Network for Information and Digital Access

**The impact of Science Literacy delivery methods - what works?**

*Gaps in impact assessment methodology*

**GROUP 5. Online interactions**

**V 1.0 | 28 March 2019**

| GROUP 5. Online interactions | | | | | |
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| **Mechanism** | **Subject and keywords** | **Gaps in the impact assessment (IA) methodology<br>Lack of (or insufficient):** | **Possible methodological improvement(s) /Recommendations / Directions for future research** | **Challenges** | **Reference** |
| **35. Blogs** | | | | | **NO GAPS IDENTIFIED** |
| **36. E-Books** | | | | | **NO REVIEWS** |
| **37. e-Zines** | | | | | **NO REVIEWS** |
| **38. Mobile Apps** | Health [Healthcare and Medicine] | - **rigorous research to test mobile app effectiveness and acceptability**<br>- **comprehensive evaluation to date of public and commercial apps**, despite their apparent popularity | - large sample, high-quality, adequately powered, randomized controlled trials are required<br>- need for better reporting of health-related app interventions is also required. Collaborations between researchers, HCPs, app developers, and policymakers could enhance the process of delivering and testing evidence-based apps to improve health outcomes<br>- further research should focus on conducting evaluation research in low- and middle-income countries | | **Can Mobile Phone Apps Influence People's Health Behavior Change? An Evidence Review**<br>Zhao, Freeman, and Li 2016 |
| **38. Mobile Apps** | Health promotion, Diet & Nutrition [Healthcare and Medicine] | - **evidence on apps effectiveness** from high-quality research studies. Even less evidence is available for longer-term usage, which is supposed to enhance maintenance of any changes in behaviour that may be achieved when using the app. Most apps are tested on a small scale only and for a short period | - it would be valuable to conduct more research into social features in mobile apps and their effectiveness in health promotion for adolescents and students<br>- need for additional research, and one may question whether this should be performed in a "traditional" way<br>- further research is recommended on the effectiveness, reach, and long-term use of mobile apps and to identify other | | **Using Mobile Apps to Promote a Healthy Lifestyle Among Adolescents and Students: A Review of the Theoretical Basis and Lessons Learned**<br>Dute, Bemelmans, and Breda 2016 |

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| | | | possibilities to tackle health issues with mobile apps, especially with respect to their potential social features<br>- is questionable whether a review or traditional research methodology in general is the most appropriate method to gather information concerning mobile apps. Research with a qualitative methodology, capturing context and changing developments not only regarding technological developments but also regarding rapidly changing trends and hypes among young people, may be suitable as well | | |
| **38. Mobile Apps** | Science education [Social science] | - **alignment between the underlying theoretical framework or learning issue and the studies' measured outcomes** | - future studies need to make use of newer available technologies, isolate the testing of specific app features and develop additional strategies around using mobile apps for collaboration<br>- researchers need to make more explicit connections between the instructional principles and the design features of their mobile learning environment in order to better integrate theory with practice<br>- it is recommended that future research on mobile apps focus on learning outcomes that correspond with the learning theories underlying the design of the applications, as well as the learning issue being addressed<br>- need for a stronger alignment between the underlying theories and measured outcomes<br>- need for more studies to assess students' higher-level cognitive outcomes, cognitive | - measure of cognitive outcomes may have also been complicated by limitations of the research settings. For example, the durations of the majority of studies in this review was less than a few weeks, making it infeasible to collect knowledge retention data | **Mobile apps for science learning: Review of research** Zydney and Warner 2016 |

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| | | | load, and skill-based outcomes such as problem-solving<br>- more research is needed on how science mobile apps can be used with more varied science topics and diverse audiences<br>- future studies should attempt to emphasize potential effects of mobile apps on higher-level cognitive outcomes through the use of methods and instrumentation aligned with the nature of these constructs<br>- more longitudinal designs and studies spanning multiple settings are necessary to provide a clearer picture of how mobile apps can influence these learning outcomes<br>- measuring cognitive load should be a focus in future studies involving the use of mobile applications<br>- need for future research to examine how mobile learning environments can be used with more diverse populations of students<br>- need to examine how mobile learning can be used with more varied topics, for instance, earth and physical sciences as well as multidisciplinary topics | | |
| **38. Mobile Apps** | Health promotion [Healthcare and Medicine] | - **use** and **content of apps** | - efficacy on relapse prevention, addressing craving post cessation and sequencing of effective application features need further research<br>- effectiveness and efficacy of smartphone alone and its comparisons with other mHealth interventions such as text messaging and emails are urgently needed | | **Effectiveness of Mobile Apps for Smoking Cessation: A Review**<br>Regmi et al. 2017 |

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| | | | - uniformity in design consideration and adoption of either theory-based content development or evidence-based content development and testing of smoking cessation mobile applications is recommended | | |
| **38. Mobile Apps** | Health [Healthcare and Medicine] | - **data available on the effectiveness of apps for the self-management of diabetes**. Further, many studies are uncontrolled and have small sample sizes. Studies using comparison groups do not provide strong evidence for the use of apps compared to standard care | - more rigorous testing is necessary to draw conclusions on the clinical utility of apps for the self-management of diabetes | | **What do we know about mobile applications for diabetes self-management? A review of reviews** Hood et al. 2016 |
| **38. Mobile Apps** | Health [Healthcare and Medicine] | - **robust evaluation of the potential that mobile health apps may support the health of High-Need, High-Cost (HNHC) populations** | - some of the methodological problems such as small sample sizes and short length of follow-up could be addressed if apps incorporated the consent process and data collection into the apps' functionality. New methodological approaches that enable large-scale app outcomes research are needed. Controlled trials where the consent process and data collection occur entirely in the context of a publicly available app may enable such work<br>- researchers conducting interventional studies should consider the inclusion of both a control arm and an app-only intervention arm to make clearer the link between the app and the outcome | - majority of apps studied were unavailable to consumers, the study designs were primarily cross-sectional, non–cross-sectional studies had a fairly short length of follow-up, and study sizes were small. In most cases, developers were often the ones evaluating the apps, sample sizes were small, funding sources were ambiguous, and clinical outcomes were evaluated in a minority of studies | **Patient-Facing Mobile Apps to Treat High-Need, High-Cost Populations: A Scoping Review** Singh et al. 2016 |
| **38. Mobile Apps** | Health [Healthcare and Medicine] | - **firm conclusions about the impact of mobile devices** since the results in the qualitative synthesis are based on self-reports and perceptions of using different types of mobile | - further empirical research with large sample sizes and mixed research methods and triangulation techniques is needed to build up a strong evidence base on the | | **Use of Mobile Devices to Access Resources Among Health Professions** |

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| | | devices. This limits valid generalizability to different groups of health professions students across diverse educational programs in various settings | long-term efficacy of mobile technologies incorporated in educational curricula, student learning, patient care, and knowledge management<br>- future investigative work on psychometric properties of a subjective and objective mobile technology measurement instrument would contribute to the development of a reliable and valid measurement to assess outcomes of mobile technology integrated into curricula of health professions education beyond the internal, local, or institutional application. The line of research with rigorous methodology design would facilitate cross-institutional research and enhance generalizability of results to health professions students across different programs | | **Students: A Systematic Review**<br>Mi et al. 2016 |
| **38. Mobile Apps** | Health [Healthcare and Medicine] | - **methodologies** and **context** | - future research should focus on large Randomised Control Trials (RCTs) of the impact of mobile phone apps on gestational diabetes mellitus (GDM) prevention and management<br>- health literacy levels of the potential audience should be taken into consideration when developing and evaluating the usability of apps for this audience | | **Functionality, Implementation, Impact, and the Role of Health Literacy in Mobile Phone Apps for Gestational Diabetes: Scoping Review**<br>Chen and Carbone 2017 |
| **38. Mobile Apps** | Agriculture [Biology] | - **present narrow focus** | - it would be useful to extend the proposed solutions in agriculture spatially and temporally | - most of the solutions are tested in small scale and for a short period of time<br>- extending a research prototype to a scalable | **Applications of Smartphone-Based Sensors in Agriculture: A** |

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| | | | | and sustainable solution requires new business models. The success of such models would allow longitudinal studies to be conducted where data is gathered for the same subjects repeatedly over a period of time, which allows us to better understand how effective and sustainable a solution is over a period of time | **Systematic Review of Research** Pongnumkul, Chaovalit, and Surasvadi 2015 |
| **38. Mobile Apps** | Health promotion, Diet & Nutrition [Healthcare and Medicine] | - **randomized controlled trials of the efficacy of mobile phone apps in smoking cessation and sun safety**<br>- **similarity in study design** (e.g. choice of a comparison group, outcome measures, and sample size) **and mobile phone app functionalities** increase the difficulty of drawing firm conclusions about the effectiveness of apps in promoting behaviours associated with reduced cancer risk | - additional cancer prevention and control research is needed to examine the efficacy of mobile phone apps<br>- future studies should utilize randomized controlled trial research designs and adequate sample sizes to better explore the cancer prevention capabilities of mobile phones<br>- research-tested mobile phone apps are also needed for non-English speakers or for persons with low health literacy | | **Mobile Phone Apps for Preventing Cancer Through Educational and Behavioral Interventions: State of the Art and Remaining Challenges** Coughlin et al. 2016 |
| **38. Mobile Apps** | Health [Healthcare and Medicine] | - **evidence to support mobile apps safety or effectiveness with vulnerable populations**<br>- **quality research evidence for mental health mobile apps, especially those for adolescents** | - future research should address methodological concerns (i.e. small sample sizes, inadequate reporting of demographic data such as gender and age, acceptability and use of apps with clinical groups, short duration of studies, sparse information on maintained over time positive gains, suitable Randomised Control Trial (RCT) comparing a mobile app to an adequate control group) | | **Mental Health Mobile Apps for Preadolescents and Adolescents: A Systematic Review** Grist, Porter, and Stallard 2017 |

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| | | | - future research may also want to consider the role of parents/guardians in supporting adolescents using apps for mental health<br>- urgent need for methodologically robust, adequately powered research evaluating the safety, efficacy, and effectiveness of mental health apps for children and young people with mental health problems<br>- well-designed RCTs with adequate power and control groups are needed to demonstrate whether mobile apps for mental health have any clinical benefit for children and young people<br>- future research should also utilize quicker, good-quality designs since the development of apps is vastly outpacing the development of the evidence base | | |
| **38. Mobile Apps** | Health, health promotion [Healthcare and Medicine] | - **scope and methodologies** | - need for better ways to assess the quality and effectiveness of apps in order to harness the potential of mobile health apps for behaviour change and health<br>- to complete a review of behaviour change and health-promoting apps, the authors suggest the inclusion of three components: (a) a review of usability and functionality, (b) some critique of the apps potential to promote behaviour change, and (c) the quality of the health-related content within the apps. A study or evaluation tool incorporating these three components would assist consumers in identifying high quality and effective health apps | | **Evaluating mobile phone applications for health behaviour change: A systematic review**<br>McKay et al. 2018 |

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| **38. Mobile Apps** | Health [Healthcare and Medicine] | - **randomized controlled trials (RCTs) evidence for mental health apps efficacy**<br>- **experimentally trialed apps that use evidence-based frameworks** (e.g. cognitive behavioral therapy) | - randomized controlled trials are required to validate future mental health apps and the principles upon which they are designed | | **Mental Health Smartphone Apps: Review and Evidence-Based Recommendations for Future Developments**<br>Bakker et al. 2016 |
| **39. Podcasts** | Education [Social science] | - **depth** [of IA] | - need for further investigation on the utilization of podcasts as tools for developing strategic knowledge in teaching of practical subjects e.g. Computer programming, Computer Aided Design<br>- the use of methods such as focus groups discussions should be explored (i.e. where podcasting is used for collaborative learning among students)<br>- need for further work to explore benefits of adopting specific approaches in the investigating the use of podcasting in Higher Education in different contexts | | **Methods of Investigating the Use of Podcasting in Higher Education: A Review of Recent Studies**<br>Oloo and Elijah 2015 |
| **40. Social media** | Health [Healthcare and Medicine] | - **focus** | - the next steps in research could focus on isolating the effect of the social media tool, particularly as it relates to improved patient outcomes<br>- more focused efforts to determine whether social media has an impact on its own, or whether any observed effects are attributable to the intervention overall or to the non-social media components, would be a research priority<br>- a more in-depth examination of how the social media interventions are | - the contrast between the statistical significance of the primary outcome in the RCTs and the positive conclusions reported suggests that issues such as selective outcome reporting (eg, choice of groups to compare), misrepresentation of conclusions (eg, focus on change over time within a | **Social media use among patients and caregivers: a scoping review**<br>Hamm et al. 2013 |

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| | | | implemented, and specifically how and to what extent health or other professionals are involved, would contribute to a better understanding of their use<br>- additional research is needed to clarify whether the use of social media truly confers an advantage, or if the novelty of the medium is solely responsible for its use | group, rather than differences between groups) and a spin in reporting (eg, emphasis on a positive trend) may play a more substantial role in the promotion of social media use than actual effectiveness<br>- the fact that most interventions were evaluated by their developers may have also influenced the positive conclusions reported | |
| **40. Social media** | Health, health promotion [Healthcare and Medicine] | - **evidence available for harder-to-reach populations** in the primary studies or the systematic reviews<br>- **evidence of the design and implementation features** (e.g. intensity and duration of interventions) that could lead to improved effects | - an area for further research is the use of well-known social media platforms (e.g. Facebook and Twitter) for health promotion interventions<br>- future research should aim to identify which social media interventions are effective and describe all aspects of the interventions, including how they are implemented and utilized, using explicit criteria such as the TIDIER (Template for Intervention Description and Replication) checklist<br>- research should also explicitly document any increased negative behaviours, stigmatization or exacerbation of existing health inequities if some populations are excluded<br>- future systematic reviews and primary studies should collect and analyze the | | **Interactive social media interventions to promote health equity: an overview of reviews**<br>Welch et al. 2016 |

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| | | | effect of the intervention by different population groups<br>- need for qualitative research on the role of theory-based program design and evaluation, use of multiple components, user-centred design, and measurement of the implementation process (including use, interaction and satisfaction)<br>- when planning a social media intervention, the target population's baseline use of social media should be considered<br>- more research is needed on social media that engages with existing social networks (rather than research-only platforms), acceptability and use of social media, and assessment of both desirable and undesirable effects | | |
| **40. Social media** | Diet & Nutrition [Healthcare and Medicine] | - **scope**, **methodologies** and **context** | - trials isolating the effects and mechanisms of action of specific social media platforms are needed to draw clear conclusions regarding the effectiveness of social media to support cost-effective and clinically significant behaviour change<br>- more work is needed on barriers and facilitators underlying the use of social media written by registered dietitians (RDs), and how to make these tools useful for RDs to reach patients and health consumers with diverse sociodemographic characteristics to improve dietary behaviours and help reduce social inequalities in health | | **Users, Uses, and Effects of Social Media in Dietetic Practice: Scoping Review of the Quantitative and Qualitative Evidence** Dumas, Lapointe, and Desroches 2018 |

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| **40. Social media** | Health [Healthcare and Medicine] | - **study design** | - if demographic variables are controlled, chronic disease sufferers are likely to be active and positive about social media<br>- further research is suggested using systematic and thoughtful study designs to investigate how the particular affordances of social media are best suited to addressing different patient needs | - biases in participant selection (i.e. tendency to sample female, Caucasian, college educated, employed and competent Internet user. They do not correspond to the profile of the average chronic disease sufferer, typically (in the USA) described as African American, less educated and lower income earning | **Health outcomes and related effects of using social media in chronic disease management: A literature review and analysis of affordances**<br>Merolli, Gray, and Martin-Sanchez 2013 |
| **40. Social media** | Health [Healthcare and Medicine] | - **evidence from Randomised Control Trials (RCTs) and longitudinal studies** (the vast majority of the studies in the review were exploratory and descriptive)<br>- **impact of social media for health communication in specific population groups**, such as minority groups, patients groups, culture differences<br>- **relative effectiveness of different applications of social media for health communication**<br>- **knowledge of the longer-term impact** on the effectiveness of social media for health communication<br>- **knowledge of the most suitable mechanisms to monitor and enhance the quality and reliability of health communication using social media**<br>- **evaluation of the impact of social media on behaviour change for healthy lifestyles** | - further research with larger sample sizes and more robust methodologies are required to fully determine the role of social media for health communication<br>- investigation of the full potential of social media in effectively supporting the patient-health professional relationship; the impact of peer-to-peer support for the general public, patients, and health professionals to enhance their interpersonal communication<br>- key recommendations for future health communication research focus on robust and comprehensive evaluation and review, using a range of methodologies<br>- determine the impact of social media for health communication in specific population groups with large sample sizes (representation of population groups)<br>- determine the relative effectiveness of different social media applications for health communication using RCTs | - the risks arising from sharing information online, the consequences for confidentiality and privacy, and the most suitable mechanisms for effectively educating users in the maintenance of their confidentiality and privacy<br>- the information needs to be monitored for quality and reliability, and the users' confidentiality and privacy need to be maintained | **A New Dimension of Health Care: Systematic Review of the Uses, Benefits, and Limitations of Social Media for Health Communication**<br>Moorhead et al. 2013 |

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| | | | - determine the longer-term impact on the effectiveness of social media for health communication using longitudinal studies<br>- explore potential mechanisms for monitoring and enhancing the quality and reliability of health communication using social media<br>- investigate the risks arising from sharing information online and the consequences for confidentiality and privacy, coupled with developing the most suitable mechanisms to effectively educate users in the maintenance of their confidentiality and privacy<br>- determine how social media can be effectively used to support the patient-health professional relationship<br>- determine the impact of peer-to-peer support for the general public, patients, and health professionals to enhance their interpersonal communication<br>- explore the potential for social media to lead to behaviour change for healthy lifestyles to inform health communication practice | | |
| **40. Social media** | Education [Social science] | - **clarity on how the studies measured learning outcomes** and whether the latter support learning objectives optimally as stated in the authors' intentions. Many of the studies lack evidence of effective learning achievements, and they preferably measured students' perceptions and responses to the learning experience<br>- **studies conducted using a clear theoretical framework or specific hypothesis to test**: a | - future studies should use improved measurements of learning outcomes that are also theoretically and methodologically based<br>- an increase of documented research in after-school clubs or civic associations could contribute to clarifying the relationship between the formal and the informal dimensions of learning supported by social network sites, as well as to | - the propensity of academia to document mostly case studies carried out in higher education runs the risk of overshadowing the conspicuous number of cases that occur in after-school clubs or civic associations | **Is Facebook still a suitable technology-enhanced learning environment? An updated critical review of the literature from 2012 to 2015: Is Facebook a suitable TEL environment?** |

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| | | clear theoretical framework, along with specific hypotheses to test through suitable methodological approaches, can explain if and why Facebook is an effective tool especially for formal learning<br>- **understanding of how religious or ethnic identity influence participants' behaviours** in learning situations | pointing out the blurring of boundaries between the two<br>- future studies need to take into account is how cultural differences between countries affect the propensity to adopt Facebook for learning and the ways students react to their use in education according to several cultural variables<br>- adopting learning design approaches that deal with cultural variables (e.g. religion, ethnic identity) can provide hints on what happens when a new digital tool is introduced to different cultures and whether the tool can potentially bridge those cultures<br>- design approaches can also contribute to point out whether Facebook, with its specific characteristics that inform the way the connectivity is built and operated by the technical capabilities and by the users' preferences (van Dijck, 2013), has been globally 'exporting' the same implicit 'pedagogical' model throughout the world | - only a few studies reported how cultural variables influence students' learning: power relations between students and their teacher; religious beliefs and topics related to ethnicity; individual-based and collective-based cultures. Cultural issues deeply influence how students perceive and manage their participation in Facebook-led learning experiences | Manca and Ranieri 2016 |
| **41. Websites** | | | | | **NO REVIEWS** |
| **42. Wikis** | Health [Healthcare and Medicine] | - **methodology** | - need to conduct systematic reviews to further synthesize the results of experimental and quasi-experimental studies in the field of health professions education and to further synthesize evidence about implementation strategies addressing the different barriers identified<br>- it is essential that further prospective trials with objective outcomes be conducted, given that the majority of the | - important barriers such as the quality of information contained in different wikis must be better addressed<br>- finding ways of assuring the scientific integrity of evidence within CWAs and recognizing authorship are significant stumbling | **Wikis and Collaborative Writing Applications in Health Care: A Scoping Review** Archambault et al. 2013 |

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| | | | literature presently exists in the form of case reports with self-reported measurements<br>- future trials should identify implementation processes that can be influenced by collaborative Writing Applications (CWAs) and how to measure them (possibly using Web metrics) as intermediate outcomes of a complex knowledge translation intervention<br>- before conducting such trials, researchers and decision-makers must reflect on defining the purpose of using a CWA as a knowledge translation intervention<br>- researchers must find ways to adapt CWAs to the particular needs of different stakeholder groups (consumers, professionals, and researchers)<br>- studying each specific behaviour involved in using CWAs (ie, to use, to contribute, to edit, to delete) with the help of theoretical frameworks will also help inform future interventions<br>- future studies should explore the impact of collaborative writing and conversational features on information sharing and investigate what kind of knowledge (explicit vs tacit) is shared. This could help knowledge users choose an appropriate CWA<br>- as future communication tools, the impact of using different types of media embedded within CWAs (audio and video recordings) should also be explored<br>- explore in future studies the impact of using a closed vs an open CWA on the | blocks that need to be addressed for health care | |

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| | | | quality of the information found within the CWA and on the type of barriers experienced by users<br>- more research is needed to determine which stakeholders benefit the most from using CWAs, to address the barriers to their use, to find ways to ensure the quality of their content, to foster contributions, and to make these tools effective knowledge translation tools for different stakeholders | | |
| **42. Wikis** | Education [Social science] | - **studies with experimental designs, random assignment, and controls for the influence of extraneous variables**. These research findings were primarily derived from descriptive designs, small samples over narrow time frames, student or instructor perceptions, researcher developed instruments, and multiple interventions | - more research is needed on their effectiveness especially in the area of nursing education<br>- future research in nursing education should focus on the design of wiki-based writing and the amount of structure that should be provided to not only allow direction but also encourage variation and creativity (e.g. how much instructor direction should take place in the design of a wiki project or in the best timing of feedback to students)<br>- another area of potential research is finding the best strategies to help students feel comfortable and confident to edit not only their own work but also that of their peers, and move from the role of reader to writer and editor<br>- more research is needed on the utility of wikis in an interprofessional environment since a core competency of professional nurses resides in the ability to work collaboratively within a team | - nurse educators need to anticipate the discomfort of students using wikis, be clear on expectations for editing, model expected behaviours, provide timely feedback, offer rewards for contributions, and monitor students closely for contributions | **Evaluating the Impact of Wikis on Student Learning Outcomes: An Integrative Review**<br>Trocky and Buckley 2016 |

**Bibliography**


Archambault, Patrick M, Tom H van de Belt, Francisco J Grajales III, Marjan J Faber, Craig E Kuziemsky, Susie Gagnon, Andrea Bilodeau, et al. “Wikis and Collaborative Writing Applications in Health Care: A Scoping Review.” Journal of Medical Internet Research 15, no. 10 (October 8, 2013): e210. https://doi.org/10.2196/jmir.2787.

Bakker, David, Nikolaos Kazantzis, Debra Rickwood, and Nikki Rickard. “Mental Health Smartphone Apps: Review and Evidence-Based Recommendations for Future Developments.” JMIR Mental Health 3, no. 1 (March 1, 2016): e7. https://doi.org/10.2196/mental.4984.

Chen, Qiong, and Elena T Carbone. “Functionality, Implementation, Impact, and the Role of Health Literacy in Mobile Phone Apps for Gestational Diabetes: Scoping Review.” JMIR Diabetes 2, no. 2 (October 4, 2017): e25. https://doi.org/10.2196/diabetes.8045.

Coughlin, Steven, Herpreet Thind, Benyuan Liu, Nicole Champagne, Molly Jacobs, and Rachael I Massey. “Mobile Phone Apps for Preventing Cancer Through Educational and Behavioral Interventions: State of the Art and Remaining Challenges.” JMIR MHealth and UHealth 4, no. 2 (May 30, 2016): e69. https://doi.org/10.2196/mhealth.5361.

Dumas, Audrée-Anne, Annie Lapointe, and Sophie Desroches. “Users, Uses, and Effects of Social Media in Dietetic Practice: Scoping Review of the Quantitative and Qualitative Evidence.” Journal of Medical Internet Research 20, no. 2 (February 20, 2018): e55. https://doi.org/10.2196/jmir.9230.

Dute, Denise Jantine, Wanda Jose Erika Bemelmans, and João Breda. “Using Mobile Apps to Promote a Healthy Lifestyle Among Adolescents and Students: A Review of the Theoretical Basis and Lessons Learned.” JMIR MHealth and UHealth 4, no. 2 (May 5, 2016): e39. https://doi.org/10.2196/mhealth.3559.

Grist, Rebecca, Joanna Porter, and Paul Stallard. “Mental Health Mobile Apps for Preadolescents and Adolescents: A Systematic Review.” Journal of Medical Internet Research 19, no. 5 (25 2017): e176. https://doi.org/10.2196/jmir.7332.

Hamm, Michele P, Annabritt Chisholm, Jocelyn Shulhan, Andrea Milne, Shannon D Scott, Lisa M Given, and Lisa Hartling. “Social Media Use among Patients and Caregivers: A Scoping Review.” BMJ Open 3, no. 5 (2013): e002819. https://doi.org/10.1136/bmjopen-2013-002819.

Hood, Megan, Rebecca Wilson, Joyce Corsica, Lauren Bradley, Diana Chirinos, and Amanda Vivo. “What Do We Know about Mobile Applications for Diabetes Self-Management? A Review of Reviews.” Journal of Behavioral Medicine 39, no. 6 (December 2016): 981–94. https://doi.org/10.1007/s10865-016-9765-3.

Manca, S., and M. Ranieri. “Is Facebook Still a Suitable Technology-Enhanced Learning Environment? An Updated Critical Review of the Literature from 2012 to 2015: Is Facebook a Suitable TEL Environment?” Journal of Computer Assisted Learning 32, no. 6 (December 2016): 503–28. https://doi.org/10.1111/jcal.12154.

McKay, Fiona H., Christina Cheng, Annemarie Wright, Jane Shill, Hugh Stephens, and Mary Uccellini. “Evaluating Mobile Phone Applications for Health Behaviour Change: A Systematic Review.” Journal of Telemedicine and Telecare 24, no. 1 (January 2018): 22–30. https://doi.org/10.1177/1357633X16673538.

Merolli, Mark, Kathleen Gray, and Fernando Martin-Sanchez. “Health Outcomes and Related Effects of Using Social Media in Chronic Disease Management: A Literature Review and Analysis of Affordances.” Journal of Biomedical Informatics 46, no. 6 (December 2013): 957–69. https://doi.org/10.1016/j.jbi.2013.04.010.

Mi, Misa, Wendy Wu, Maylene Qiu, Yingting Zhang, Lin Wu, and Jie Li. “Use of Mobile Devices to Access Resources Among Health Professions Students: A Systematic Review.” Medical Reference Services Quarterly 35, no. 1 (January 2, 2016): 64–82. https://doi.org/10.1080/02763869.2016.1117290.

Moorhead, S Anne, Diane E Hazlett, Laura Harrison, Jennifer K Carroll, Anthea Irwin, and Ciska Hoving. “A New Dimension of Health Care: Systematic Review of the Uses, Benefits, and Limitations of Social Media for Health Communication.” Journal of Medical Internet Research 15, no. 4 (April 23, 2013): e85. https://doi.org/10.2196/jmir.1933.

Oloo, Gwendo John, and Omwenga Elijah. “Methods of Investigating the Use of Podcasting in Higher Education: A Review of Recent Studies.” International Journal of Computer Applications 116, no. 9 (April 2015): 5.

Pongnumkul, Suporn, Pimwadee Chaovalit, and Navaporn Surasvadi. “Applications of Smartphone-Based Sensors in Agriculture: A Systematic Review of Research.” Journal of Sensors 2015 (2015): 1–18. https://doi.org/10.1155/2015/195308.

Regmi, Kabindra, Norhayati Kassim, Norhayati Ahmad, and Nik Tuah. “Effectiveness of Mobile Apps for Smoking Cessation: A Review.” Tobacco Prevention & Cessation 3, no. April (April 12, 2017): 11. https://doi.org/10.18332/tpc/70088.

Singh, Karandeep, Kaitlin Drouin, Lisa P Newmark, Malina Filkins, Elizabeth Silvers, Paul A Bain, Donna M Zulman, et al. “Patient-Facing Mobile Apps to Treat High-Need, High-Cost Populations: A Scoping Review.” JMIR MHealth and UHealth 4, no. 4 (December 19, 2016): e136. https://doi.org/10.2196/mhealth.6445.

Trocky, Nina M., and Kathleen M. Buckley. “Evaluating the Impact of Wikis on Student Learning Outcomes: An Integrative Review.” Journal of Professional Nursing 32, no. 5 (September 2016): 364–76. https://doi.org/10.1016/j.profnurs.2016.01.007.

Welch, V., J. Petkovic, J. Pardo Pardo, T. Rader, and P. Tugwell. “Interactive Social Media Interventions to Promote Health Equity: An Overview of Reviews.” Health Promotion and Chronic Disease Prevention in Canada: Research, Policy and Practice 36, no. 4 (April 2016): 63–75.

Zhao, Jing, Becky Freeman, and Mu Li. “Can Mobile Phone Apps Influence People’s Health Behavior Change? An Evidence Review.” Journal of Medical Internet Research 18, no. 11 (November 2, 2016): e287. https://doi.org/10.2196/jmir.5692.

Zydney, Janet Mannheimer, and Zachary Warner. “Mobile Apps for Science Learning: Review of Research.” Computers & Education 94 (March 2016): 1–17. https://doi.org/10.1016/j.compedu.2015.11.001.