Supplementary Material 5: Coding Framework E-Health

Brandt, 2019: "people mentioned explicitly the advantage regarding the mobility, whereby the use of the smartphone replaced having to go to the health care center to make an appointment or to see a specialist" / "practicality of being able to take the intervention with them, to re-do the sessions, and especially being able to choose the place and time to follow the intervention" Lee J V, 2015: "(I prefer) the digitals way (telemedicine). Everyday you can see it in your digital way in the software (digital diary) so (there is) no need to record like manual(ly). Sometime(s) even (if) you record manual(ly) the paper (is placed) wherever (and will go) missing. (With telemedicine) you have a backup." Ease of access & flexibility Lee Y K, 2018: "The accessibility of the website was valuable as they could refer to it at any time. ("It gives an added value because you don't have to go and see a doctor all the Brandt, 2019: "Most patients encountered some kind of difficulty in using CONEMO or the smartphone (72%) and would have liked to receive more training" / "3 of the 6 nurses reported that it was more difficult to use the nurse dashboard in the tablet to monitor their patients than to learn and explain how to use CONEMO, and they recommended increasing the time to practice during the training" Use of technology Lee J Y, 2015: "Technology barriers remain a concern. 'I am not (that) clever (to operate a smart phone) and I can't see (the readings on the phone) unless there is help from my Complexity Pichayapinyo, 2019: "System is burdensome: five nurses discussed their concerns about the high number of emails [patients reports] that they received every week and the length of instructions that the system gave them for supporting patients' self-management." Rho, 2017: "effort expectancy [...] contributed significantly to behavioral intention to use telemonitoring" Haddad, 2014: "They [patients] also reported that they had received messages at appropriate times Jafari, 2016: "However, they [patients] also stated that receiving too much information on diabetes, possibly via text messages, could be irritating' Ramachandran, 2018: "490 (57.2%) were satisfied with the frequency of the messages [on alternate days]. Another 141 (16.5%) preferred increased frequency of the messages Mobile Health interventions: Saleh, 2018: "They [patients] also reported receiving messages at appropriate times (afternoon) and frequency (once per week)' Timing and frequency of contacts Kulnawan, 2011: "Overall, when asked about the perception of easiness with language understanding, voice clarity, dialog speed, and easiness of pressing telephone button, the respondents reported mostly and always positively about the easiness with TLC [telephone-linked care] calls" Framing of messages delivered Maar, 2016: "Participants in all focus groups repeatedly stressed that a positively framed message was more persuasive than negatively framed messages " / "Participants also asked that care should be taken not to unduly alarm people with fear-based messages which would cause even more stress " / "the authoritarian tone was also challenged " Saleh, 2018: "the majority of recipients of the intervention were satisfied with the 'simplicity of SMS intervention' in terms of content, ease of read and comprehension " / "some participants felt that some information was repetitive Barsky, 2019: "The most frequent complication was a failure to transmit readings by Bluetooth transmission from the monitors to the Black Berry phones. This was found to be because of the BlackBerry operating system software in older devices, which did not update automatically" / "Some noted that the BlackBerry mobile phone's version of the DREAM-GLOBAL app was not user friendly—the BlackBerry screens were small, and some parts of the app were difficult to access. In addition, occasional failure of BlackBerry function because of extreme cold or trouble with battery charge was observed " Jafari, 2016: "They [patients] also mentioned facilitating characteristics, such as well-designed, easy to use, well optimised for search, quick startup time, respondenced propose." Web-based programmes Lee Y K, 2018: "there were issues concerning the use of words and symbols. The users preferred words to symbols to help them navigate through the website (e.g. use the word Choice of software & device and ease of use / navigability "next" instead of an arrow symbol). The users wanted simple instructions, which explained step-by-step what they were expected to do (e.g. "click here")" / "a simple layout with all information displayed on the screen was preferred. This was because users found it difficult to use features such as a "drop-down" menu and a hide-show function" / "Patients found it challenging to use a drag-and-drop ranking function |...]. As a result, the function was eventually listed as a tick-box of concerns without any ranking" Use of personalized features and ability to make personal dt, 2019: "The main recommendations were to include more sessions and videos, to increase personal contact, and to make it more perso nalized" / almost half of the patients d have liked to receive more phone calls (44% of 27), and ideally a space to talk about their emotional state, instead of only receiving technical support from the nurse" Jafari, 2016: "The participants showed interest in getting edu-cational material to read and learn about diabetes, both in formal education al classes and also through a 'question and answer' feature with a direct communication with doctors and peers" Lee Y K, 2018: "The personalized chart on blood glucose trend helped them understand their blood glucose control over time" / "The partici pants found the personalized summary report useful as it provided a record of the choices they had made and an overview of their deliberation process for choosing an option" / "Although it was a simple rule-based risk score, the HbAIC chart and personalized information on risk made patients view it as their personal risk." Brandt, 2019: "Most patients were satisfied with the nurses' explanations of how to use CONEMO" / "Most of the patients in both pilot studies viewed the phone calls as positive because the nurses helped them to be adherent to the intervention, helped them with their difficulties using CONEMO" / "Most patients encountered some kind of difficulty in using CONEMO or the smartphone (72%) and would have liked to receive more training" Appropriate technological support Haddad, 2014: "The fact that 38.1% of patients tried to reply to the message despite instruction at the start that this would not prove possible shows that clear guidance regarding the limitations of the service is important when such services are introduced" Jafari, 2016: "Most of them did not find a Persian website about diabetes, and they noted how helpful it would be if one existed" / "Some of the participants had experien the internet and could find helpful information, but they did not find information in Persian about diabetes" tient Needs & Maar, 2016: "Participants in Tanzania also stressed the importance of understanding the linguistic variations of the Swahili dialect in the region to avoid words with local negative connotations when crafting messages" / "participants suggested building on strengths within their culture whenever possible by reinforcing healthy cultural and traditional practices" / "Participants is not both countries stressed that the messages should be centered around local realities such as income, education and cultural norms" Use of local language & contextualization Ramachandran, 2018: "824 (96.3%) felt receiving text messages in their local language would help them understand better" Jafari, 2016: "The barriers to internet-enabled patient education, as stated by the participants, included proper lack of inter-net access, uncertainty of connectivity to the internet" Access to mobile phone or internet / costs of using the Ramachandran, 2018: "223 (26.1%) did not respond since they had to pay to reply" technology Saleh, 2018: "a good proportion of respondents (n = 175) reported that SMSs were not delivered to target as the patient was not the mobile phone holder Brandt, 2019: "patients mostly mentioned the fear of getting it stolen" / "as a consequence, many people did not use it as amobile device, outside of their homes. This suggests that the Level of insecurity socioeconomic conditions related to security can have an effect on the user's experience with mHealth interventions Brandt, 2019: "There were some technological and connectivity problems, for example, people did not receive the SMS in time" Haddad, 2014: "The main limitations to this approach were the interference from the telecommunications provider, which attempted to stop some of SMSs, and the loss of some SMS messages when the recipient was located beyond network reach" Lee J Y, 2015: "Difficulty in obtaining an Internet connection [...] posed a problem for the successful implementation Pichayapinyo, 2019: "Many patients indicated that the phone connection was initially unstable" Van Olmen, 2017: "Other temporary reasons for failures were technical problems with the Frontline software (Cambodia) in the third month and problems with the provider's software resulting in network errors in DRC in months 5–6. In Cambodia, the network and provider-related errors increased over time, due to rapid changes at telephone companies, which affected the network quality of the selected provider" / "The emergence of new telephone companies, especially in Cambodia, led to people acquiring another mobile phone, in addition to their project phone, which had cheaper rates, better network access or for other reasons. The result was that, they used this new phone more often, sometimes forgetting to check their roylect phone, for functionality or new messages." to check their project phone for functionality or new messages Compatibility: disruption of existing workflow Brandt, 2019: "All nurses considered it necessary that the activities of the nurse-support would be included as part of the monthly schedule and paid work hours" Organizational incentives & Brandt, 2019: When nurses were asked if incentives could improve their performance regarding to CONEMO activities, 3 of 6 nurses stated that they would consider incentives, such as Brandt, 2019: "[the attitudes of the nurses toward the study] could have been influenced by the management style of the health care center; the 5 nurses from 1 health care center who monitored 2 patients each were all assigned by their superiors to this study, although most were initially reluctant to participate. The one nurse with the highest workload—monitoring 7 patients—who had experience participating indifferent health programs, was asked by her superior beforehand, and she had the most positive attitude toward the intervention, was highly motivated, and ultimately was less affected by the workload of CONEMO" Participative management style Barsky, 2019: "They [CHWs] also expressed appreciation for the site visits and ongoing telephone conference communication follow-up" / "The fact that the community health worker time to manage the study in each community was granted by the health leadership indicates the commitment and engagement of each community" Leadership engagement -support from management Brandt, 2019: "before implementation, the health care centers' management agreed to provide the nurses with reserved hours to participate in the intervention; however, because of logistical and administrative constraints, once the study started, the nurses had to accommodate these additional activities in their daily routine without adjustments to their existing Brandt, 2019: "most nurses (5/6) mentioned having had difficulties in consolidating their CONEMO activities with their workflow and felt that this increased their workfload" / "all Available resources - perce additional workload nurses identified the lack of time to perform the related activities as the main problem for its implementation within the health care system Pichayapinyo, 2019: "five nurses discussed their concerns about the high number of emails that they received every week and the length of instructions that the system gave them for supporting patients' self-management" Barsky, 2019: "The technological training was well received by the community health workers [...] the training was helpful and gave them confidence in their ability to perform their Access to knowledge & information - provision of Brandt, 2019: "Most nurses (5/6) stated that the training they had received was appropriate. However, 2 of them felt they were not able to remember all the procedures when the study started because of a lack of practice or a lack of concentration during the training sessions" appopriate training Knowledge & Beliefs about he Intervention Brandt, 2019: "They [nurses] thought, it [intervention] was a good idea, something different, an opportunity to talk more to the patients and something beneficial to them Perceived benefits for patients by health workers Pichayapinyo, 2019: "First, they felt that the programme enhanced patients' awareness of their diabetes. Second, they reported that the programme helped patients improve their glycaemic control" Brandt, 2019: "Less than half of the patients, 45% (N=29), reported having experience in using a smartphone" / "most [nurses] had previous experience with using smartphones (83%, N=6) or tablets (67%, N=6) Experience and confidence in Kulnawan, 2011: "This technology is new to the participants and requires time in explaining, recruiting, and getting used to the system." Self-efficacy using technology Lee J Y, 2015: "participants' lack of knowledge in using technology posed a problem for the successful implementation' Patients, health workers Lazo-Porras, 2020: "Some participants commented that regardless of the reminder system (SMS or voice messaging), it was necessary to receive help from other people to read or listen to the messages' Jafari, 2016: "Participants indicated that gaining awareness about diabetes and how to better control blood sugar are important matters to the Willingness to gain knowledge and awareness dividual Stage of Change Saleh, 2018: "Participants perceived the eSahha SMS service as 'useful, effective and enjoyable' as [...] they learned new information." / "Participants expressed that receiving awareness SMSs was a novel way to learn new information about their conditions and improve awareness about the importance of making healthy behaviors" Lazo-Porras, 2020: "Those who preferred voice messaging over SMS generally had that preference because they had difficulty reading text Pichayapinyo, 2019: "the programme would be improved if it gave more careful consideration to patients' age and technological literacy' Socio-demographic characteristics - Age, education Saleh, 2018: "Younger age-group of 40–50 years were more likely to have received and read the SMS [...] whereas older groups (76 years ormore) were more likely to have not received SMS " / "less educated individuals were more likely to not read/open the SMSs or not to deliver it to target" / "une mployed individuals were found more likely to not open and read the SMSs or not receive it" Fear of internet Jafari, 2016: "The participants also perceived cultural barriers, such as fears about the internet' Brandt, 2019: "some of the patients who were accompanied by a nurse from the health system perceived the nurse as being in a hurry during the training (10%) or without interest in explaining the intervention (7%). Comparing both pilot studies, 80% (of 15) of the patients who were accompanied by the hired nurse viewed the training session as useful, with a positive knowledge transfer, whereas only 50% (of 14) of patients monitored by a staff nurse expressed either positive or neutral comments about the quality of the training " Engaging Stakeholders' engagement Pichayapinyo, 2019: "they increas noted that the programme seemed to enhance patient-nurse relationships by triggering them to call their patients each week' Van Olmen, 2017: "Gradual decline in the number of messages sent and received [...] due to the delay in the development of new messages. It was difficult to continue frequent team neetings to prepare messages after the initial intense phase