Joint MD/PhD programme Groningen-Oldenburg
Outline PhD Project

Working title of the project	App supported health literarcy optimization in older patients
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Short Summary pf PhD project (max. 500 words), incl. research question(s), methods, approx.. schedule (incl. times in Groningen/Oldenburg)

It is expected that in 2030 23 of the Dutch population and 29% of the German population will be 65 years or older (Source: RKI, SCP). This will have a huge impact on our healthcare systems and our economy because increasing age is strongly related to non communicable diseases (NCDs). The most common NCDs are cardiovascular disease, chronic respiratory diseases and diabetes. These common NCDs are strongly related with lifestyle behavior such as smoking, physical activity and nutrition. To reduce the onset of these disease and to reduce the progression in patients who are already diagnosed lifestyle change is important.

Unfortunately there are three challenges that make lifestyle change very difficult: 1) changing behavior is complex and requires adequate support and motivation of patients and professionals, 2) patients/citizens often lack sufficient skills and knowledge regarding the professed behavior (e.g. health food choices), and 3) time investment from citizens, patients and healthcare providers is needed to make changes happen. The latter is difficult to archieve due to the high and increasing workload in healthcare due to the aging population and lack of staff. Lifestyle knowledge is the prerequisite for sustainable behavioral change.

Digital technology is expected to overcome staff shortages by taking over tasks of healthcare providers and by improving the self management of patients/citizens. However, digital tools to improve lifestyle have limited impact because the group who could benefit most are often not digital literate or do not have the means to buy advanced digital devices. According to EUROSTAT elderly, people with low educational levels and non-EU born have on average the lowers digital literacy. These are also the populations with poorer lifestyle and increased levels of NCDs. There is an urgent need to improve lifestyle in these vulnerable populations by using a digital solution that is easy to use and does not increase the workload of healthcare providers.

In this project we want to improve nutrition and physical activity by developing a tablet based intervention program. This digital program is required to be useful and practical for the target group. It should include evicence-based information but also strategies and goals to improve behaviour regarding physical activity and nutritional situation. This is a relatively new and innovative way of educating people and to change behaviour sustainable. The tablet app is already available but will be optimimizad in our project for elderly patients. Little is known about how tablet based intervention should be implemented in healthcare to unlock its full potential in elderly patients.

Our aim is to develop a tablet based program (digital tool + intervention) to improve nutritional and physical activity behavior in patients from general practioniers. We will compare the effects of

the tablet-based program with care as usual, and examine the feasibility of its use in healthcare. Older adults with nutritional deficits and functional declines (as it is present in sarcopenia and frailty) will be included. The main outcome variable will be knowledge regarding lifestyle changes in nutrition and physical activity. The study is being carried out in the Netherlands and Germany because care by general practitioners has a central character in both countries, but there are national differences with regard to care by other specialists and disciplines such as orthopedics etc., their influence has not been researched in the context of healthcare. Digital technology can be very useful in caring for cross-border patients, but cultural differences in acceptance and experiences with digital technology impact the impact of the technology.

Methodology:

The project will be executed in the Netherlands and Germany. We start the project with developing app-based educational program prototype following the 5 stages of design thinking:

1. Empathize: interviews with stakeholders (Dutch and German patients and healthcare professionals) to learn about their needs
2. Define: clarify the problem that we need to solve with the tablet-based intervention
3. Ideate: brainstorm in focus groups (2 in the Netherlands, 2 in Germany) with the stakeholders (patients and healthcare professionals) about possible intervention approaches. Implementation factors such as reimbursement options, desired disease outcomes, feasibility, available technical support, and preferred duration of the tablet- based intervention. The outcome of this phase is an implementation guideline for the prototype
4. Prototype: develop the prototype
5. Test: the prototype will be tested and interactively improved in a pilot study in 20 participants (10 in Germany and 10 in the Netherlands, elderly >65 years)

Pilot study:

The main aim is improve knowledge regarding nutrition and physical activity from before to after the tablet-based intervention in order to change health bahaviour. The duration of the intervention is 1 year, patients are expected to use tablet-based intervention for 1 month. Secondairy aims are:

- Improvement of nutricianal status and physical activity
- System Usability
- Workload and satisfaction of healthcare professionals
- Cultural differences in effectiveness, implementation and satisfaction
- Feasibility of prospective implementation

Newly diagnosed patients and patients with poor disease control will be eligible for participation. We will evaluate the effect of the intervention in three ways: 1) patients receive a disease knowledge questionnaire before and after the tablet-based intervention program and differences between baseline and follow-up will be analysed. After the intervention they receive the system usability questionnaire, 2) data from the electronic patient record (EPR, if available) will be used to compare the tablet-based intervention program patients with patients receiving care as usual. This comparison will be made at three points in time (directly after the tablet-based intervention program, and after 3 months). Differences regarding disease status and self-management between the groups will be statistically tested. 3) Healthcare professionals involved in the treatment of the patients will receive a questionnaire after the pilot to measure their satisfaction with the procedure, changes in workload and the expected feasibility.

PhD candidate Profile/Desired Qualification

The PhD candidate should be interested in lifestyle change and in innovative technology. The candidate will work in a interdisciplinary team of nutritionists, computer scientists, Health Services Researchers in Germany (Oldenburg) and in the Netherlands (Groningen). The candidate will be based in Oldenburg but depending on the phase of the project, will also spend time at the department of primary care and longterm care of the UMC Groningen. Interviews and focus groups will be performed in German and in English or Dutch.