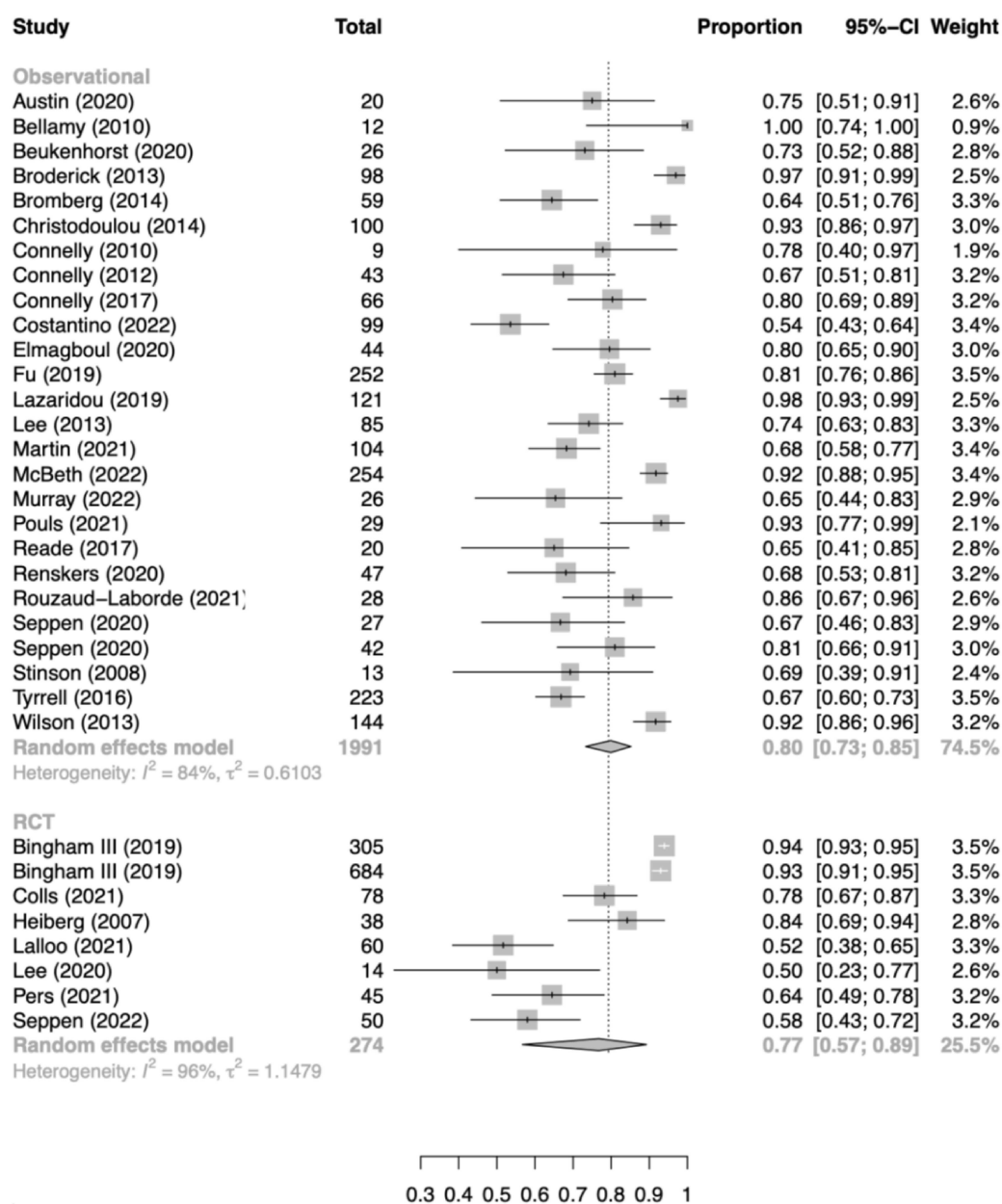
**152 hits (Update: additional 27 hits)**

**Supplement 2.** Risk-of-bias assessment for included full-text studies, based on Newcastle-Ottawa Scale (NOS) for cohort or case-control (CC) studies or on PEDro scale for randomised controlled studies.

| <b>Study</b>           | <b>Scale</b> | <b>Assessment</b> |                  |             |
|------------------------|--------------|-------------------|------------------|-------------|
| Austin (2020)          | NOS          | Selection ☆☆☆     | Comparability NA | Outcome ☆☆  |
| Bellamy (2010)         | NOS          | Selection ☆☆☆☆    | Comparability NA | Outcome ☆☆  |
| Beukenhorst (2020)     | NOS          | Selection ☆☆☆     | Comparability NA | Outcome ☆☆  |
| Bingham III (2019)     | PEDro        | 8/11              |                  |             |
| Broderick (2013)       | NOS (CC)     | Selection ☆☆☆☆    | Comparability ☆☆ | Exposure ☆☆ |
| Bromberg (2014)        | NOS          | Selection ☆☆      | Comparability NA | Outcome ☆☆  |
| Christodoulou (2014)   | NOS (CC)     | Selection ☆       | Comparability ☆☆ | Exposure ☆☆ |
| Colls (2021)           | PEDro        | 8/11              |                  |             |
| Connelly (2010)        | NOS          | Selection ☆☆      | Comparability NA | Outcome ☆☆  |
| Connelly (2012)        | NOS          | Selection ☆☆      | Comparability NA | Outcome ☆☆  |
| Connelly (2017)        | NOS          | Selection ☆☆      | Comparability NA | Outcome ☆☆  |
| Costantino (2022)      | NOS          | Selection ☆       | Comparability NA | Outcome ☆☆  |
| Crouthamel (2018)      | NOS          | Selection ☆☆      | Comparability NA | Outcome ☆☆  |
| Druce (2017)           | NOS          | Selection ☆☆☆     | Comparability NA | Outcome ☆☆☆ |
| Elmagboul (2020)       | NOS          | Selection ☆☆☆     | Comparability NA | Outcome ☆☆  |
| Fu (2019)              | NOS          | Selection ☆☆☆     | Comparability NA | Outcome ☆☆  |
| Gilbert (2021)         | NOS          | Selection ☆☆☆     | Comparability NA | Outcome ☆☆☆ |
| Heale (2018)           | NOS          | Selection ☆☆☆     | Comparability NA | Outcome ☆☆  |
| Heiberg (2007)         | PEDro        | 5/11              |                  |             |
| Jacquemin (2018)       | NOS          | Selection ☆☆☆     | Comparability NA | Outcome ☆☆  |
| Kempin (2022)          | NOS          | Selection ☆☆☆     | Comparability NA | Outcome ☆☆☆ |
| Laloo (2021)           | PEDro        | 9/11              |                  |             |
| Lazaridou (2019)       | NOS          | Selection ☆☆☆     | Comparability NA | Outcome ☆   |
| Lee (2013)             | NOS          | Selection ☆☆      | Comparability NA | Outcome ☆☆  |
| Lee (2020)             | PEDro        | 7/11              |                  |             |
| McBeth (2022)          | NOS          | Selection ☆☆      | Comparability NA | Outcome ☆☆☆ |
| Murray (2022)          | NOS          | Selection ☆       | Comparability NA | Outcome ☆☆☆ |
| Nowell (2021)          | NOS          | Selection ☆☆☆     | Comparability NA | Outcome ☆☆  |
| Östlind (2021)         | NOS          | Selection ☆☆☆     | Comparability NA | Outcome ☆☆  |
| Pers (2021)            | PEDro        | 8/11              |                  |             |
| Pouls (2021)           | NOS          | Selection ☆☆☆     | Comparability NA | Outcome ☆☆☆ |
| Reade (2017)           | NOS          | Selection ☆☆☆     | Comparability NA | Outcome ☆☆  |
| Renskers (2020)        | NOS          | Selection ☆☆☆     | Comparability NA | Outcome ☆☆  |
| Rouzaud-Laborde (2022) | NOS          | Selection ☆☆      | Comparability NA | Outcome ☆☆  |
| Seppen (2020)          | NOS          | Selection ☆☆☆     | Comparability NA | Outcome ☆   |
| Seppen (2022)          | PEDro        | 9/11              |                  |             |
| Skrepnik (2017)        | PEDro        | 9/11              |                  |             |
| Stinson (2008)         | NOS          | Selection ☆☆      | Comparability NA | Outcome ☆☆  |
| Tyrrell (2016)         | NOS          | Selection ☆☆☆     | Comparability NA | Outcome ☆☆  |
| Wilson (2013)          | NOS          | Selection ☆☆      | Comparability ☆  | Outcome ☆☆  |
| Yu (2022)              | NOS          | Selection ☆☆☆     | Comparability NA | Outcome ☆☆  |
| Zaslavsky (2019)       | NOS          | Selection ☆☆☆     | Comparability NA | Outcome ☆☆  |

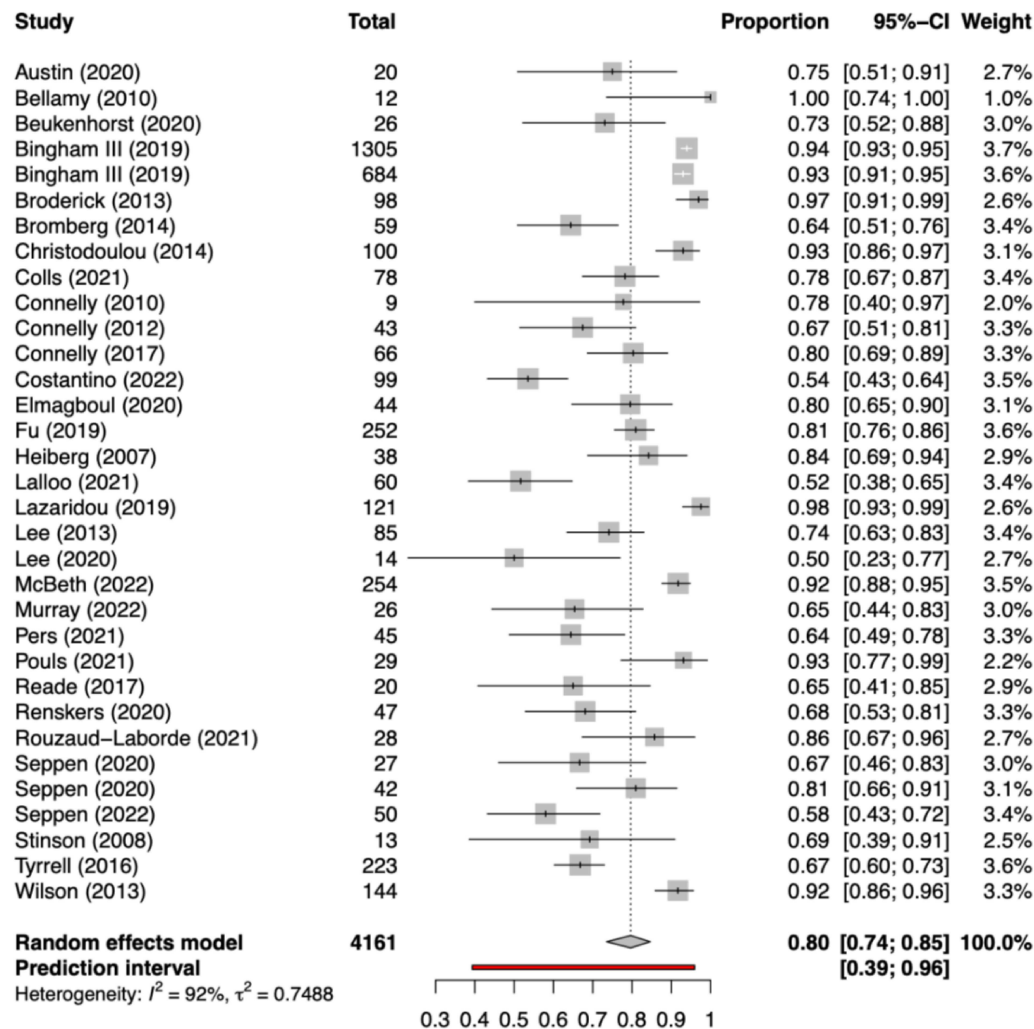
**Supplement 3A.** Forest plot of pooled completion rates for eHealth studies in an RA population.

Supplement 3B. Forest plot of pooled completion rates according to eHealth study design.

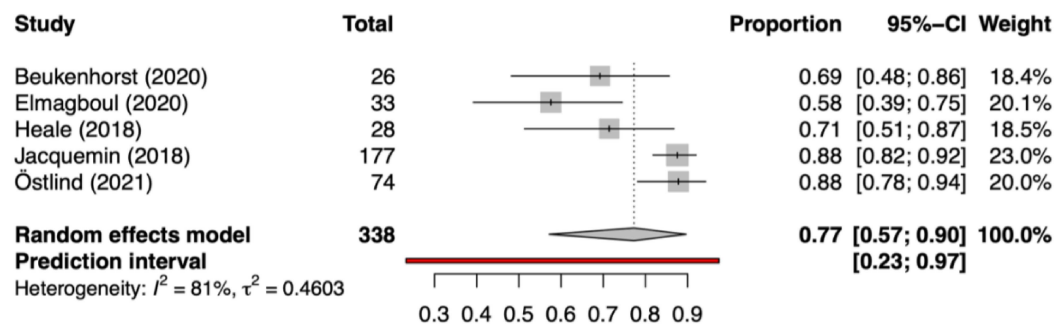




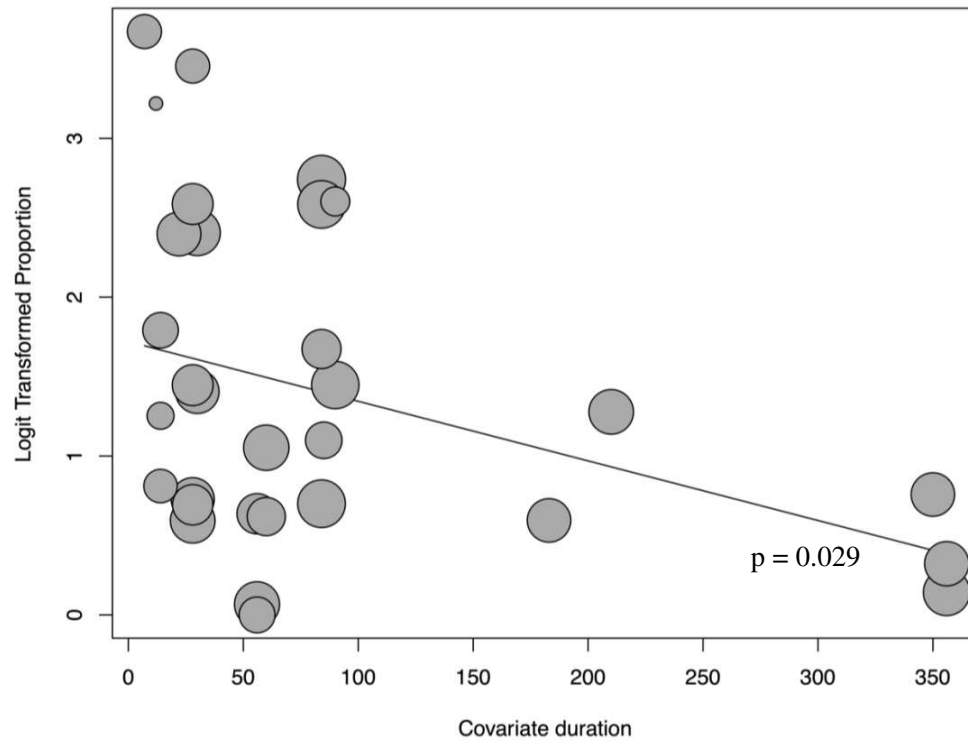
**Supplement 4A.** Sensitivity analysis, excluding abstracts, of pooled completion rates for patient-reported outcomes collected with eHealth tools.



**Supplement 4B.** Sensitivity analysis, excluding abstracts, of pooled proportion of study days a wearable activity tracker was actively worn.



**Supplement 5:** Bubble plot for the association between completion rate (as logit transformed proportion) and study duration in days.





**Supplement 6.** Collected electronic patient-reported outcomes (ePROs) for included eHealth studies.

| <i>First author (year)</i> | <i>Diagnosis</i> | <i>eHealth tool</i> | <i>Monitoring frequency</i>              | <i>PROs</i>   |
|----------------------------|------------------|---------------------|--|---|
| Austin (2020)              | RA               | Smartphone app      | Daily; weekly; monthly                   | - Daily: adapted <b>RAID</b> , single item on <b>morning stiffness</b><br>- Weekly: self-reported <b>joint joints</b> , 2 flare questions, <b>PGA</b> , <b>WPAI</b><br>- Monthly: <b>HAQ</b>  |
| Bellamy (2010)             | OA               | Smartphone app      | Once every 3 days                        | <b>WOMAC Index (NRS)</b>  |
| Beukenhorst (2020)         | OA               | WAT                 | Continuous + PROs daily; weekly; monthly | - Daily: single items on <b>knee pain</b> , knee pain affecting daily activities, and knee pain during painful activity<br>- Weekly: single items on <b>pain interference</b> and impact of knee symptoms on <b>quality of life</b><br>- Monthly: 17 items from the <b>KOOS</b>                         |
| Bingham III (2019)         | RA               | PDA e-diary         | Daily                                    | Duration and severity of <b>morning stiffness, fatigue and pain (NRS)</b>   |
| Broderick (2013)           | OA               | Web-based           | Daily; weekly                            | <b>PROMIS</b> short forms for pain intensity (single item), pain interference, fatigue, and physical function   |
| Bromberg (2014)            | JIA              | Smartphone app      | Thrice daily                             | <b>Pain intensity (VAS)</b> , <b>pain location (body map)</b> , <b>pain duration (Likert)</b> , <b>pain unpleasantness (VAS)</b> , <b>functional limitations</b> (individual items from <b>ASK and CALI</b> ), <b>stiffness (VAS)</b> , <b>fatigue (VAS)</b> , <b>duration of stiffness and fatigue</b> |
| Christodoulou (2014)       | OA               | Web-based           | Daily                                    | <b>PROMIS</b> fatigue   |
| Colls (2021)               | RA               | Smartphone app      | Daily                                    | Cycled between <b>PROMIS</b> physical function, pain interference, fatigue, sleep disturbance and depression, and <b>RADAI-5</b>  |
| Connelly (2010)            | JIA              | PDA e-diary         | Thrice daily                             | <b>Pain intensity (VAS)</b> , mood  |

|                   |  |                        |  |   |
|-------------------|--|------------------------|--|---|
|                   |  |                        |  | (PANAS-C), functional limitations (CALI)  |
| Connelly (2012)   | JIA  | Smartphone app         | Thrice daily                                 | Emotion regulation (PANAS-C), pain intensity (VAS), functional limitations (ASK and CALI)   |
| Connelly (2017)   | JIA  | Smartphone app         | Thrice daily                                 | Pain intensity (VAS), pain unpleasantness (VAS), pain location (body map), pain interference (CALI), mood (PANAS-C)   |
| Costantino (2022) | SpA  | Web-based              | Weekly                                       | BASDAI, pain (NRS), flare question  |
| Crouthamel (2018) | RA   | Smartphone app         | Weekly; monthly                              | - Weekly: PGA, pain (Likert), morning stiffness (Likert), mood (Likert), app satisfaction<br>- Monthly: EQ-5D, HAQ, FACIT-F   |
| Druce (2017)      | RA(19%)<br>SpA(9%)<br>Arthritis(40%)<br>Gout(3%)<br>FMS(24%)<br>Headache(7%)<br>Neuropathic(13%)<br>Other(23%) | Smartphone app         | Daily  | Likert scale for pain, fatigue, morning stiffness, pain interference, sleep quality, time spent outside, feeling tired on waking, physical activity, mood, and well-being |
| Elmagboul (2020)  | Gout   | WAT + smartphone app   | Weekly                                       | 4 gout flare questions  |
| Fu (2019)         | OA   | Web-based              | Once every 10 days + in case of flare        | Pain (NRS), sleep quality (PSQI), fatigue (MAF), IPAQ-S, HOOS   |
| Heiberg (2007)    | RA   | PDA e-diary            | Daily; weekly                                | - Daily: VAS for pain and fatigue, PGA, RADAI<br>- Weekly: SF-36, MHAQ  |
| Kempin (2022)     | SpA  | Smartphone app         | Once every 2 weeks                           | BASDAI, pain (NRS)  |
| Laloo (2021)      | JIA  | Smartphone app         | Daily  | Pain intensity (NRS), pain interference (CALI), PedsQL Arthritis Module   |
| Lazaridou (2019)  | OA   | PDA e-diary            | Daily  | NRS for pain intensity and physical activity  |
| Lee (2013)        | RA   | SMS                    | Monthly                                      | EQ-5D and 1x RA-WIS   |
| Lee (2020)        | JIA  | Smartphone app         | Twice daily; daily; weekly + in case of pain | MPT and weekly PROMIS pain interference   |
| Martin (2021)     | RA   | SMS                    | Monthly                                      | RAID  |
| McBeth (2022)     | RA   | Smartphone app (+ WAT) | Twice daily; daily; once every 10 days       | - Twice daily: Likert scale for pain, mood and fatigue  |

|                        |   |                      |                                 |   |
|------------------------|---|----------------------|---------------------------------|---|
|                        |   |                      |                                 | - Daily: <b>CSD</b><br>- Once every 10 days: <b>WHOQoL</b>  |
| Murray (2022)          | RA  | Smartphone app       | Daily                           | <b>PROMIS short forms for pain interference, fatigue, sleep disturbance, depression, and physical function; RADAI-5</b>   |
| Nowell (2020)          | RA  | WAT + smartphone app | Continuous + PROs daily; weekly | - Daily: <b>NRS for pain and fatigue</b><br>- Weekly: <b>PROMIS</b> pain interference, physical function, fatigue, sleep disturbance and social participation, <b>flare</b> question              |
| Nowell (2021)          | OA(65%)<br>RA(49%)<br>PsA(26%)<br>AS(16%)<br>FMS(40%)<br>OP(16%)<br>SLE(9%) | Smartphone app       | Monthly                         | <b>PROMIS item banks</b> for pain, physical function, mental health, fatigue, social health, sexual function and sleep, <b>OMERACT RA Flare Instrument</b> , duration of <b>morning stiffness</b> |
| Pers (2021)            | RA  | Smartphone app       | Weekly                          | <b>RAPID-3</b> , self-reported <b>joint counts</b> , <b>pain intensity (VAS)</b> , <b>flare</b> question  |
| Pouls (2021)           | Gout  | Smartphone app       | Daily                           | <b>Pain (NRS)</b> , <b>warm joints (yes/no)</b> , <b>swollen joints (yes/no)</b> , <b>flare</b> question  |
| Reade (2017)           | RA  | Smartphone app       | Daily                           | <b>Likert scale for pain, fatigue, feeling tired on waking, morning stiffness, well-being, PGA, mood, physical activity, time spent outside, perceived influence of weather</b>                   |
| Renskers (2020)        | RA & SpA  | Web-based            | Free to choose (at baseline)    | Free to choose (at baseline) between <b>RAID, RADAI-5, HAQ, BASDAI and/or BASFI</b>   |
| Rouzaud-Laborde (2021) | OA  | WAT                  | Thrice daily; daily             | - Thrice daily: <b>pain (NRS)</b> , <b>fatigue (NRS)</b> , <b>mood (VAS)</b><br>- Daily: <b>sleep quality (NRS)</b>   |
| Seppen (2020)          | RA  | Smartphone app       | Weekly                          | <b>RAPID-3</b>  |
| Seppen (2022)          | RA  | Smartphone app       | Weekly                          | <b>RAPID-3</b>  |
| Stinson (2008)         | JIA   | PDA e-diary          | Thrice daily                    | Pain intensity, unpleasantness and interference (adapted <b>Brief Pain</b>  |

|                |    |             |        |  |
|----------------|----|-------------|--------|--|
|                |    |             |        | <b>Inventory short form), VAS for stiffness and fatigue</b>                  |
| Tyrrell (2016) | AS | Web-based   | Weekly | <b>BASDAI, IPAQ, quality of life (howRu)</b>                                 |
| Wilson (2013)  | OA | PDA e-diary | Daily  | <b>Likert scale for pain expression and spouse responses to patient pain</b> |

RA = rheumatoid arthritis, OA = osteoarthritis, JIA = juvenile idiopathic arthritis, SpA = spondyloarthritis, FMS = fibromyalgia syndrome, OP = osteoporosis, SLE = systemic lupus erythematosus, AS = ankylosing spondylitis, WAT = wearable activity tracker, PDA = Personal Digital Assistant, SMS = short message service, PROs = patient-reported outcomes, RAID = Rheumatoid Arthritis Impact of Disease, PGA = patient global assessment of disease activity, WPAI = Work Productivity and Activity Impairment questionnaire, (M)HAQ = (Modified) Health Assessment Questionnaire, WOMAC Index = Western Ontario and McMaster Universities Osteoarthritis Index, NRS = Numeric Rating Scale, KOOS = Knee Injury and Osteoarthritis Outcome Score, PROMIS = Patient-Reported Outcomes Measurement Information System, VAS = Visual Analogue Scale, ASK = Activities Scale for Kids, CALI = Child Activity Limitations Interview, RADAI(-5) = Rheumatoid Arthritis Disease Activity Index, PANAS-C = Positive and Negative Affect Schedule for Children, EQ-5D = 5-level EuroQoL, FACIT-F = Functional Assessment of Chronic Illness Therapy-Fatigue, PSQI = Pittsburgh Sleep Quality Index, MAF = Multidimensional Assessment of Fatigue, IPAQ-S = International Physical Activity Questionnaire short form, HOOS = Hip injury and Osteoarthritis Outcome Score, SF-36 = Short Form-36, PedsQL = Paediatric Quality of Life Inventory, RA-WIS = Rheumatoid Arthritis-Work Instability Scale, MPT = My Pain Tracker, CSD = Consensus Sleep Diary, WHOQoL = World Health Organisation Quality of Life questionnaire, RAPID-3 = Routine Assessment of Patient Index Data 3, BASDAI = Bath Ankylosing Spondylitis Disease Activity Index, BASFI = Bath Ankylosing Spondylitis Functional Index