CHALLENGES WITH DEMENTIA

HELSEINNOVASJONSSENTERET

NTNU master - Tjenestedesign - Project by Ina Nikolic 2021

Goal

After researching growing dementia as a problem in the future society, I have came up that among other things there is a need to improve process to get younger patient diagnosed as early as possible when having early dementia symptoms.

Dementia starts often with symptoms that person starts to behave differently and his relatives do not know the reason.

Helping patients with early diagnosis would benefit patient, his relatives (inkl. children), his employer and other government organizations involved.

«It is frustrating for patient and his family not knowing the reason for his/hers change in behaviour.»

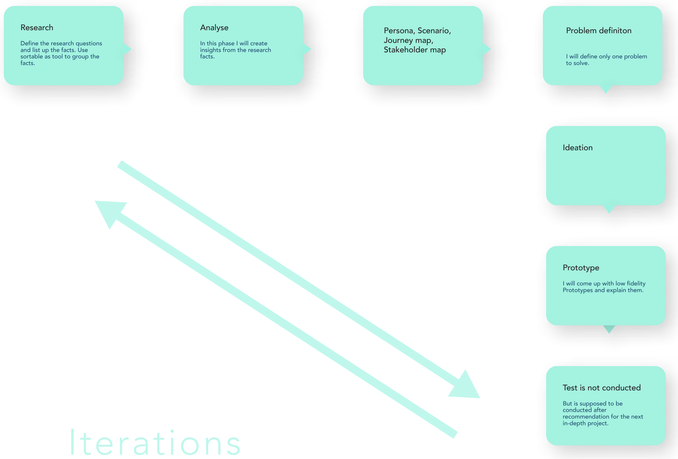
Challenge

The challenge is to consider the problem for why is dementia getting diagnosed late in cases of younger patients.

I have considered challenges, limitations and possibilities. Through this project I have applied Design Thinking and User Experience mapping methods in order to create ideas for how to solve the problem.

I have also considered how this problem will develop in the future, and what challenges this might create in the society.

Design Thinking Process



Ethical code of conduct

In case any real users should be implied in this project, the ethical code of conduct is defined under here. Also through the content of the solution, I have reflected on ethical code and that dementia patients are vulnerable, and need understanding, compassion, support and help.

- Participants agreement in advance of the interview. Ref. finished attached agreement. Agreement informs a participant about most important details and privacy settings for this project.
- The participant can cancel participation in this project any time, also during the interview.
- The recordings will not be taken and the research results will be documented in a form of notes.
- It will not be stored any notes apart those relevant for the project. Personal information will not be stored and is irrelevant for the project.
- All participants should have signed participant agreement where they agree on participating in this project

Key Insights

Research process

- Airtable
- Meetings with Helseinnovasjonssenteret
- Started with wide research
- Narrowed down to work on early diagnosis
- Through interviews with users I have discovered stigma
- I have conducted interviews with relatives
- I have interviewed one doctor neurologist

Initial research facts

https://airtable.com/invite/l?inviteId=invSHEsI4YCncDGGu&inviteToken=50133f21d800e420d6caa8da0270de49c26133474bc416c1d59912afef3b60d0&utm_source=email

Facts from interviews

https://airtable.com/invite/l?inviteId=invSHEsI4YCncDGGu&inviteToken=50133f21d800e420d6caa8da0270de49c26133474bc416c1d59912afef3b60d0&utm_source=email

Primary persona

Ole

" I have always had a good health, but lately I have experienced some difficulty finding a street address, how i difficulty of concentrating.

Age: 52
Work: Engineer
Family: Wife and two kids
Location: Norway
Character: Rational

Personality

Introvert — Extrovert
Thinking — Feeling

Rational | Ordinary | Busy | Dutiful

Goals

- Want to please his family
- Want do everything what he remembers
- Want to have control over his life
- Function at work as normal.
- Have a good economy

Frustrations

- He apologies with finding a street adress
- He notices he forgets more, but he think he is stressed
- He goes to doctor but the doctor says he is stressed

Biography

Ole is 52 years old engineer who have always had successful life. He is working an a big oil company as a department manager, where he worked his way up for the last 15 years. Suddenly he discovers that he struggles to remember, have overview over his jobs tasks and find a street adresses when working with his clients. At the same time his company has some difficulty, because they have lost a big client. Ole thinks that stress is a reason for why Ole is little confused and "surrer".
He is considering if going to the doctor, but can't decide nor find a time.

Motivations

Family and friends
Good economy
Time managment
Social status
Appear perfect

Platforms he uses

Helsenorge — VG
NRK — Dagbladet
TV2

Secondary persona

Ole`s Wife Maria

" I am worried for Ole and a way how he does it at work. He forgets also family appointments some times.

Age: 50
Work: Teacher
Family: Married and two kids
Location: Moss, Norway
Character: Curious

Personality

Introvert — Extrovert
Thinking — Feeling

Rational | Curious | Family oriented

Goals

- Want to please her family
- Think about family economy and wheints to have clear plans for the future
- Want to have control over her life
- Want to feel safe for the future
- Have a good economy

Frustrations

- She is worried for Ole
- She notices Ole forgets more and not knowing a reason she is more and more worried
- She can`t sleep and feel tired during a day

Biography

Ole`s wife is 50 years old teacher. She loves family time, and likes to work with people. She is frustrated because she doesn`t know what is happening to Ole and how to resolve the situation. She sleeps bad in the night, which makes her tired at day time. She experiences health problems due to tiredness, like difficulty to concentrate, migrene, and mussel pain. That makes her often absent from her work and she is often at sick leave from her work.

Motivations

Family and friends
Good economy
Time managment
Social status
Understanding people

Platforms he uses

Helsenorge — VG
NRK — Dagbladet
TV2

Secondary persona

Ole`s Son Henrik

" My dad has changed lately, and I don't know the reason. I am worried and disgruntled that he forgets my football training.

Age: 14
Occupation: School elev
Family: Parents and a brother
Location: Moss, Norway
Character: Curious

Personality

Introvert — Extrovert
Thinking — Feeling

Curious | Sports interested

Goals

- Want to see his dad the way he has always been
- Want a good family
- His parents take him to activities in the evening
- Want to feel safe for the future
- Trust his parents

Frustrations

- Dad forgets his activities in the evening
- Feels unsafe in the car with his dad
- Schoolteacher took initiative and saw that he needs help

Biography

Henrik is a bi.p.a teenager who likes all things teenager like. He goes to school and have training activities in the evening. He has lately experienced that his dad forgets his activities and he feels unsafe in the car with his dad. He is worried, and school teacher has noticed that and wants to offer him extraordinary follow up with PPT (pressen. He gets even more frustrated because of that.

Motivations

Family and friends
Good economy
Time management
Do it well in the football team
Stable life

Platforms he uses

Instagram — VG
NRK — Dagbladet
TV2

Secondary persona

Dr. Hansen

"Too many people have a reduced memory in periods because of the everyday stress. Unfortunately today's society is to blame for that."

Age: 60
Work: Doctor at Fastlege

Location: Moss, Norway
Character: Rational

Personality

Introvert — Extrovert
Thinking — Feeling

Rational | Responsable | Busy | Dutiful

Goals

- Take medical responsibility
- Help patients in limited of time
- Have templates to work
- Know exactly when to send to spetialist doctor in suspecting dementia as diagnosis
- Have a good economy

Frustrations

- He struggles to have enough time for each patient.
- Difficult to find right point when sent a patient to neurgical and geriatric specialist.
- Health guidlines are not always equaly clear

Biography

Dr. Hansen is a doctor at Fastlegen in Moss, Norway. He has a long career as Fastlege, and he notices the changes in the society related type of illnesses. He wants to help all his patients and have limited of time for each. He has met a lot of people who struggle with their memory because of stress. As Dementia is not common illness for under 75, he rarely send theese patients to specialists, because he thinks that their difficulty related to memory and orientation is created because of stress.

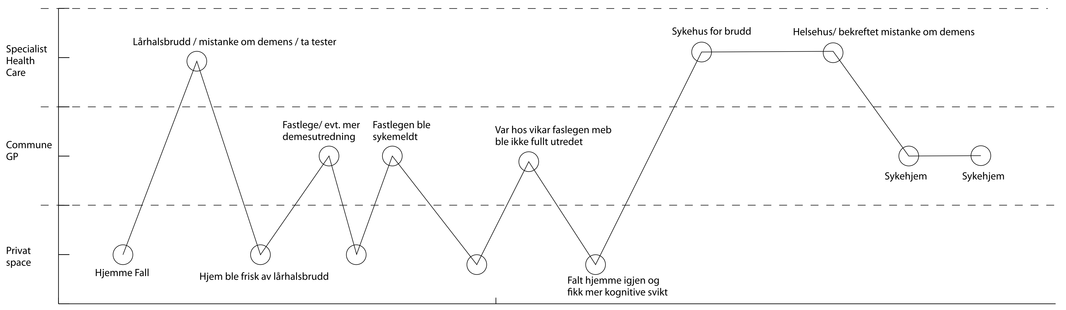
Motivations

Medical results
Scientific methods
Medical quality
Medical efficiency
Medical guidelines

Platforms he uses in his proffesion

Helsenorge
Medical journals
Medical conferences
Kjærnejournal
To research more..

Journey map



Journey map from another users

https://drive.google.com/file/d/1LEfqHXbde2_TqLJXE7da3FwiMiMlstHP/view?usp=sharing

https://drive.google.com/file/d/1fwNWq87IsXelFulYjgs6ojtz1Cn7YPZT/view?usp=sharing

Stakeholder mapping and conflict points

- Underline the role of a relative
- And also the roles of other stakeholders
- Because the patient himself can have a difficulty of realizing disown symptoms

Scenario

Ole is having early symptoms with orientation and memory. He is only 55 years old, that is too early age to think about dementia diagnosis. He is having problems at his job and has been threatened by getting fired, if he doesn't improve his working results. Apart from this, his company is going to a difficult time, so he doesn't know the reason for his problems. He doesn't even imagine that his problems might be due to dementia early symptoms.

His wife is frustrated and angry with Ole, because she has noticed he has become different lately. She sleeps bad at night because she is so worried. She is force to go to sick leave because she is unable to work because of extremely bad sleep.

Ole's son is also worried, because his father forgets his training activities, and has changed personality lately. He is worried and can't understand why this is happening. His teachers have notice his worries, so they want to offer him psychological help.

Desired achievements

Oles relative take Mini-mental test digital at home with Ole in order to check if there is a reason to go to doctor for dementia examination

Ole goes to his family doctor (GP) and doesn't feel stigma

Ole is offered help to map his differences in behavior

Family doctor recognize that this might be early symptoms of dementia and sends Ole to a specialist

Alternative Scenario 1

Ole is living alone.Nobody has very close contact with him. Ole is behaving strange lately and only his colleagues have noticed that. They don't have any tool to identify dementia, and would need some support and information about how to support Ole in starting diagnosing process.

Desired achievements

Ole's colleagues need a digital tool in order to send worry message to commune

Commune coordinator will than take contact with Ole and help him start dementia exams

Commune coordinator will than support Ole in this difficult time

«What if Ole lived alone?»

Alternative Scenario 2

Ole is having early symptoms with orientation and memory. He is going to his GP and GP is taking some exams. So GP gets long term sick, and is away from his office for more than a year. There are several substitute doctors in the office, but they do not have a clear guideline to follow. So all the process take several years before Ole gets his diagnosis.

Desired achievements

Doctor has clear guidelines what exams he should take fro dementia diagnosis.

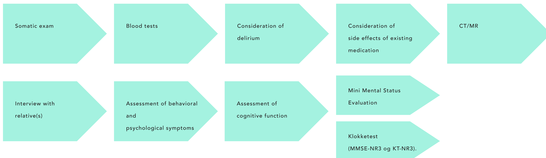
When family doctor is away, the substitute doctors can easily jump into process and continue a process of diagnosing.

Problem Statement

Ole needs help to recognize early dementia symptoms in order to check for possible dementia diagnosis. If we can help Ole with this, it would reduce his economical worries, offer him early medication and reduce problems with other family members.We would also make sure that the Ole harms someone unintentionally.

How is dementia getting diagnosed?

To be able to find solutions on this problem, trough interview with Helsenovasjonssentenet, I have first considered details about how dementia is diagnosed today.



Most of the tests are happening at Fastlegen, but it is done interdiciplinary, in a combination with Specialist health system.

Regarding testing of Cognitive function:

Several factors can negatively affect the test results, such as old age, lack of motivation, low education, aphasia, depression, reading / writing difficulties, low Norwegian language skills, reduced vision and / or hearing and acute somatic illness. Remember to use glasses and a voice amplifier if necessary. In younger people and people with high education, a high score on MMSE-NR3 may still be compatible with cognitive impairment or dementia, while a low score in very old people may be compatible with normal cognitive function. Relevant tests for mapping cognitive function can be found at the National Competence Service for Aging and Health: basic assessment tools.

Further work and considerations

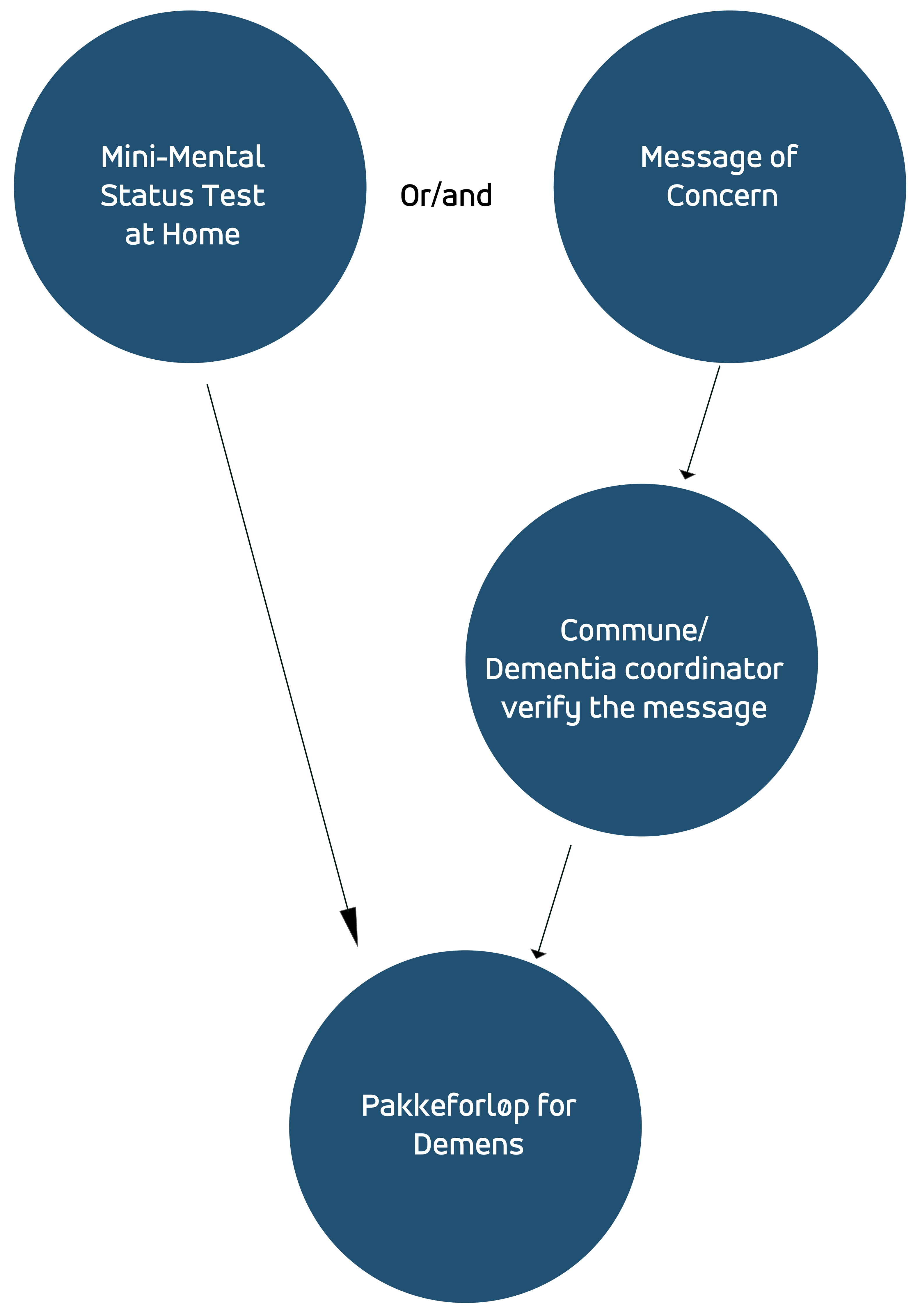
- How to structure dementia diagnosing process?
- Can user concduct Mini-Mental status test at home and how?
- How to help users who live alone to be more aware when having dementia symptoms?
- How to simplify diagnosig process within the health system?

4 Hypothesis to solve the problem

☆ ☆ ☆ ☆ ☆ ☆ ☆ Test Rating Resluts	**Hypotesis 1**	**Hypotesis 2**	**Hypotesis 3**
	User can conduct MMSE-NR3 test AT HOME with help of a relative. This can be initial starting point to start with diagnosing process without stigma and with the dialogue with relative. This can also be much stronger document for fastlegen to start all the process necessary for a full diagnosis. https://xd.adobe.com/view/35e7a7fb-d030-43c9-a17b-ee748f91b482-60b4/	ESTABLISTH «DEMENS PAKKEFORLØP» Simplifying diagnose process for fastlege and patient: Medically consider if it is possible to drop out some stages of diagnosing process. Prioritise stages and group stages with milestones. Digitaly keep patients informed where in «Pakkeforløpet» they are https://xd.adobe.com/view/691898fb-aadd-4c9f-8a44-3f676b86128d-3c4b/	Digitalising, simplifying and redesigning the forms for Basal Demens utredning and sending them directly to Specialist health care (by digital system) who reviews all the forms at the end to make a final diagnosis, is sth what will positively contribute to make early patients diagnosis. **Here there is a need to check how this is done today before making a prototype. At this point there is no prototype for this hypothesis.**
Test on patients	✔	✔	
Test on Fastlege	✔	✔	✔
Test on Kommune koordinator	✔	✔	✔
Test on Specialist health care / Medical Experts on Dementia		✔	✔

	Hypotesis 4
	Hypothesis 4 - Dementia Warning app. It is similar to hypothesis 1 but distinguishes in the type of content. The concept is that a relative, friend, neighbor or employer have available list/information to check upon in order to warn GP (Fastlege). After warning the patient should be invited for dementia examination at doctor`s office, or should take initiative himself to go to the doctor. https://xd.adobe.com/view/d03fca4a-aa7e-49c1-95ec-5b7371e17a62-856c/
Test on patients	✔
Test on Fastlege	✔
Test on Kommune koordinator	✔
Test on Specialist health care / Medical Experts on Dementia	

Combining hypothesis 2, 1 and 4



Conclusion

- To achieve and provide early diagnosis, it is necessary to design solutions for both, users and a health system.

- Combination between «Pakkeforløp for demens», self-test and a system to send a message of concern can improve early diagnosis process.

- To take this project further it is necessary with professional recruitment methods of participants (users) and the budget to conduct the tests.

- When this project is taken further is is necessary to start with testing the proposed solutions and consider how those solutions can be combined into the whole.

References

STICKDORN,LAWRENCE, HORMESS, SCHNEIDER 2018, «This is Service Design Doing», Applying Service Design and Design Thinking in the Real World

Noroff nettstudie 2020 / 2021, «Use of Design Thinking and mapping methods for User Experience Research«

Picture credits : Photo by Ravi Patel on Unsplash

How can preventive work for dementia in the population be increased and stimulated?

TPD4156 Service design
November 2021

Gjærde, Haksø, Sund & Wolna

Department of design
Faculty of Architecture and Design
NTNU – Norwegian University of Science and Technology

Project client: Health Innovation Centre

NTNU
Norwegian University of Science and Technology

HELSEINNOVASJONSSENTERET

Contents

Introduction

Project description

Background

An increasing proportion of the elderly in the population results in more people with dementia, and statistics show that the number of people with dementia will be close to doubled 20 years from now (Aldring og helse, 2021). This will require a greater need for competence and resources – a resource that the health service in the future will have major problems meeting. There is thus a need for increased knowledge about the disease as well as more preventive work, early interventions and responsibility for one's own health. This was the basis of why the Health Innovation Centre initiated this project.

Scope and aim

The scope for this project was: How can we increase knowledge about dementia in the population in general and in people with (mild) cognitive impairment and relatives, to make the disease harmless and motivate greater responsibility for one's own health.

Due to limitations in both time and resources, we needed to narrow this scope down. And after further investigation and research, through interviews with both clients, experts and users, the final aim of this project was: How can we increase and stimulate the preventive work for dementia in the population?

Methods

Research plan

Before we started, we wanted to make a research plan to find out what data we needed and how we would collect data from target users. Our *design* approach to this project was of course the foundation for our planning. According to Sevaldson (2010), Research by Design emphasizes insider perspectives, a generative approach, operates in rich and multiple layers and relates to real life contexts. The output is new communicable knowledge that is only found within design practice, Sevaldson claims.

To define the scope of our project, we wanted to use exploratory research. Exploratory, or generative research sets out to learn more about a specific subject without the prior formulation of explicit assumptions (Stickdom et al., 2018).

Due to the complexity of the challenge, it was important to use a user centered approach combined with input from field experts and supported by relevant studies. By using data triangulation, we would be able to see the challenge from an individual perspective, as well as from the perspective of field experts and society. Data triangulation makes data sets richer and more comprehensive while simultaneously reducing the subjectivity of the researcher (Stickdom et al., 2018).

Our framework throughout this project has been the Double Diamond model (Design Council, 2019), with its four main phases: Discover, Define, Develop and Deliver.

We've followed the four design principles that is emphasized by Design Council within this project:

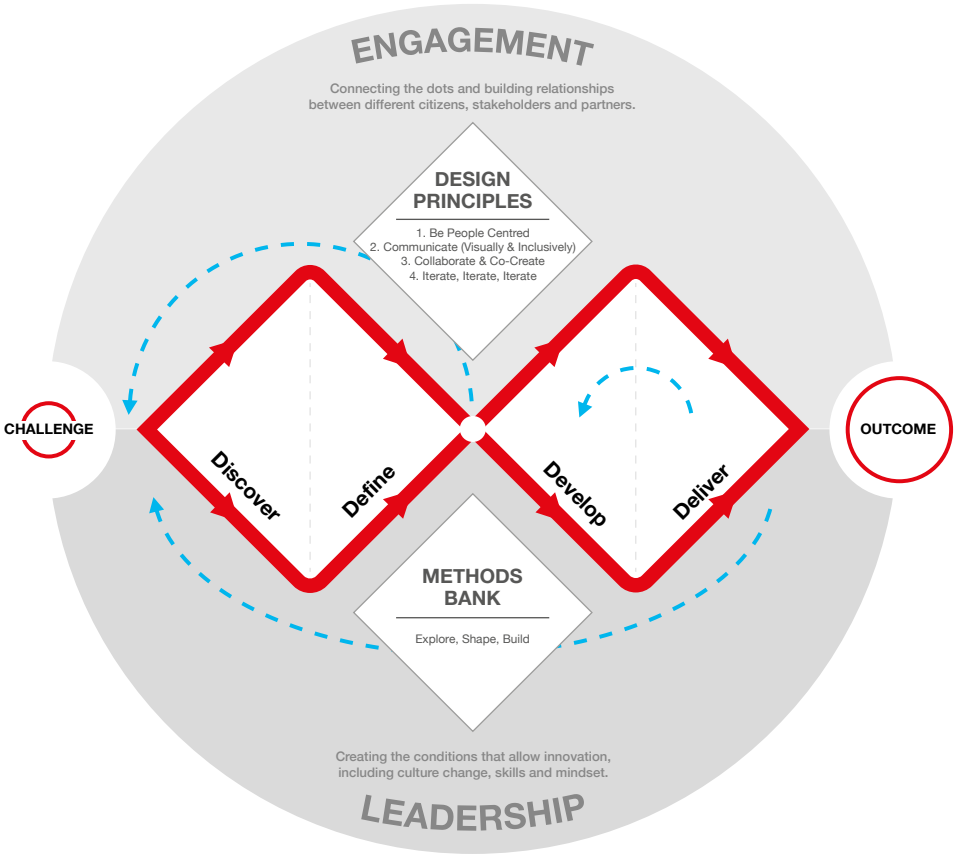
- Put people first. Start with an understanding of the people using a service, their needs, strengths and aspirations.
- Communicate visually and inclusively. Help people gain a shared understanding of the problem and ideas.
- Collaborate and co-create. Work together and get inspired by what

others are doing.
- Iterate, iterate, iterate. Do this to spot errors early, avoid risk and build confidence in your ideas.

Within this framework, we have used several methods and tools:
- interview with stakeholders and experts (method)
- interview with potential users/people in the target group (method)
- literature review (unstructured) (how were de collected, recommendations from field experts supported by our own search) (method)
- workshop with triangulation of the collected data from interviews and literature reviews (method)
- co-creative workshop (method)
- personas (tool)
- user journey (tool)
- service blueprint (tool)
- “how might we” ideation (tool)

The methods and tools will be further elaborated in the following chapters.

As the Double diamond model illustrates, the initial problem statement will evolve over time. In this project, the discover and define phases helped narrow down the quite broad starting scope into a more specified and targeted aim (see Scope and aim above). In the delivery phase, we had to concentrate the result into one specific area of preventive work for dementia. This was due to lack of time and resources. Still, we think the suggested solution will have a transfer value for other areas of preventative work related to dementia.



Discover

Insight / Empathize

Semi-structured interviews with client and experts

To get a clear overview of the project's field and possibilities, we started by doing a semi structured interview with the project's client; The Norwegian Health Innovation Center. According to Baxter et al. (2015), the pros of a semi structured interview, is that it provides both quantitative and qualitative data. It also provides some detail and an opportunity to follow up. This was important at this stage. On the other hand, the cons with this type of interview is that it takes some time to analyze the participant's comments, and is not as consistent. These factors were given less weight at this stage (discover-phase), as we wanted to gather as much information and follow ups as we could, and to use the time to analyze data to discuss and discover within the group.

Two representatives with good insights to the field were recruited for the interview, which was conducted digitally on Teams. The interview was done with two representatives from the project group; one interviewer and one notetaker. The two people from the Health Innovation Center were sitting together in a meeting room. The meeting was recorded digitally, after giving consent from the interview objects. This made it possible for the rest of the project group to see the interview, and we could go back to watch if there was something missing or unclear in the findings from the interview. We considered the interview not to contain any personal or sensitive data, as the topic for the interview was focusing on professional views on dementia and preventive work, and that made the threshold for recording lower.

To see the interview guide, please see appendix 1.

Semi-structured interviews with target group and potential users

During the interview with the representatives from the Health innovation center, we learned that the target group for preventing and delaying dementia symptoms is very wide. According to the Health innovation center, there is a need for increased knowledge in the general public, even from a young age. We decided to conduct interviews to get insight into where the target group and potential users are standing with regards to dementia knowledge and preventive work related to dementia. All together, eight people were interviewed. Out of these eight, four persons had been affected by dementia (next of kin) and four persons were not directly affected, but had some common knowledge. The interview objects were both male and female, aged between 25 and 67.

The questions were oriented around what experience they had with dementia, what knowledge they possessed about dementia, where they had gained the knowledge and what and where they would prefer to learn more about dementia and preventive work.

For the full interview guide for these interviews, please see appendix 2. During the interviews we realized how much stigma there is around dementia. Shame, pain and embarrassment makes this disease especially painful for the people it affects, and their loved ones. We gathered multiple stories where next of kin has been forced to make difficult decisions on behalf of someone close to them. According to the health innovation center, increasing knowledge and awareness about the disease would contribute to making the topic less taboo, thus contributing to reducing stigma around the issue.

Secondary research: Articles and other literature

To learn more about the topic of the project, we kindly asked the Health Innovation Centre to recommend some articles and literature that are central to dementia knowledge and preventative work. We got different tips on both articles, websites, national guidelines and public documents, that we divided between us - two persons per article /reading material. We then collected our notes and summaries of what we had read in a single document, and discussed the findings (see appendix 3).

We found most of the literature enlightening and interesting, as it gave us some valuable insight to the field of dementia and preventive work. The two studies we did not use as much further, were the two referring to "Inn på tunet" (the last two in the table above). "Inn på tunet" ("Into the yard'', or farm-based day care) is a service for people with dementia, and is supposed to improve the participants quality of life by using activities and resources of the farm environment to promote mental and physical health (Ibsen et al., 2019). As our project later turned focus over to preventive work, this service was no longer so relevant since this is a service for people that already have dementia.

The literature was divided into different categories:

Websites - infopages	Aldring og helse	https://www.aldringoghelse.no/
	Nasjonalforeningen for folkehelsen	https://nasjonalforeningen.no/
	Demenskartet	https://demenskartet.no/
National guidelines and public documents	Demensplan 2025	https://www.regjeringen.no/contentassets/b3ab825ce67f4d73bd24010e1fc05260/demensplan-2025.pdf
	Meld. St. 15 (2017–2018) Leve hele livet – En kvalitetsreform for eldre	https://www.regjeringen.no/no/dokumenter/meld.-st.-15-20172018/id2599850/?ch=1
	Nasjonal faglig retningslinjer demens	https://www.helsedirektoratet.no/retningslinjer/demens
Studies and reports	Samfunnskostnader knyttet til alzheimers og annen demenssykdom (rapport)	https://www.menon.no/wp-content/uploads/2020-64-Samfunnskostnader-knyttet-til-Alzheimers-og-annen-demenssykdom.pdf
	Dementia prevention, intervention, and care: 2020 report of the Lancet Commission	https://www.thelancet.com/commissions/dementia2020
	An overview of systematic reviews of pharmacological and non-pharmacological interventions for the treatment of behavioral and psychological symptoms of dementia	https://www.cambridge.org/core/journals/international-psychogeriatrics/article/an-overview-of-systematic-reviews-of-pharmacological-and-nonpharmacological-interventions-for-the-treatment-of-behavioral-and-psychological-symptoms-of-dementia/DCA87B8BC78047977CB92427BF3F4FC3
	People with dementia attending farm-based day care in Norway – Individual and farm characteristics associated with participants' quality of life	https://onlinelibrary.wiley.com/doi/10.1111/hsc.12937
	Facilitation of activities for people with dementia in day care: a qualitative study exploring the experiences of staff	https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6613360/

Table 1: Secondary research - central literature on dementia and preventive work

Define

The define phase consists of two main focus areas: analyzing user data, and analyzing secondary research.

Data analysis: secondary research

During the research phase, the teams split up to cover relevant literature. After conducting individual research, the team conducted a knowledge-sharing workshop. Through this workshop, the team gained deeper knowledge on the topic through sharing insights of important findings. What stood out here was the extreme impact dementia has on society, both when it comes to financial cost, and the personal cost for individuals affected. Moreover, the research uncovered specific studies on preventive actions for delaying and preventing dementia symptoms. Understanding that advice and actions could be very specific rather than the more general advice commonly known such as exercise more and eat more vegetables were new and promising findings.

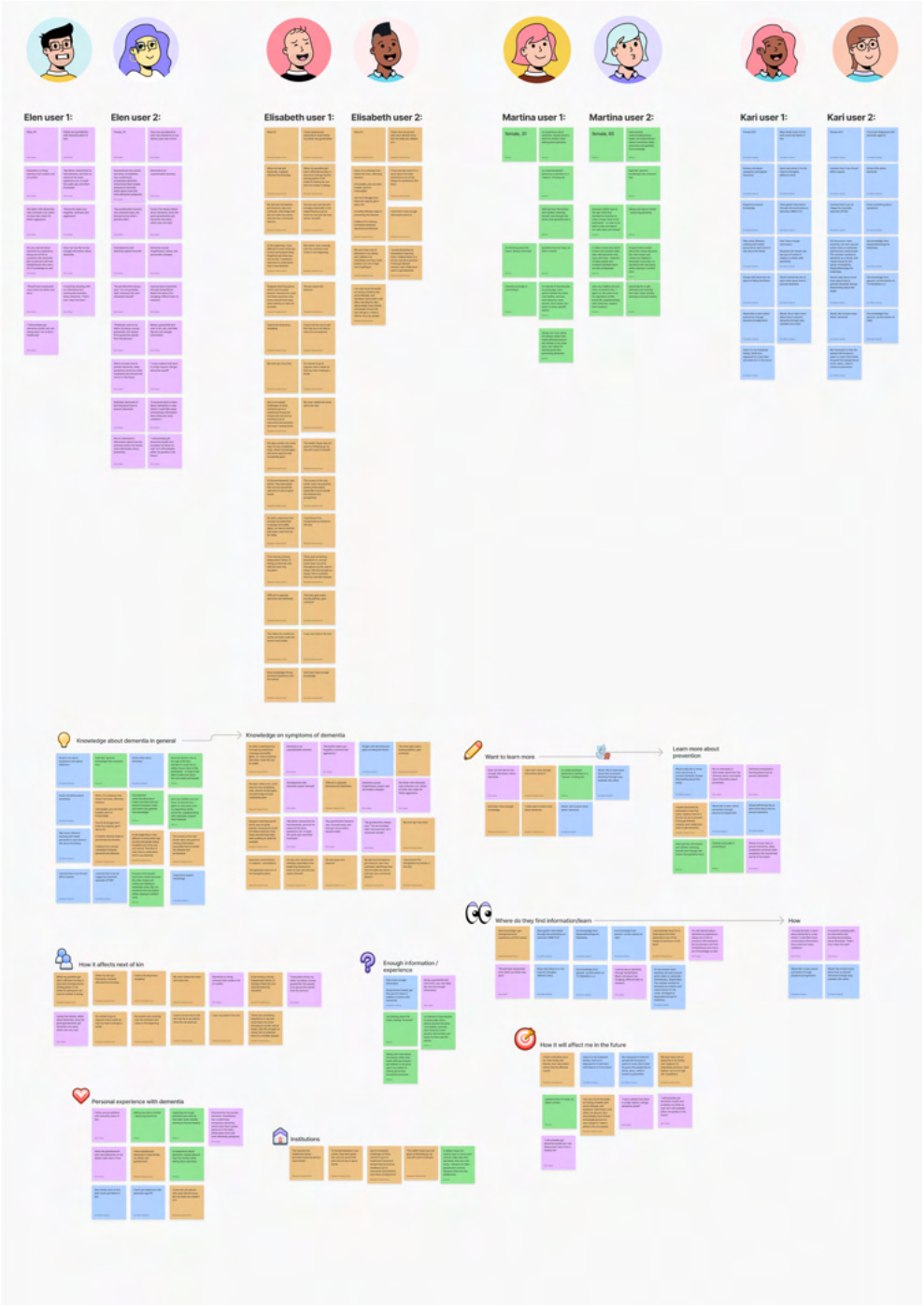
Examples from research knowledge-sharing workshop

Data analysis: user insight

Workshop affinity diagram

The interviews resulted in a large amount of qualitative raw data. In order to analyze the data, we used affinity diagramming, a quick and effective tool/method for analyzing qualitative data. The data from the interviews was condensed by extracting the carrying message to smaller sticky notes in Figjam.

Having no predefined categories, we organized related data into distinct clusters and allowed relationships and categories to emerge from the data (Baxter et al., 2015). Using this method we were able to identify recurring patterns and similarities in the interview objects' experiences. Furthermore, conducting the affinity diagramming the team was able to see the findings from a more holistic perspective as well as share ownership of the collected findings. The following discussions and reflections led to a common understanding of the challenge we were striving to solve, which was important for teamwork and the following steps of the process.



The analysis of IO data, uncovered several key findings:

- The specific life situation, including age of the individual, is closely linked with how significant dementia impacts their daily life.
- More specifically, a recurring pattern was the untroubled minds of the young individuals, who have not had dementia close in their own life, nor in the life of someone close to them. Similarly, the findings showed that all interview objects (IO.) who had been closely related to a person with dementia, either parents or partners with dementia patients, had a very different perspective on the disease than the ones who had not. Moreover, the closer relation, the heavier the disease had impacted their lives.
- Regardless of past experiences with dementia, the interview objects expressed a desire to learn more about how to prevent and delay dementia symptoms.

Although the data were only based on 8 individuals' perspectives, the findings were strong enough to make us change the scope of the project. Instead of focusing on increasing knowledge about dementia in the general public, we found that our interview objects are more interested in gaining knowledge about specific preventive actions they can implement in their lives. The total societal costs for dementia makes a total NOK of 96 billion (Skogli et al., 2020). Thus focusing on the preventive actions of dementia gave good sense. Also Supported by findings from the studies of the possible significant impact of delaying and preventing dementia symptoms we saw an opportunity to tackle dementia before it hits.

Stakeholder map

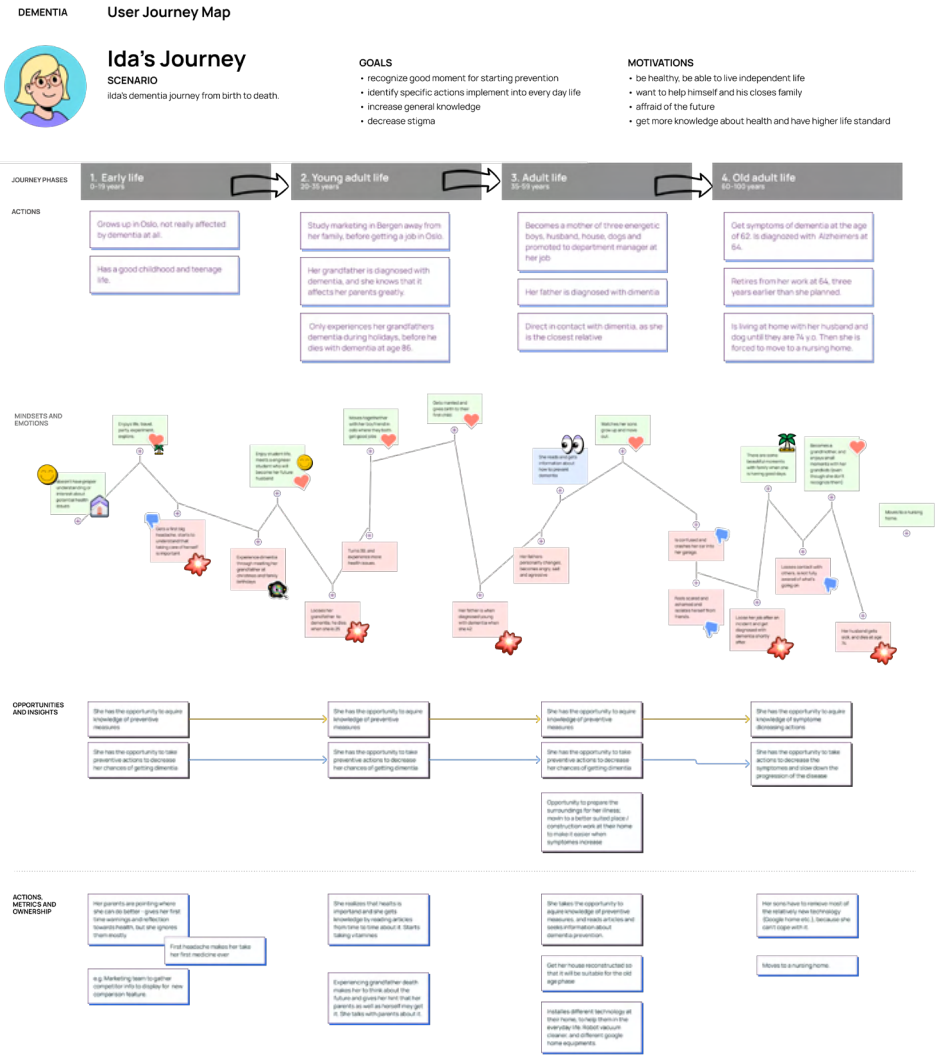
In order to get a better overview of the stakeholders involved in the experience of the target group, we created a stakeholder map. We used a generic model where the target group is in the center of the circle surrounded by direct and indirect stakeholders (Stickdorn et al., 2018). Simple, without many details, it was an effective tool to get an overview of stakeholders involved in the ecosystem, enabling us to lift the perspective and generate ideas for potential strategic partners.

Ida's journey

In the insight phase, qualitative data was collected directly from users through 8 interviews. Although this is one of the central aspects within the design thinking empathize phase, these are individual subjective experiences, and being the victim of a problem does not necessarily make one able to see the solution. Therefore, making a persona based on the research findings to represent patterns of user's behaviours, experiences, goals and motivations can be a powerful tool (Cooper, 2004).

In supplement to the user interviews and the interview with the experts, we learned more about dementia from the secondary research. This together gave us valuable insights to the different affections dementia can have on people throughout life.

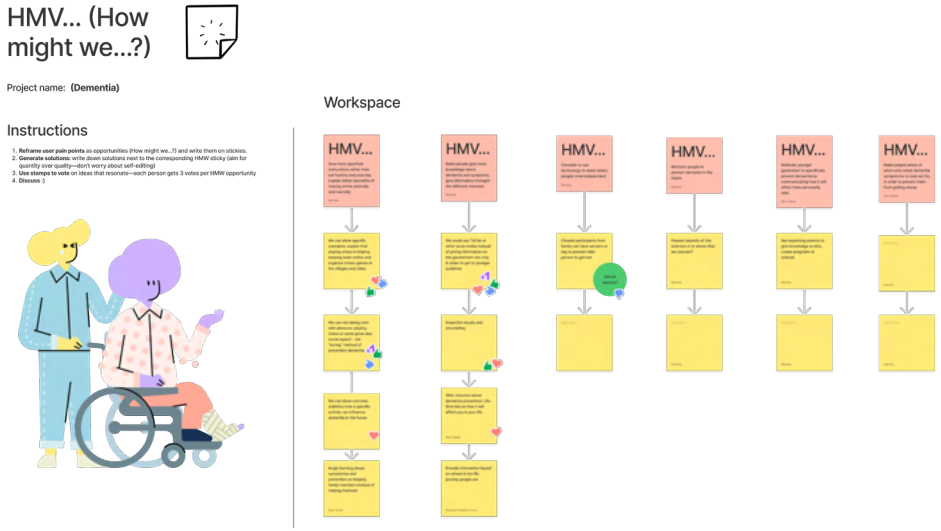
As the challenges and impact of Dementia stretches over the entire lifecycle, we decided to draw inspiration from Oslo kommunes Tim's journey which is their working tool, an archetype representing the citizens of the municipality (OsloOrigo, 2021). To represent the stretched impact of Dementia, we created Ida's journey. A user journey stretching over a simplified lifespan developed on the basis of the findings from the interviews and the affinity diagramming. The journeymap was effective in visualizing the current impact of Dementia today, and uncovering pain points and opportunities of improvement (Stickdorn et al., 2018).



Develop

How might we

The broad reach of Dementia made it clear that the target group for the preventive work was very wide. Aiming to reach a wide range of individuals, we conducted the ideation method “How might we” to systematically connect our ideation process to our research findings (Stickdorn et al., 2018). The identified opportunity areas were then voted on.



Co-creative workshop

To enrich our ideation process and help us prioritize opportunity areas, we invited an intimate, mixed group of field specialists and potential users to join a Co-creative workshop.

The workshop had the following three goals:

- Prioritize list of preventive actions
- Ideation
- Explore possible platforms & providers

The guest participants were the following:
One representative for the Health Innovation Center, one PhD candidate within sports psychology, and the founder of a technology company.

Task 1 - prioritize:

Research findings showed that prevention in early, mid and later life has a 40% impact on one’s health when it comes to dementia (Livingston et al., 2020). To gain a better understanding of what was important to our target group, we asked the participants to rate the listed factors according to two perspectives: which factor do they find the most surprising (mark with yellow star), and which do they find the most worrying (mark with red heart).

Hearing loss stood out as the factor receiving the majority of votes in both categories. According to the Lancet commission (Livingston et al., 2020), hearing loss as a risk factor could reduce 8% of dementia prevalence if this factor is eliminated. This finding supported the input from the Health innovation center, where they have a high focus on increasing knowledge of the importance of preventing hearing loss.

Task 2: Ideate

After ranking the factors of concern and surprise, we then asked the participants to ideate on preventive actions for each factor. The participants were active throughout the session and contributed with creative ideas and suggestions on preventive actions.

After the ideation of preventive actions, users were asked to vote on which preventive actions they themselves do today. The purpose of this exercise was to uncover potential gaps between what users say they do, and what they actually do. Three focus areas stood out and we brought back the ideation method “How might we” to systematically ideate on each aspect.

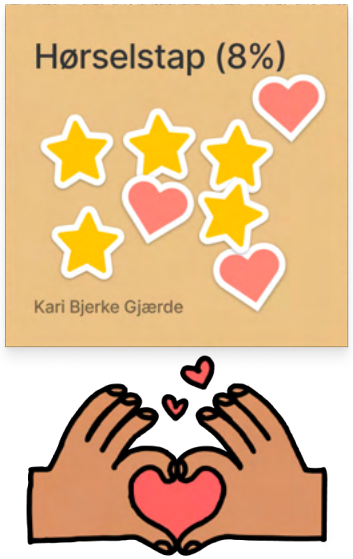
Purpose here was to ideate on the following:

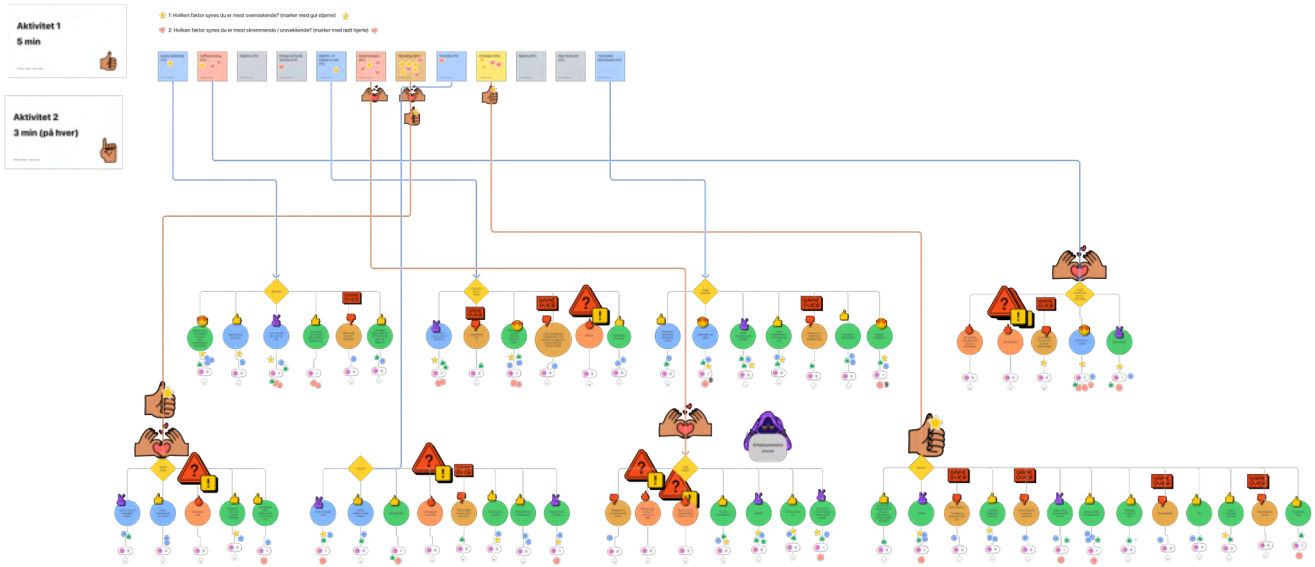
- How might we effectively communicate specific Dementia preventive actions?
- How might we make it interesting?
- How might we make it inspiring?

By isolating each factor, the group was able to transform the more general approach, to identifying specific measures for reaching each segment of the target group.

Several of the ideas need support from third party stakeholders. Ideating together with the workshop participants, sparked new ideas for strategic partners and platforms.

One of several outcomes of the workshop was the potential need for collaboration between the public, and private sector, and the need to involve public institutions in the development.





Develop

The outcome of the project has resulted in a four part delivery:

1. An improved service blueprint
2. A multichannel campaign for preventive actions targeting one specific risk area of dementia; hearing loss.
3. One common platform collecting all relevant information of dementia and preventive work in one single platform.
4. Proposal for a plugin which can be added on to any device to provide the user full control over the volume. This tool will enable users to effortlessly protect their hearing.

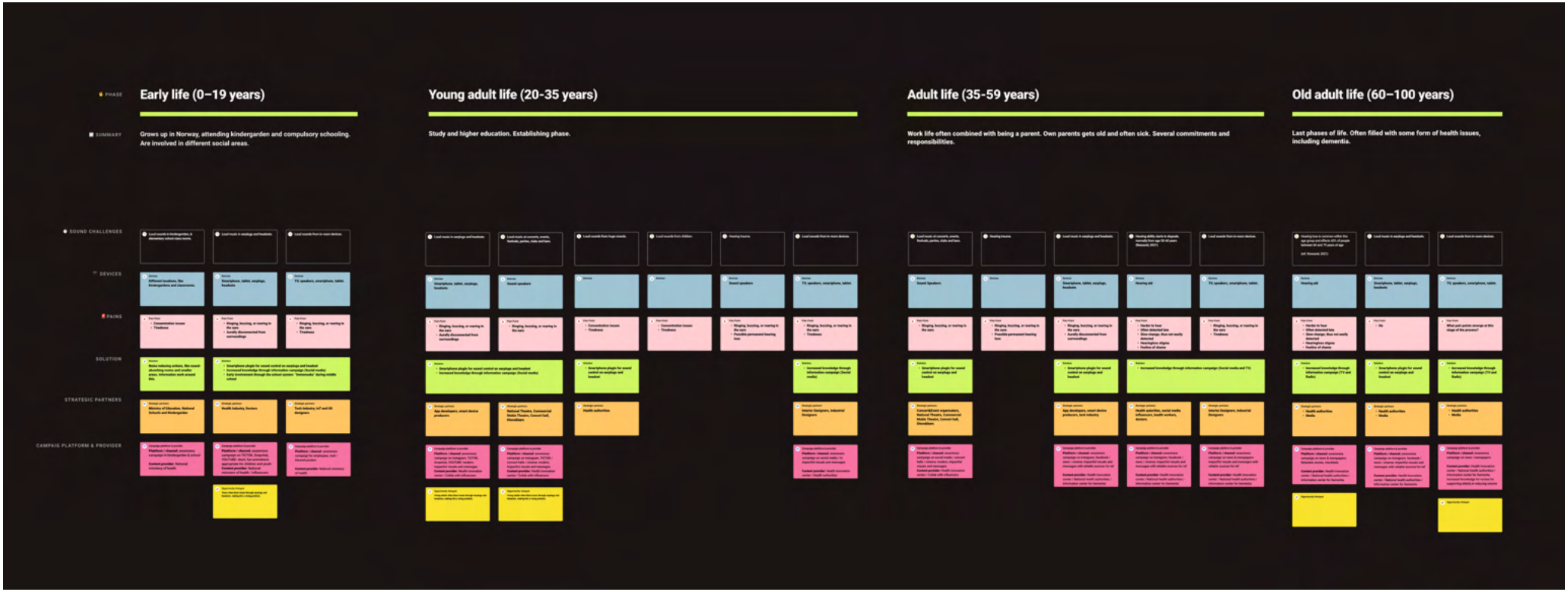
The purpose of the improved service blueprint is to break up the complexity of dementia prevention into smaller parts, thus making it possible to isolate and target one challenge at the time.
The multichannel campaigns and plugin serves as a proof of concept, illustrating how systematic dementia prevention measures can be tailored to reach a diverse target group on the platforms where they are likely to be exposed to the relevant information. Finally, the shared platform serves as a connection point for providing useful information for individuals either they are searching for information about the disease or specific preventive actions.

Improved service blueprint

For the delivery, we have created an improved service blueprint, a tool to be used as reference when developing targeted measures for each area of prevention. According to Stickdorn et al., the service blueprint can be understood as an extended journey map, especially developed to connect user experiences with frontstage and backstage processes (Stickdorn et al., 2018).

The NNgroup use the following definition of service blueprint: “A service blueprint is a diagram that visualizes the relationships between different service components — people, props (physical or digital evidence), and processes — that are directly tied to touchpoints in a specific customer journey” (Gibbons, 2017).

The blueprint is designed as a tool for breaking down the complexity of the wide and highly diverse targetgroup. One of the essential components of the blueprint is the strategic advice for how to reach the different segments within the target group. A study conducted by IPSOS for NTNU in June 2021 has mapped out which users are present on which social platforms, based on age and gender (Holmefjord, 2021). We believe systematic targeting users on the platforms they currently are, will significantly increase the impact of the dementia prevention campaign.



Multichannel campaign

The wide target group makes preventive work challenging, especially since individuals have very different digital behavior and they are navigating different digital spaces. Furthermore, the wide span of life situations, interest and knowledge about dementia makes it challenging to hit the different segments. By using the blueprint to systematically target different segments, we were able to develop prototypes of campaigns aimed directly at specific segments. For the youth, we have developed an instagram campaign to increase knowledge about the consequences of hearing loss. The campaign illustrates how reducing the sound level in headphones can decrease chances of getting dementia symptoms.

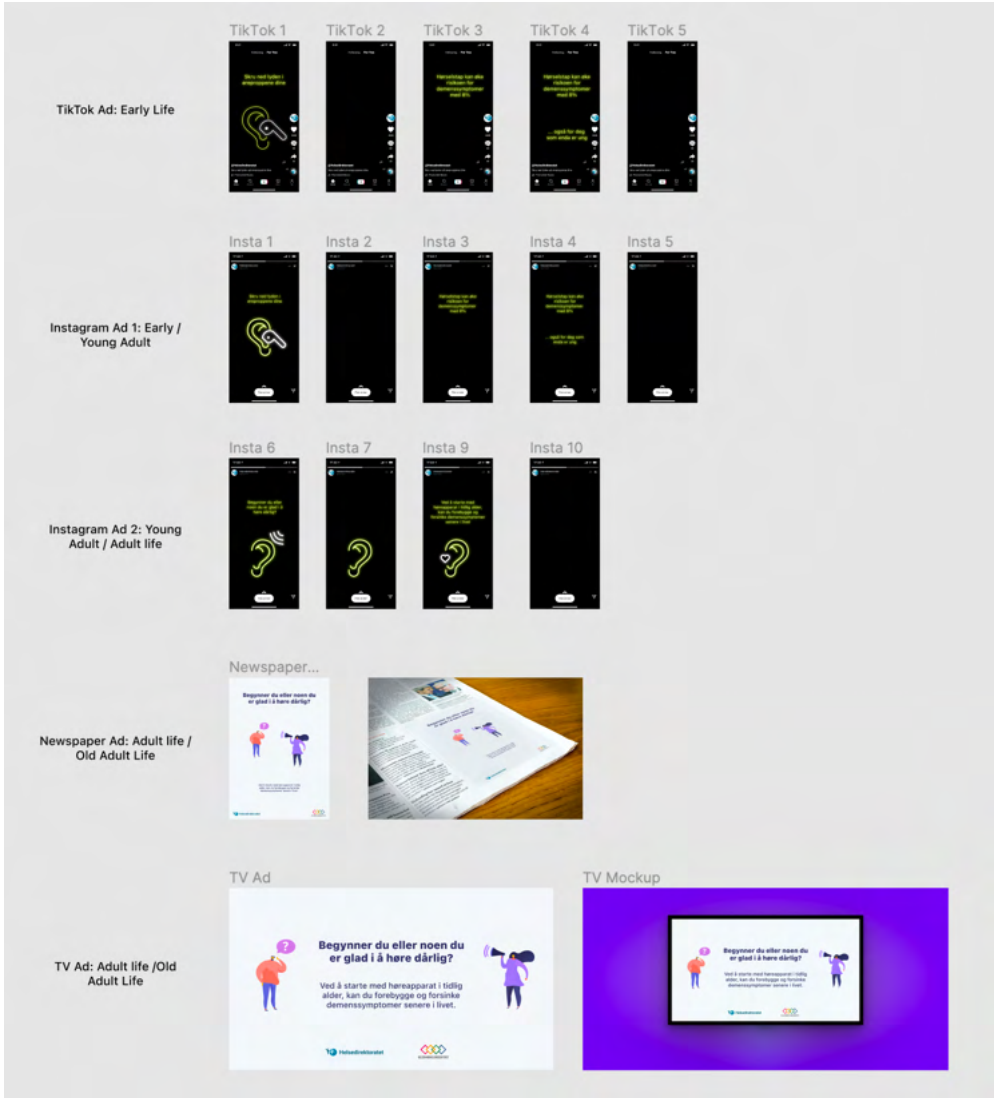
Moreover, using data about current user behavior strategically will allow for tailoring content to the user, thus, increasing the chances that it will have an impact. By increasing the knowledge of the general public, individuals will be able to make informed decisions and take responsibility for their own health. Furthermore, the increased knowledge will, according to the Health Innovation center, contribute to reducing stigma around this terrible disease.

The different ads in the campaign are all leading to an information website with summarized knowledge and specific actions for preventing and delaying dementia symptoms.

Link to TikTok Ad (Prototype)

Link to Instagram Ad 1 (Prototype)

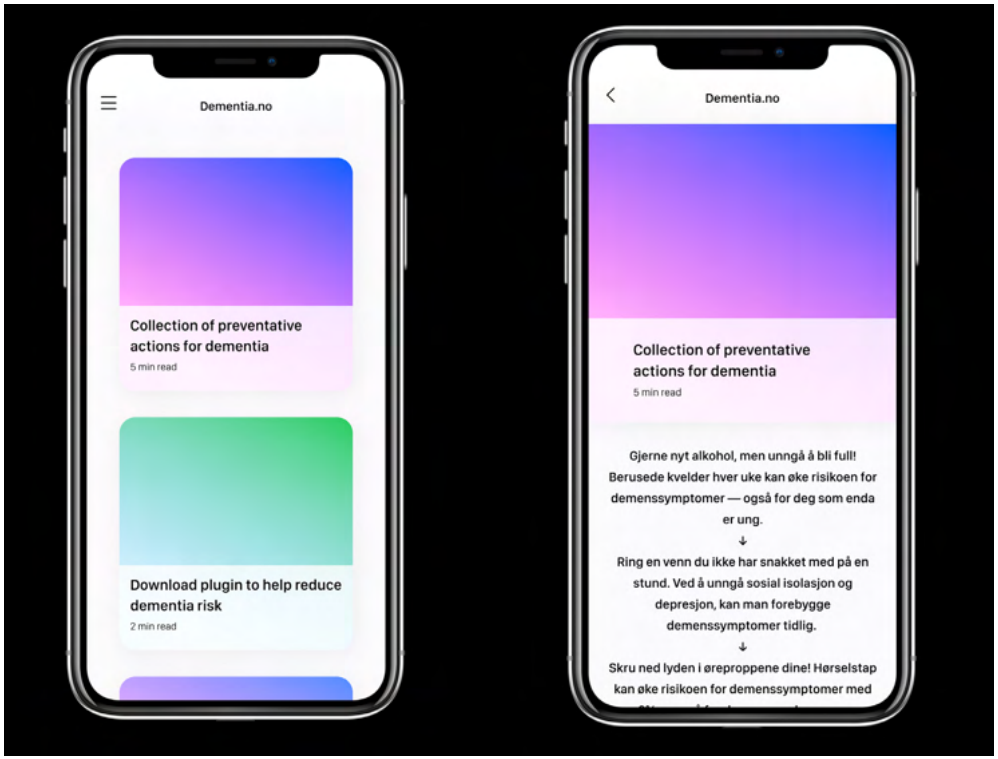
Link to Instagram Ad 1 (Prototype)



Collective plattform

Research showed that today, information about dementia and preventive actions is scattered on multiple different platforms (table 1). There is no collective platform where all information is collected. Moreover, dementia.no is today owned by Pfizer, directing potential users to a page which is not relevant to what they are searching for. The third part of the delivery is therefore a platform connecting all silos which are currently serving different aspects of information to the population. By bridging the silos, this platform will enable patients, next of kin and other individuals searching for information about dementia to find information more effectively.

Link to prototype



Plugin for applications

The plugin is developed to seamlessly be added to any device application. By tracking the decibel levels which the user is exposed to in headphones and earbuds, the application will be a guide to reduce the volume. The idea is also that the app can make the headphones and earbuds reduce external noise from i.e. load concerts or surroundings with high volume. In that way, it traces load volume (above recommended levels) and makes sure your ears don't get exposed to noise over time

Link to [prototype]

Discussion and Limitations

- Chose to focus on preventive actions directed towards hearing loss due to feedback from health innovation center, user feedback and research studies such as the Lancet report.

- Due to time limitations, we had few participants available for this project. For instance, we tried to recruit one dementia coordinator to join our workshop, but the short time left available forced all five we were in contact with, to reject. We also would have recruited more users with a broader background. This limitation means that the representativity of the user group is not very accurate in this case.

- During the workshop, the participants were on different occasions asked to vote for proposals, solutions, or their own current behaviour. It is important to note that when casting not-anonymous votes, there will always be a risk of participants influencing each other's choices. To limit this risk, we set aside a bit of time for individual reflection before they casted votes, to allow them to make their own informed decisions. Regardless, the matter of influence is a limitation that needs to be taken into consideration when it comes to data validity.

- Data analysis: affinity diagramming. There is always a risk that some data is lost or "colored" in a data analysis process. By extracting the essence of the message into small sticky-notes, some context is likely to have been lost in the process. Although affinity diagramming is not a water proof method for analyzing data, it still provides a powerful method for identifying relations and recurring patterns in the data.

- The goal for this project was to understand how preventive work for dementia in the population can be increased and stimulated. In the work of answering the problem statement, we have relied on the Lancet report. If we were to develop and deliver a finalized campaign to the strategic partners, we would have gone deeper and wider in the research, conducting a literature review to ensure all specific actions were included.

Ethical considerations

In this project, due to both time limitation and guidance from the lecturer, we seeked to not gather any personal data; data that can be used to identify individual persons, either directly (name, ID etc.) or indirectly (combination of background data etc.). This made it possible to perform the project, without any application and approval from NSD (Norwegian Centre for Research Data) and REK (Regional Committees for Medical and Health Research Ethics).

This also meant that all electronic data through this project had to be anonymous, and we have followed this during all phases.

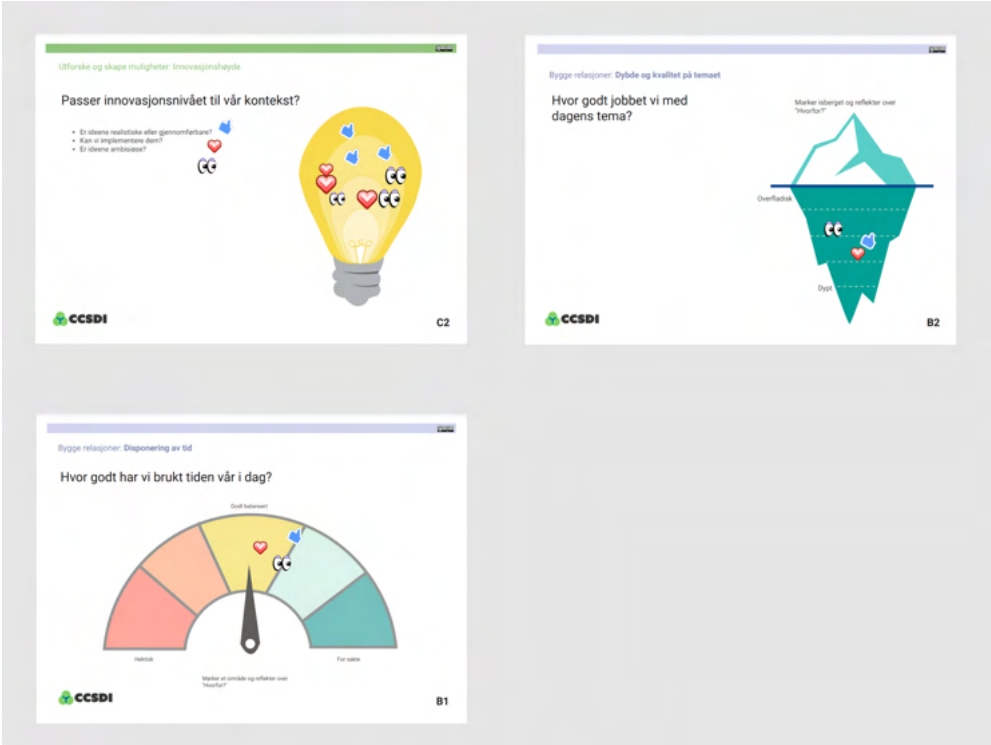
As part of the workshop, we had planned on using CCSDI-cards. These evaluation cards are used for assessing co-creative processes. We have used these cards earlier, and find them useful for sharing perspectives and also building relations in a co-creative workshop. They can also work as a quality assurance, as they give the participants the opportunity to fill in some information that they would have given during the workshop, but for some reason did not get the chance to give. Unfortunately, due to time limitation and lack of time in the end, we were not able to go through this evaluation. Therefore, we had a internal session in the team, where we filled in the cards that we felt were relevant for this use. This gave us an opportunity to discuss and evaluate the workshop ourselves, but we saw this was not optimal. We would have preferred to get feedback from the participants too, as they are crucial for the fill-in on information, and we lost some useful feedback. Lesson learned.

As the topic for this project was something that affects and will affect a great part of the population, at a near and personal level, it was important for us to approach it with caution and respect. The Little Book of Design Research Ethics (IDEO, 2015) points out three principles:

Respect, Responsibility and Honesty. Each principle is accompanied with a value sentence that gives it strength:

> *Respect - We honor participants' limits and value their comfort. Responsibility - We act to protect people's current and future interests. Honesty - We're truthful and timely in communication.*
> (IDEO, 2015)

All these three factors were important for us, not least in the meeting with users. But it is also important to consider this throughout this kind of project, as we think the topics' character requires distinct respect, honesty and protection of people's current and future interest.



Future Recommendations

- Include representatives from different target groups in testing & evaluating ads and campaigns to ensure their effectiveness aimed at each individual group. Bringing back the fourth design principle from the double diamond: iterate, iterate, iterate based on the findings from testing to conduct running improvements of the campaign material.

- Establish ownership for the campaign. We suggest a collaboration between the Health Innovation Centre, the Public Health Institute (Folkehelseinstitutttet, FHI) and the Norwegian Directorate of Health (Helsedirektoratet). A collaboration with trusted organisations, government and acknowledged institutions, we believe the campaign would gain credibility, and thus having a greater impact on the general public. Because this is a disease of extremely high financial cost for society we also believe that these strategic partners would be interested in a collaboration. And for our society, we cannot afford not investing in dementia preventive work.

- For increasing the effectiveness of the campaign we recommend implementing the use of algorithms to reach each segment of the targetgroup.

- Use Ida and her journey as a working tool, in future development of campaigns on other focus areas of dementia prevention. Learning from the success of Tim's journey, there is reason to believe this will be effective in making complex work areas more relatable. Using Ida as representative enabled the project group and collaboration partners to achieve a common understanding and empathize with users.

- In this project, we have focused on the preventive actions related to hearing loss. According to the Lancet Commission (Livingson et al., 2020) the risk factors that would reduce dementia prevalence if the factor(s) are eliminated, are:

  Less education (7%, early life)
  Traumatic brain injury (3%, midlife)
  Hypertension (2%, midlife)
  Alcohol >21 units per week (1%, midlife)
  Obesity (1%, midlife)
  Smoking (5%, later life)
  Depression (4%, later life)
  Social isolation (4%, later life)
  Physical inactivity (2%, later life)
  Air pollution (2%, later life)
  Diabetes (1%, later life)

Summed up, this gives potential modifiable risk factors that could reduce dementia with 40%.

Our advice for the future is to develop a service blueprint with an accompanying campaign for each risk factor. The improved service blueprint developed in this project could probably be used as a template for the other risk factors, but we think it will be important that each risk factor has its own blueprint and campaign plan - as the risk factor has different target groups and stakeholders.

Conclusion

The service blueprint, proposed solution for campaign strategy, the app and the collective platform for dementia information are not final solutions, but the first step in the development process. The blueprint is developed as a working tool, and the campaign material as examples of targeted preventive actions directed towards a specific segment of the population. Although the time constraints limited the opportunity to conduct user testing of the tool as well as the possibility to test the effectiveness of the campaigns, the team has developed an understanding for how systematic campaigning and collaborations across platforms and institutions can increase and stimulate the preventive work for dementia in the population.

Using a variety of methods and tools, has enabled us to understand how all the services tie together in an interconnected ecosystem where the need for seeing the challenge both in the larger perspective as well as on an individual level is equally important. Breaking up silos and seeing the entire journey from the larger perspective enables cross platform touchpoints and cross organizational collaborations which are all powerful aspects of designing good services and user experiences.

Bibliography

Aldring og helse (2021, n.d.), Hvor mange i Norge har demens? Demenskartet. https://demenskartet.no/

Baxter, K., Courage, C. & Caine, K. (2015) Understanding Your Users: A Practical Guide to User Research Methods (2nd edition). Morgan Kaufmann/Elsevier. ISBN 978-0-12-800232-2

Cooper, A. (2004). The inmates are running the asylum. (2nd edition). Sams publishing.

Design Council (2019), What is the framework for innovation? Design Council's evolved Double Diamond. https://www.designcouncil.org.uk/news-opinion/what-framework-innovation-design-councils-evolved-double-diamond

Gibbons, S. (2021). Service blueprints: definition. NNgroup.
https://www.nngroup.com/articles/service-blueprints-definition/

IDEO (2015), The Little Book of Design Research Ethics. (1st edition). ISBN 978-0-578-16303-1

Holmefjord, H. H. (2021), Bruk av sosiale medier i aldersgruppen 18–65 år. Undersøkelse av Ipsos for NTNU.

Livingston, G., Huntley, J., Sommerlad, A., Ames, D., Ballard, C., Banerjee, S., Brayne, C., Burns, A., Cohen-Mansfield, J., Cooper, C., Costafreda, S., Dias, A., Fox, N., Gitlin, L., Howard, R., Kales, C., Kivimäki, M., Larson, E., Ogunniyi, A., Orgeta, V., Ritchie, K., Rockwood, K., Sampson, E., Samus, Q., Schneider, L., Selbæk, G., Teri, L., Mukadam, N. (2020) Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. Lancet 2020; 396: p.413–46, Published Online July 30, 2020
https://doi.org/10.1016/ S0140-6736(20)30367-6

OsloOrigo (2021). Om Tim, Vårt symbol på innbyggeren. Oslo Origo.
https://labs.oslo.kommune.no/

Resound (2021), Nedsatt hørsel hos eldre. https://www.resound.com/nb-no/hearing-loss/artikler/nedsatt-hoersel-hos-eldre

Sevaldson, B. (2010). Discussions & Movements in Design Research. FormAkademisk - Forskningstidsskrift for Design Og Designdidaktikk, 3(1). https://doi.org/10.7577/formakademisk.137

Skogli, E., Karttinen, E., Stokke, O.M., Vikøren, S. (2020), Samfunnskostnader knyttet til alzheimers og annen demenssykdom. Menon-publikasjon nr. 64/2020.

Stickdorn, M., Hormess, M., Lawrence, A., & Schneider, J. (2018). This is service design doing: Applying service design thinking in the real world : a practitioner's handbook.

Appendix 1

HELSEINNOVASJONSSENTERET

7. The Centre for Health Innovation (Helseinnovasjonssenteret)

An increasing proportion of the elderly in the population results in more people with dementia and thus a greater need for competence and resources (demenskartet.no). A resource need the health service in the future will have major problems meeting.

There is thus a need for more preventive work, early interventions and responsibility for one's own health. How can we increase knowledge about dementia in the population in general and in people with (mild) cognitive impairment and relatives, to make the disease harmless and motivate greater responsibility for one's own health.

Case/Service: Helseinnovasjonssenteret, https://www.helseinnovasjonssenteret.no/
Number of groups: 1-2 (Gjøvik/Trondheim)
Contact person(s): Service Designer Mari Mørkeset Sandbakk, mari@helseinnovasjonssenteret.no

Interview guide - Meeting with Health Innovation Centre

- Introduce ourselves and the group
- We have planned some questions, is it OK to record the meeting?

1. What kind of problems with dementia are you facing today?
   Hva er hovedproblematikken med demens i dag?

2. What resources do you need most?
   Hvilke ressurser er det snakk om i denne sammenhengen, er det økonomisk, personer, sykepleiere etc., eller formidlingsressurser (som demenskartet.no)? Gi eksempler.

3. Which sector of health service is struggling most?
   Hvilken sektor i helsetjenesten har størst utfordringer med dette? Beskriv/eksempler.

4. What preventive actions can be taken?
   Hvilke forebyggende tiltak kan tas? Hvilke er de viktigste? Eksempler.

5. Can you explain early interventions? Describe as per scenario.
   Forklar tidlig intervensjon, og beskriv gjerne med scenario.

6. How can we increase knowledge about dementia?
   Hvordan tenker dere vi kan øke kunnskapen om demens?

7. What are mild cognitive impairment people? Can you describe or give specifications of what categorizes people in this range?
   Hva definerer mildt kognitivt svekket ("mild cognitive impairment people"), hvilke kriterier inngår? Er de diagnostisert? Alder? (Vil hjelpe oss å definere vår målgruppe/sluttbruker)

Appendix 2

Interview guide Phase 1

Interview objects:

- People directly affected by dementia (Either next of kin og are newly diagnosed themself).
- Regular people who know about dementia, but are not directly affected.

Everyone interviews two people each (One directly affected by dementia, and one regular person).

Interview questions:

- Age and Gender
- What experience (or what relation) do you have with dementia?
  - (Important to include follow up questions)
- What do you know about dementia?
  - (Include follow up questions)
- Where did you learn/got information about dementia?
- Do you feel you have enough information about dementia?
- Would you be interested in learning about how to prevent dementia?
- To what degree do you think dementia will affect you in the future?

Insert your findings into post-it notes in this FigJam file before October 7th:
https://www.figma.com/file/u8Xc3hfyKlmYTgYkzRlezf/Interviews-Affinity-Map?node-id=0%3A1

Appendix 3

Link to FigJam workshop board

Link to FigJam affinity map

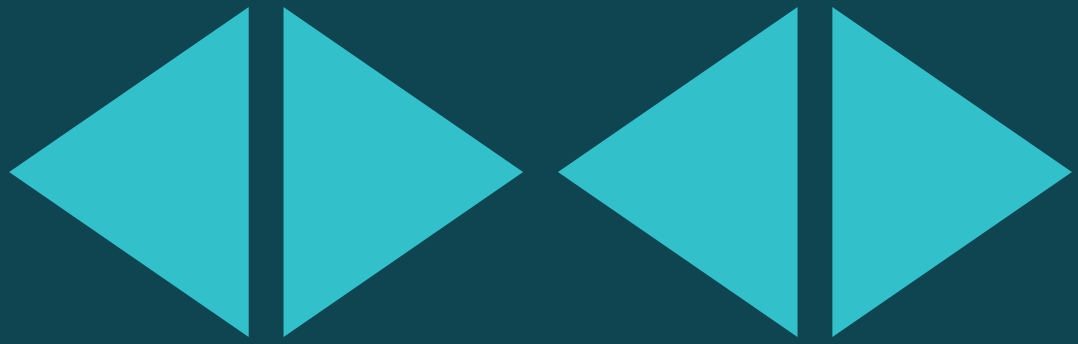
Link to our notes and summaries of literature and articles

Service Design Report
Dementia Prevention

Linn Moløkken and Petra Vymazalová

TPD4156 - Design 7 - Service Design
Autumn 2021

Table of Content



Introduction

Case Description

Case Proposal

The Centre for Health Innovation (Helseinnovasjonssenteret) An increasing proportion of the elderly in the population results in more people with dementia and thus a greater need for competence and resources (demenskartet.no). A resource need the health service in the future will have major problems meeting.

There is thus a need for more preventive work, early interventions and responsibility for one's own health. How can we increase knowledge about dementia in the population in general and in people with (mild) cognitive impairment and relatives, to make the disease harmless and motivate greater responsibility for one's own health.

Case Provider

Our case provider The Centre for Health Innovation (Helseinnovasjonssenteret) focuses on developing a more sustainable organization of health services in Norway. "Together with owners, partners and community residents, we are seeking to find new solutions to national health challenges through knowledge, research, development and innovation" (Welfare Technology and Research, Centre for Health Innovation, n.d.).

HELSEINNOVASJONSSENTERET

Design Process

Double Diamond

The double diamond is a service design process model which was published by the British Design Council and is since then established in the service-design community. It consists of four phases which change from convergent to divergent twice. The phases are Discover, Define, Develop and Deliver as described in 'Der Service Design Prozess 4+1' by Torsten Stapelkamp.

We tried to follow the double diamond phases like described by Dr. Elmansy in his article 'The Double Diamond Design Thinking Process and How to Use it'.

In the first phase you discover the topic by researching and collecting relevant data which are related to it. We have done that by meeting with the case provider and getting to know which areas we could dive in by researching. We wrote down the key insights and results from our desk research and discussed our individual research outcomes together. We got to understand the target challenge with the help of a quantitative interview as field research. This first phase helped us a lot in finding our key takeaways and problems which were worth working on.

In the define phase we narrowed down our ideas and formulated a clear definition of the problem. Defining a path with steps to reach a clear brief was achieved by filtering all ideas and narrowing them down. We have done that by analysing all data we gathered and focusing on feedback and needs from our interview participants. We then created four different personas, a customer journey map and stakeholder maps that made it easier to visualize needs and take the whole experience into account as well. This way we were able to define our problem statement that we moved further with.

In the third phase of develop we created solutions to be able to test them.
We repeatedly iterated on those solutions by involving experts and shadowing the target group to realize where improvements should be done. Here we also kept a design thinking approach in the back of our heads where we kept prototyping, testing and iterating.

In the deliver phase, the product is delivered after all ideas are narrowed down to one final proposal after multiple iterations. Further surveys and iterations could be done to improve future versions of the product.

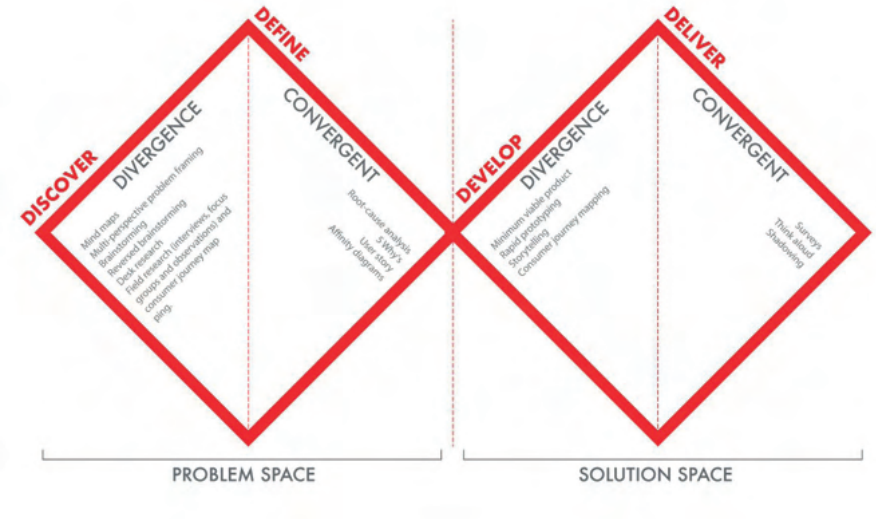


Figure: The Double Diamond design thinking process (Adopted from the Design Council) (Elmansy, 2021).

Ethical considerations

Throughout our service design process we focused on not mentioning sensitive data in our documents or notes when interviewing or testing in order to not go against the principles of NSD. For this project we did not have the time to send in an application for keeping personal data. Therefore we refrained from collecting any personal data that could be used to identify the person directly or indirectly. This meant we did not record any names, gender, age, residence or IP-addresses or emails.

Dementia on its own is a sensible topic. Even though we did not have direct contact with dementia patients we talked to next-to-kin or health workers about this serious medical illness and everything that comes with it.
We had the three Design Principles of respect, responsibility and honesty as mentioned in 'The Little Book of Design Research Ethics' in our mind. Especially in our research phases, we made sure that our participants feel comfortable, that we protect their interests and communicate with them truthfully. We inform them that we conducted research and will protect the information we gathered, for the time of the project as well as in the future.

Respect

We honor participants' limits and value their comfort

Responsibility

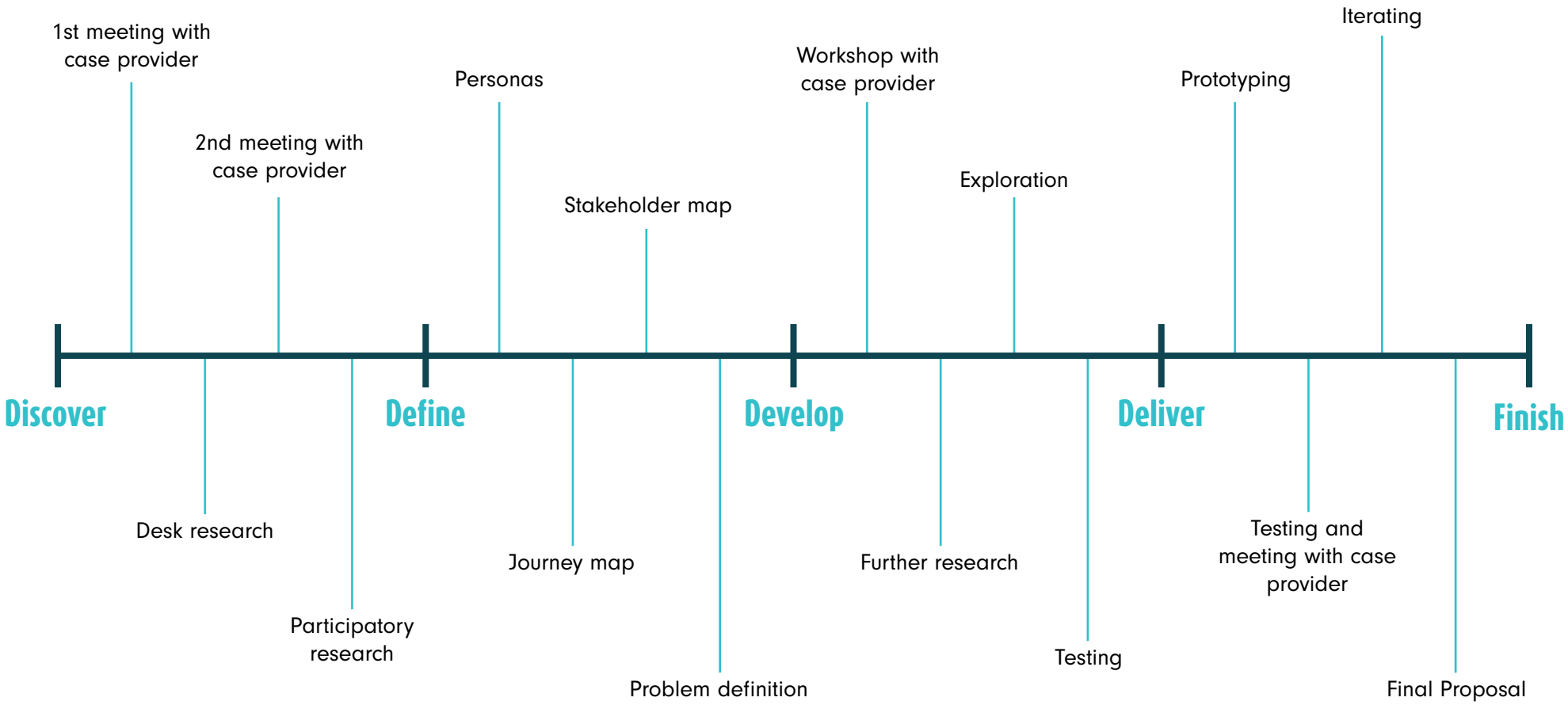
We act to protect people's current and future interests

Honesty

We're truthful and timely in communication.

(Suri, 2021)

Timeline


1st meeting with case provider
2nd meeting with case provider
Participatory research
Desk research
Discover
Personas
Stakeholder map
Journey map
Define
Problem definition
Workshop with case provider
Exploration
Further research
Develop
Prototyping
Testing
Deliver
Iterating
Testing and meeting with case provider
Final Proposal
Finish

Discover

Intial meeting with case provider

In the initial meeting we met with two research advisors from The Centre for Health Innovation. As The Centre for Health Innovation is based in another city in the North of Norway, the first meeting as well as all further meetings were held online over the communication application 'Microsoft teams'.

We got to know that there are various issues around the topic of dementia. Every individual of the population gets in touch with dementia directly or indirectly throughout their lifetime. Three topics which were of larger importance were the increasing age in the population, associated therewith, the number of dementia patients, secondly healthcare workers who are increasingly exhausted because of the modest amount of workers per patient which are meanwhile fulfilling tasks which do not belong to their main area of responsibility and lastly a big gap in public knowledge since there are missing explanations or information about the topic dementia. Corresponding to the last point, especially the information about risk factors being modifiable, caught our attention when speaking about that for example wearing hearing aids decreases the risk of getting dementia.

Desk research

We started the research phase by doing some desk research where we used the methods 'Preparatory research' and 'Secondary research' found in 'This is Service Design Doing'.

What is dementia?

As stated by the Alzheimer's Society in What is Dementia? The term dementia describes a disease of the brain with a set of symptoms like memory loss, difficulty of problem-solving, thinking and language.

The Alzheimer's Society describes in Types of Dementia that there are different types of dementia which evolve when the brain is damaged by diseases. The most common cause of dementia is Alzheimer's disease which affects the brain's physicality. The second most common type of dementia is vascular dementia with symptoms which occur when the brain is damaged because the blood can not be supplied appropriately to the brain. Other types of dementia develop when nerve cells are damaged or die so that the brain tissue gets smaller. Their symptoms vary and affect daily life differently.

HUNT research project

HUNT is a research project that includes health information from residents of the province Trøndelag. The last collection round HUNT4 ended in 2019. The sub project HUNT5 70+ focused on elderly health. They collected information from 9930 participants above the age of 70. And based on these numbers they estimated that 2% of the national population are suffering from dementia. This number will rise to 4% in the next 30 years because of the elderly wave (Demenskartet | Aldring og helse, 2020). Norway's current health system will not be able to handle this increase of patients. Thus new solutions need to be brought forward, and there needs to be an increased focus on preventive measures.

Norway's dementia plan

The government of Norway has submitted a national dementia plan since 2007. It was last updated in 2020 and called 'Demensplan 2025'. Prevention and early diagnosing are two important areas in the new plan. The plan has four areas of focus; co-determination and participation, prevention and public health, good and coherent services, planning, competence and knowledge development (Omsorgsdepartementet, 2020).

The Lancet Report

'Dementia prevention, intervention, and care: 2020 report of the Lancet Commission.' This report presents a list of 12 modifiable risk factors of dementia spread through a lifetime. They are; less education, hearing loss, traumatic brain injury, hypertension, excessive intake of alcohol, obesity, smoking, depression, social isolation, physical inactivity, air pollution and diabetes. It concludes that 'Knowledge about risk factors and potential prevention, detection, and diagnosis of dementia is improving although significant gaps remain' and 'Interventions, include organization of the complex physical illness and social needs to support people affected by dementia can have a huge effect when taken as a whole' (Livingston et al., 2020).

Additional

These resources looked into so far are generally academically oriented. They use academic terminology and the information is dense. This

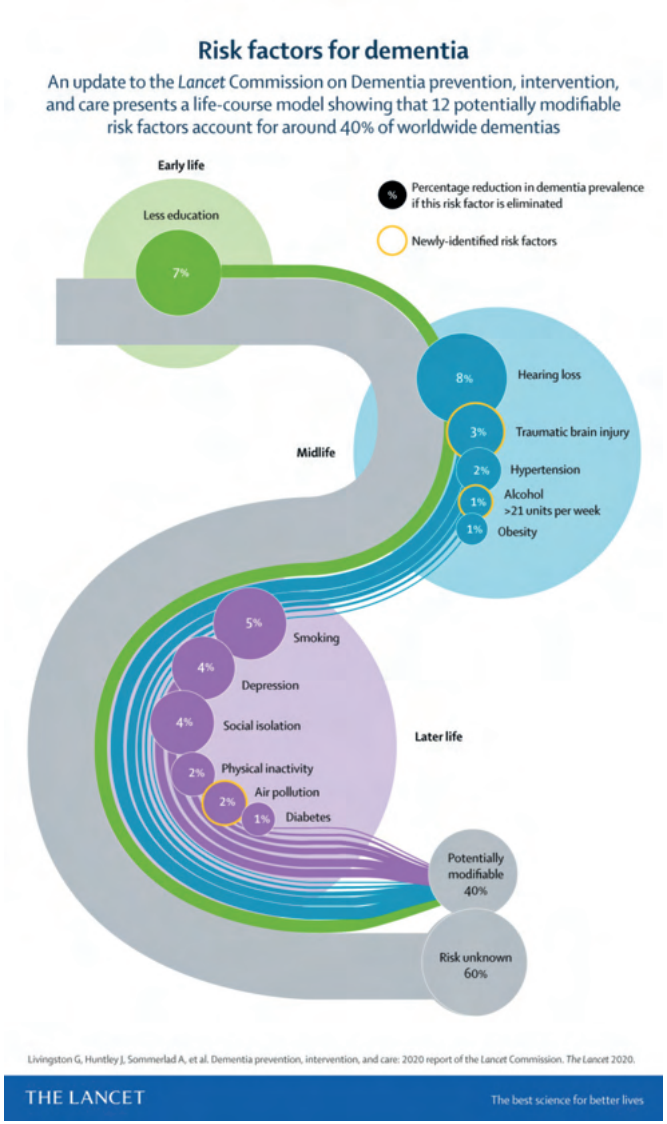


Figure: Modifiable risk factors (Livingston et al., 2020).

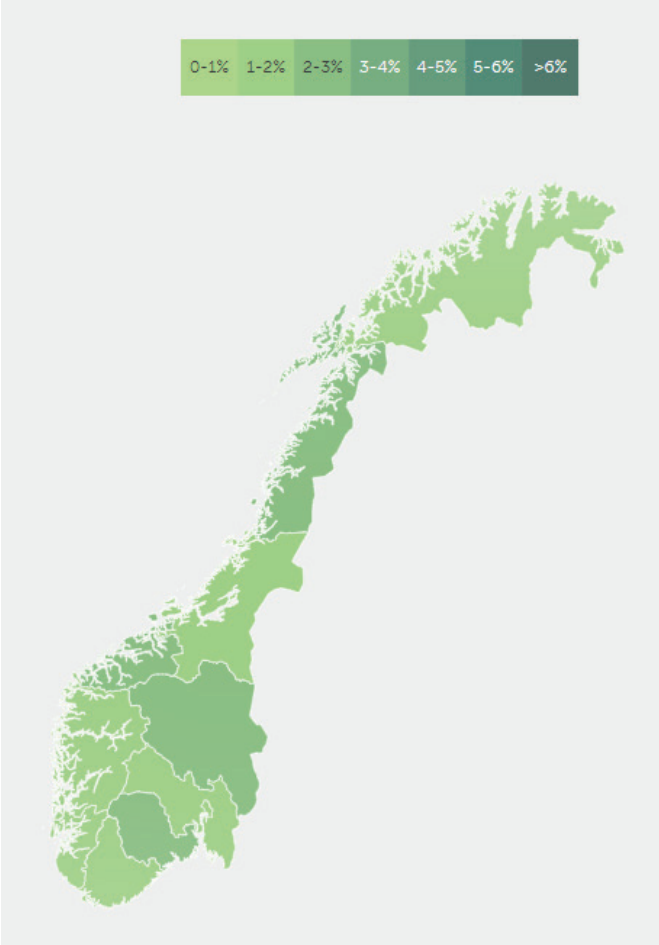


Figure: Population of Norway with dementia (Demenskartet, Aldring og helse, 2020).

makes it generally less accessible for a normal person looking up any advice they personally can follow.

In addition to these resources, we also looked through different Norwegian health sites such as helsenorge.no, aldringoghelse.no, helsedirektoratet.no and nhi.no. Here there was a lot of information about dementia itself and how to live with it. But surprisingly it was hard to come by any information about any preventive measures.

Follow up meeting with case provider

After we have done our desk research and collected data, we spoke about which problems we would like to improve with our future service. We agreed to work on the prevention methods for dementia and spoke about that in more detail with The Centre for Health Innovation. They gave us tips on where to find further research and which stakeholders or organisations could be worth reviewing.

Participatory research

After going through desk research, we started gathering data from a participatory approach. We did a quantitative interview and participant observation.

Quantitative interviews

We started by conducting quantitative interviews in the form of a survey which mapped out how much people knew about dementia, if they had any experience with it and most importantly if they were aware of any of the risk factors. To be sure that we didn't collect any personal identifying information or IP address, we conducted the interviews over our own phones where we noted down the answers and entered them in a survey format. We ended up talking with five people from varying age groups.

From the results we found that everyone had some experience with dementia. Either someone in their family or someone they knew had suffered from dementia. When we next asked them if they could name any risk factors on their own, only two participants were able to think of some factors on their own. Next when we listed out the different factors we found out that the majority had never heard of most of the risk factors. This is especially surprising considering that most of them had a family member suffering from dementia. Since dementia can be hereditary, it is extra important that family members are informed about the modifiable risk factors.

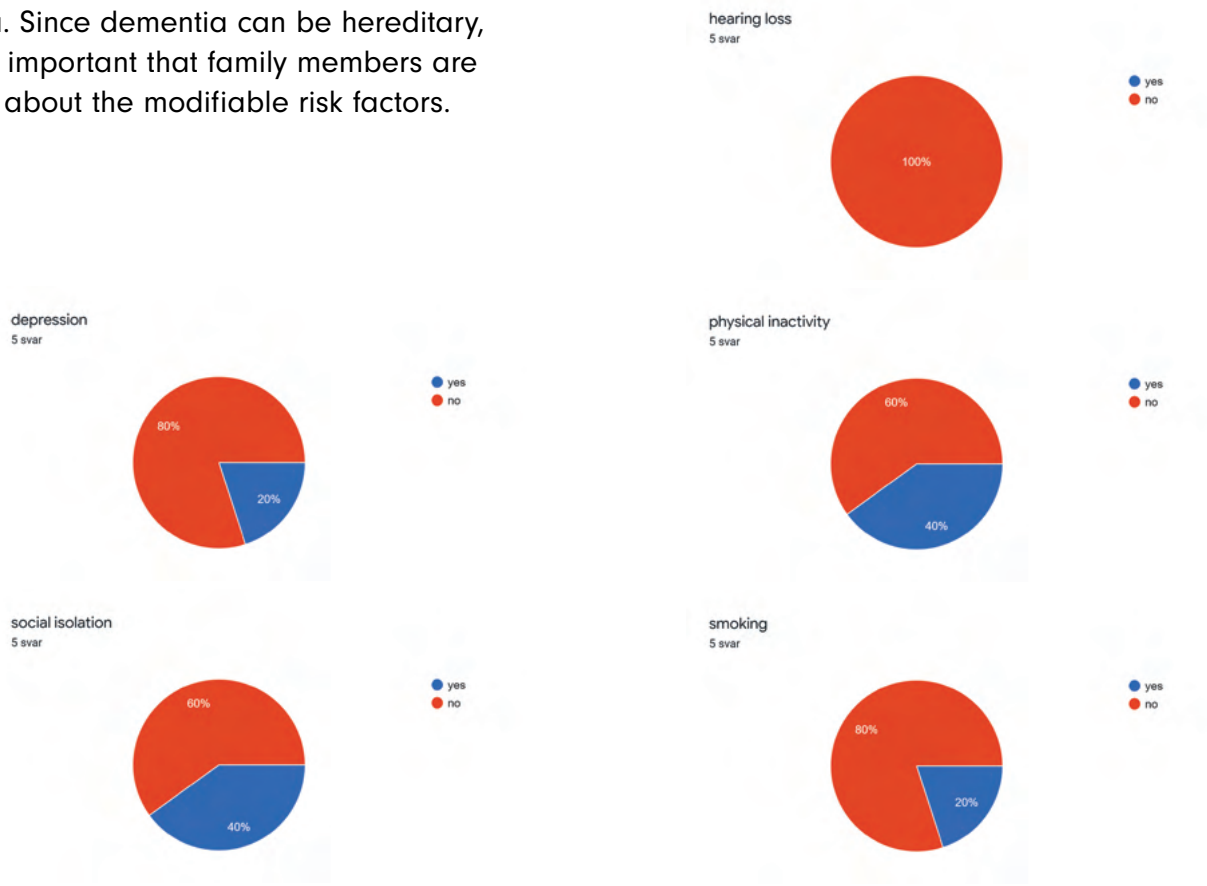


Figure: Sample from quantitative interviews, see attachment 1.

Participant observation

After our initial survey we also conducted a participant observation where the goal was to see how a person would go about looking for information about dementia prevention. We first asked a participant "imagine you want to find out more about dementia prevention and your chances of developing dementia, what would you do first?". Her first instincts were to ask family and friends if they knew anything or were to go. The next step for her would've been asking a general practitioner. After asking people directly the participant would resort to the internet.

The next phase was to observe the participant as they look up information through an internet browser. These were some of the keywords initially used to search: demens (dementia) and demens forebygging (dementia prevention). From these searches the participant entered these sites:

https://nhi.no/sykdommer/hjernenervesystem/ulike-sykdommer/demens-oversikt/
This page did mention some of the modifiable risk factors of dementia. But it was only briefly. There were only two paragraphs about dementia prevention, and no further links for more information or advice.

https://www.aldringoghelse.no/demens/
This website has a lot of resources about dementia, living with dementia and dealing with dementia from a relative point of view. But the participant could not find a section about dementia prevention.

https://forskning.no/partner-alzheimer-depresjon/ti-grep-for-a-forebygge-demens/266680
This was an article that actually talked about specific advice around dementia prevention. It is a nice starting point, however it is still a bit general and short. The participants would've liked to see links to further resources and advice.

The participants have some inkling of different risk factors, but do not feel they know a lot about them. They still feel slightly unsure.

The participants also went to the local 'kommune' website to see if there were any official resources there. The website was initially overwhelming because there are so many areas where the kommune operates so that it can be hard to navigate or find the right section. The participant got frustrated and didn't know which section to look into.

After the interview we discovered a section in the kommune website that included resources to stay physically active and avoid social isolation. But the participant did not find these at the time of the interview. They did not remember right away that physical inactivity and social isolation were risk factors even though they were mentioned. They were not delved into anywhere so the participant did not remember it so they could look for specific resources for that.

In the end the participant could not find many specific tips to combat the different risk factors. They found the risk factors barely mentioned and felt a bit frustrated over the lack of information, especially connected to their own community. They also stated that they would have never looked for these websites if not encouraged. They also felt a bit unsure on how and where to start living healthier. It's a big area. There was a wish for more specific steps. Next step would be to contact a doctor and ask directly.

A problem we discovered however is that people do not go around everyday and think about dementia and they are not aware there exists modifiable risk factors, thus they have no motivation about looking up any further information into the topic.

Figure: Meny about dementia from aldringoghelse.no

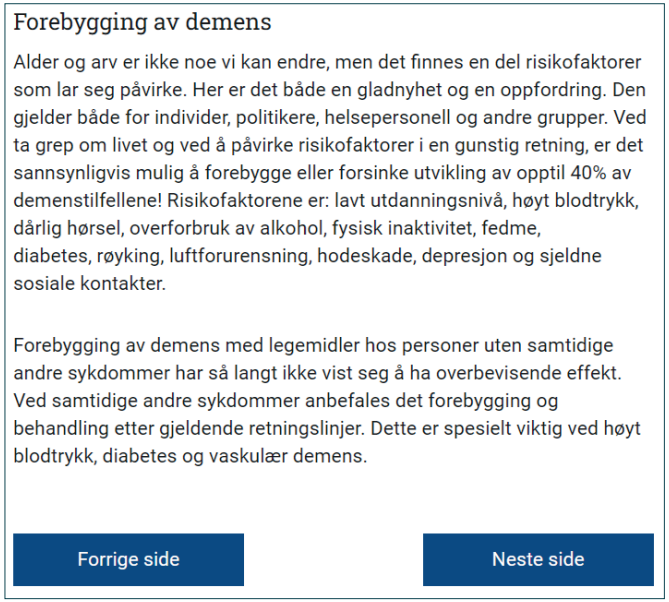


Figure: To paragraphs about dementia prevention from NHI.no

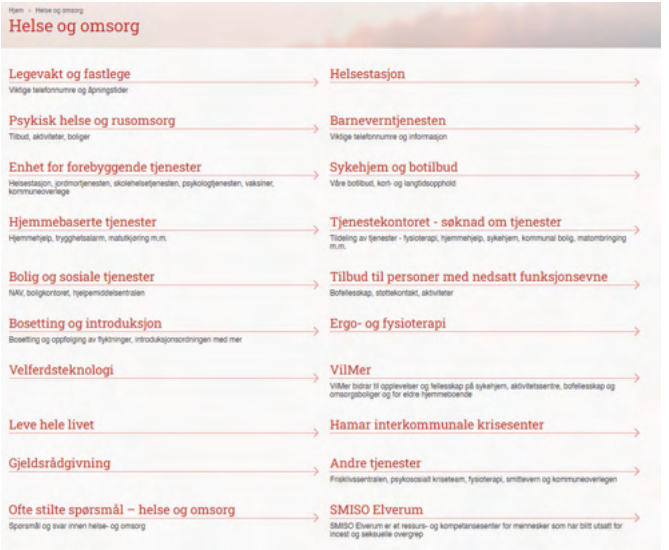
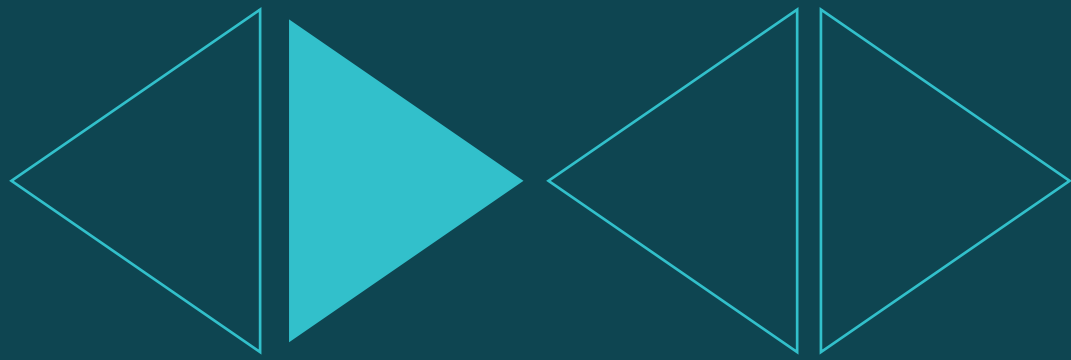


Figure: All the subsections in the health section of a 'kommune' webiste.

Closing notes

If we were to repeat this process, we would include more participants in both of these interviews. We would also like to have included different health practitioners and participants from the younger age group (20-40 years old).

One of the principles of service design is Human-centered. Through conducting these interviews and talking with The Center of Health Innovation we tried to learn and understand the experiences of different people related to this challenge.



Define

Personas

Dementia prevention is an issue that concerns nearly everyone. This needed to be reflected in the personas. We therefore created four different personas from four different age groups, thus they were all in different situations and stages of life. This is how we tried to represent a wide part of the population.

There are many different ways of creating a persona. After having analyzed the data gathered from the research phase, we look for repeating patterns and behaviours like suggested in This is Service Design Doing p.128. Ex. We found that a majority of the people we talked to were unaware of most of the risk factors, they had never been to a doctors check-up regarding dementia and had at some point known someone suffering from dementia. While creating our personas we focused on painting a picture of their current situation and their relationship with dementia. If they had ever thought if they might develop dementia themselves, if they knew someone with dementia or if they knew anything about dementia. We also defined which touchpoints they regularly interacted with, so we as designers could better understand how to reach the different age groups. In addition to focusing on the details more relevant to our case, we made sure to include little quirks and characteristics. This made it easier for us to imagine them as real people, and thus connect to, empathize and care for them.

The personas in the end also helped with narrowing down and picking a focus for the project onwards.

I enjoy the precious moments of seeing my daughters growing up.

Wants to know
symptoms and prevention methods
Problems
websites did not help her in finding an proper answer
Touchpoints
website, (hopefully doctor), laptop, smartphone, TV, newspapers and site, radio, family, friends, colleagues

Mathilde Jakobsen

44 years
lives in Bergen
Active, loving, honest

Started recognizing that her mother forgets about things and is worrying about her mother's (age 68) health, wants to persuade her to get to the doctor as she is not sure if she is imagining her mother having the symptoms
she thinks she heard that dementia can be inherited but she does not know, that's why she researched a little bit on the internet and thinks that this topic concerns her as well. Her mother should really go to a checkup as she fears that her mother could have dementia.

What do you call a laugthing piano? A Yama-hahahahaha.

Wants to know
Is it likely that I develop dementia?
Is there anything I can do to prevent it?
How does dementia start?
Problems
Find it hard to navigate internet and tech devices without help.
Touchpoints
Family, general practitioner, local community, TV, local and national newspaper,radio

Ole Hermansen

81 years
lives in Lillehammer
Musical, loyal, funny

Ole is living in a elderly home in Lillehammer. He lives alone, but gets a visit from a family member once a week. His wife passed away six years ago and he is trying to find new hobbies to fill the time. He enjoys playing on the huge piano in the common room as everybody admires him for being able to play fast-pasted melodies. His father had dementia and he know that it can be hereditary. He has not looked for any further information about dementia. He has a computer, but isn't that good or comfortable in using it. Since he has never spoken to any health workers about developing dementia and has never been to any checkups regarding it, he is unaware of other risk factors.

Keeping care of the nature and the environment is what I care about.

Wants to know
Will my grandma recognize me?
What will happen?
Problems
Finding valid information on the situation trough the internet
Touchpoints
Family, websites, blogs, videos on the internet

Marie Andersen

22 years
lives in Gjøvik
loving, open-minded, sporty

Marie is living in a students housing accomodation with her boyfriend. She loves to play volleyball and hockey with matches on the weekend. She likes to bake and cook for her friends which she meet within the students house. It is a way of connecting with people since she moved from Bergen to Gjøvik for her studies in sustainable manufacturing. After her father informes her that her grandmother was diagnosed with dementia, she starts worrying about her being not able to recognize her because of the scary stories her firends tell her about dementia. She has to research on the topic to find out what really comes with this disease and find out how this will change their relationship to each other and how she can help her grandma as much as possible.

Ich kann meinen inneren Schweinehund nicht überwinden.

Wants to know
More about dementia in general
How it develop
Any reducing risk factors
Problems
Doesn't know anything from before, language barrier on Norwegian websites,
Touchpoints
Laptop, smartphone, TV, radio, friends, colleagues, ads in public

Stefan Müller

34 years
lives in Oslo
lazy, observant, social

He moved to Oslo from Germany because of work 1 year ago. He doesn't speak or understand fluent Norwegian yet. He generally only uses English at work and when hanging out with friends. Because he is a bit lazy he hasn't been actively learning the language. However he really likes his job and enjoys the country so far, and is planning to stay. He likes to hang out with friends and watches a lot of movies in his free time. Currently he lives alone in Oslo. Suddenly he noticed an increased focus on dementia, and overheard his colleagues talking about the governments new dementia plan. He doesn't really know anything about dementia from before and is slightly curious to learn more.

Journey map

We created a journey map to visualize the experience of our target audience, which at this point was just the general population. Journey map is a tool to further understand the experience of those we're designing for (Stickdorn et al., 2018). The journey map as well as experiences throughout are based on the participant observation, searching for information about dementia and its prevention on the internet. The main actor was therefore a normal person sampled from our quantitative interview round. We tracked stages, steps and the emotional journey throughout the experience. This helped increase empathy for our target audience. Initially we wanted to frame how and where the target audience gathers information around the topic. We found out that the negative feelings throughout the experience of searching are predominant. There is a short period of happiness when finding many search results on the internet for the term "dementia prevention" but after further looking into specific pages, finding out that the relevant information can not be found or finding it takes a lot of time, reading and effort.

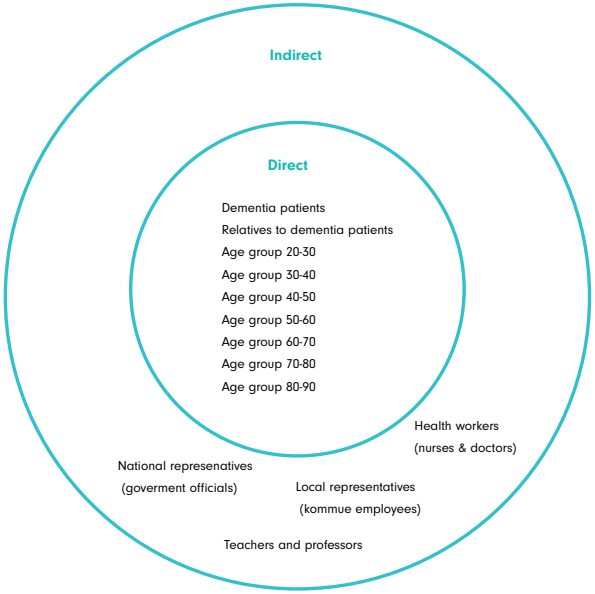
Stage	First hearing about dementia and personal responsibility	Looking up further information	Finding tailored advice	Finding available programs and services	Being informed and ready to take steps
Action	Hears about thorugh family/ friends, sees a article, sees a news feature on TV	Searches the internet, ask family and friends	Asking general practitioner	Looks up kommune website, ask kommune employee	Making plan with which steps to take
Emotions	Uncertainty, fear, interest	tiny relief and then uncertainty	helplessness, uncertainty	Overwhelmed, frustrated	Uncertainty, fear, frustration
Touchpoint	Friends, family, collegues, laptop, TV	Laptop, family, friends	Laptop/tablet, general practitioner	Laptop/tablet, general practitioner, kommune representive	Family, GP, laptop, community
Thoughts	I didn't know about the risk-factors before, I think about own chances of developing dementia	I found it difficult to find any elaborate information, but I found some genreal	Is it okay to ask a GP about this, or am I wasting his/hers time	Are there any programs, Where should I start	I don't really know where to start, I feel like everything is disorganized
Problems	Many open questions, doesn't really think about dementia at all and therefore never moves further, rarely sees it mentioned,	Not able to find much relevant information	Different knowledge and education on dementia, prevention and experiences with it, don't know who to contact,	Hard to navigate kommune websites, and couldn't find many relevant programs	Hasn't really found much information or steps to take

Figure: Journey map, see attachment 2.

Stakeholder map

By mapping out internal and external stakeholders, we gained an overview about all parties and individuals that are directly or indirectly related or affected by our future service. This way it is possible to involve relevant participants in the phase of research, prototyping and implementation and get to know requirements for the product.
Two stakeholder maps were created to pinpoint internal and external stakeholders for first general interest in the topic in dementia as well as a service-related stakeholder map which portrayed stakeholders which were part of a website which informed the audience about dementia and prevention methods. The main difference lies in the external stakeholders. While the internal are the population and dementia patients of next-to-kin, the external stakeholders differ since there is a specific website provider who provides information instead of many different parties and institutions which in general inform the population. Since there is not one specific party, it is difficult to overlook the research, results and information that is displayed to the population which is why it varies a lot.

Stakeholder map genreal interest in dementia



Stakeholder map health website about dementia

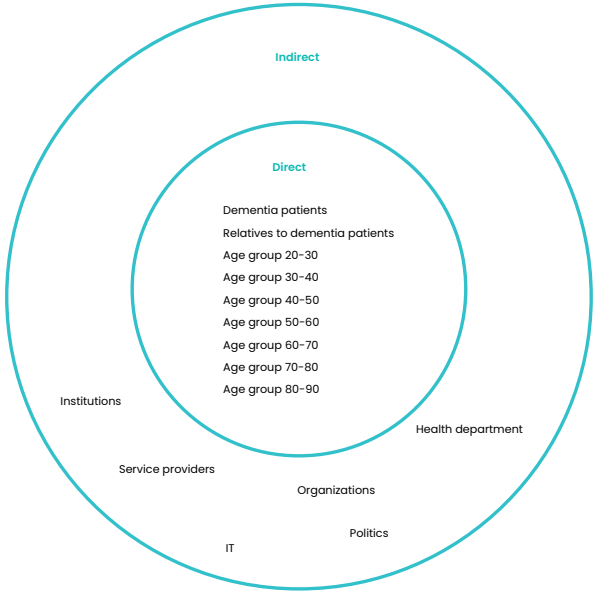


Figure: Stakeholder maps, see attachment 3.

Problem definition

From these two phases of data gathering, we summarized our key insights. Research identified that there are modifiable risk factors for dementia. Most people are unaware of these. Because of this unawareness there is a need to inform and motivate taking action. At the same time there is a lack of accessible information. On top of this, there needs to be different approaches to address the different age groups. To move further we needed to specify which challenge to tackle and what to focus on.

How can we make information about dementia prevention more accessible to the middle age group and help motivate personal responsibility and effort?

Develop

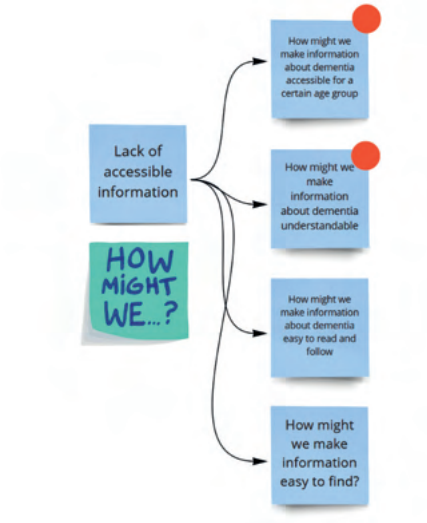
Ideation

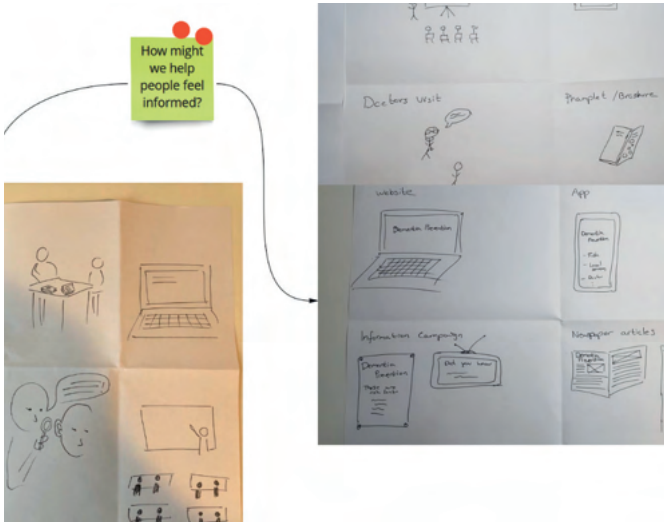
Ideation Workshop

By doing a co-creative workshop in one of our lectures we learned to think about a possible product by gathering all ideas which we narrowed down by the end. In the workshop we did a couple of exercises by using different methods. Some of those methods are mentioned in 'This is Service Design Doing'. Those methods were structured in a way that individual work as well as team work compliment each other in a way that personal thoughts and ideas are taken into consideration but the group discusses and evolves the ideas together.

With the help of **'How might we...'** questions we reformulated our problem definition into relevant questions. After that we decided which one of these seemed most valuable for us.
Besides that we used the **'crazy 8'** method to individually scribble out eight different ideas in eight minutes to address the selected question from the 'How might we...'- exercise.
We discussed the ideas again as a team and structured them into a **priority matrix** in regard to the factors low and high value and easy and hard to implement.
Finally we identified **prototyping questions** by taking valuable perspectives for the selected idea. We did that by answering questions about value, look and feel, integration and feasibility.

The workshop was done by our group of two. It was interesting to see how many individual ideas we generated, directions that we could take and to discuss their value as a team. The methods helped us to find a direction in further evolving our product in a fast and effective way. The outcome of this ideation workshop was a website that would inhold necessary information for the target audience which is the middle age group and propose different prevention methods. After that workshop we started by mapping out our ideas with use of the post-it-method, framing what the website should contain to be helpful for the middle age group. We mind-mapped our ideas on which requirements should be met and which information the website should contain. Besides we created a user scenario we would like to approach imagining the ideal state.





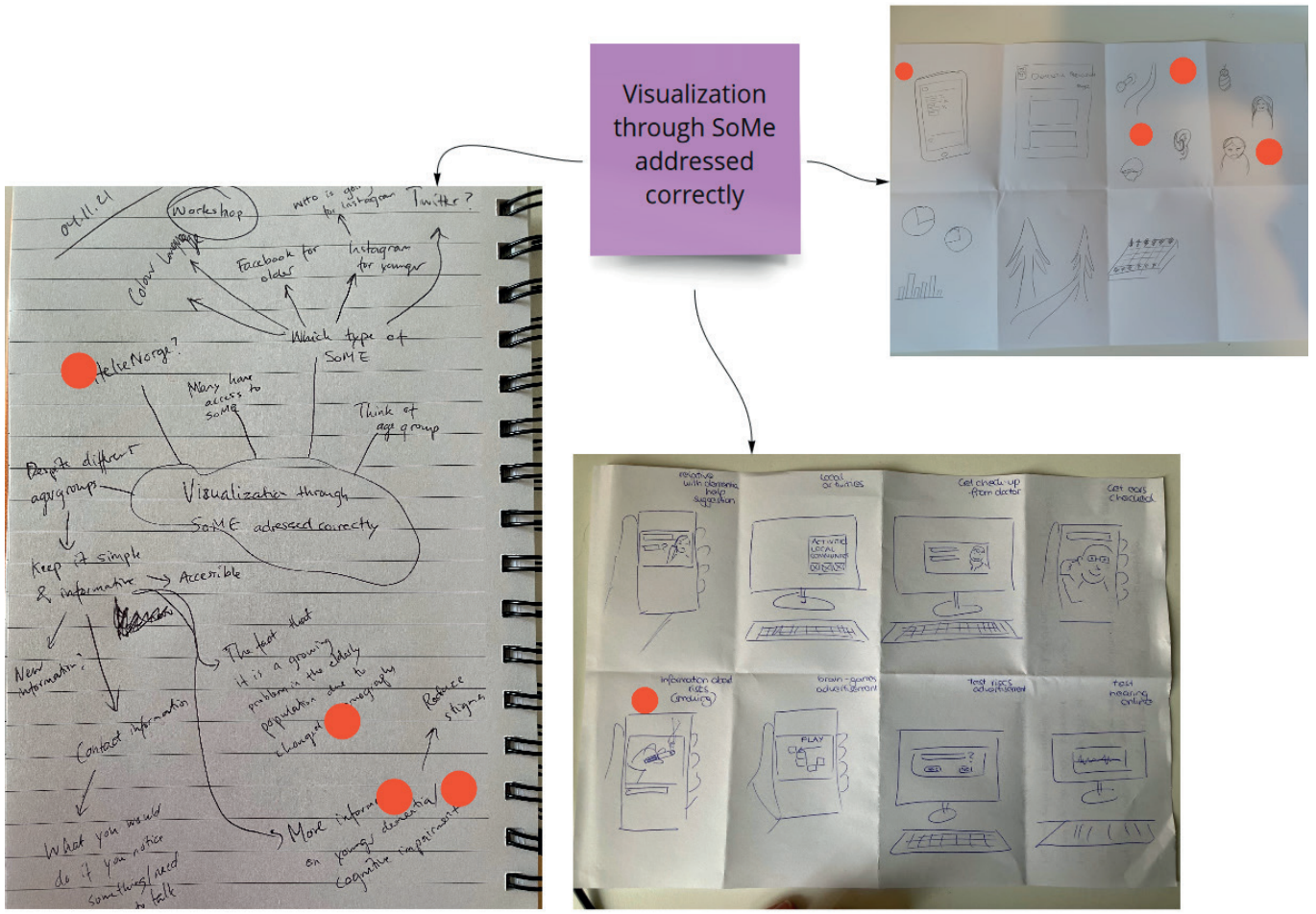
Ideation

Co-Creation Workshop

Involving the Centre for Health Innovation and doing a co-creating ideation workshop with the same four exercises with one of their researchers, led us to a different approach which evolved to be our final solution that we agreed on. Our final solution is a social media campaign for the middle age group which informs about dementia prevention methods and motivates them to take actions. We talked about social media platforms and agreed that the most suitable social media platform which is preferably used by the middle age group is facebook.

The main reason for picking this approach over the idea of an information website as a service was that our main challenge from the beginning was to inform the society about dementia and modifiable risk factors for it and that we wanted to address as many people as possible. We imagined that stumbling upon this topic over a social media platform would draw more attention then a website which was willingly searched for to find information about dementia.

In this phase by actively including The Center of Health Innovation, we made the process more collaborative.



Research

Social Media and Health Promotion

After having decided to focus on visualization and informing through social media we started researching different existing social media campaigns and health promotion.

We found different facebook groups and instagram accounts from other countries that were informing about dementia and dementia prevention. We also look into different health sites and how they presented information and resources in health promotion. We studied each example and asked who the target audience was, if there were anything attention grabbing, what mood it was expressing, how language was used, how are images and illustrations used and which context was the content in. From this research we noticed that many sites and campaigns had a generally lighthearted and uplifting tone, there was a focus put on resources and advice that could help. Instead of focusing on the negative aspects of different health situations. As an example we found stopsmoking website that illustrated what happens in the body when you stop smoking. How it heals and the benefits you gain.

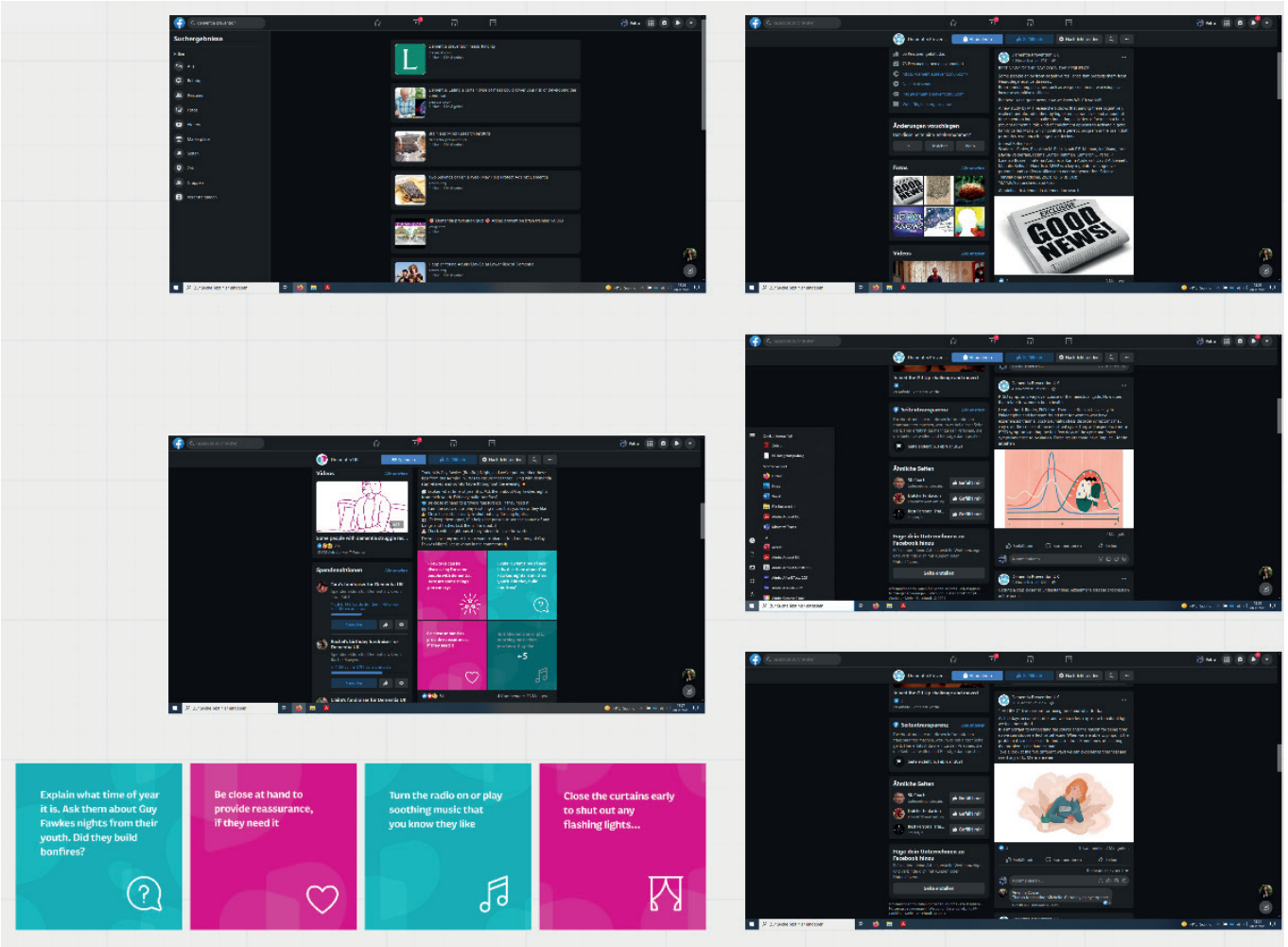


Figure: Sample Screenshots of facebook posts and sites from Dementia UK and Dementia Prevention UK

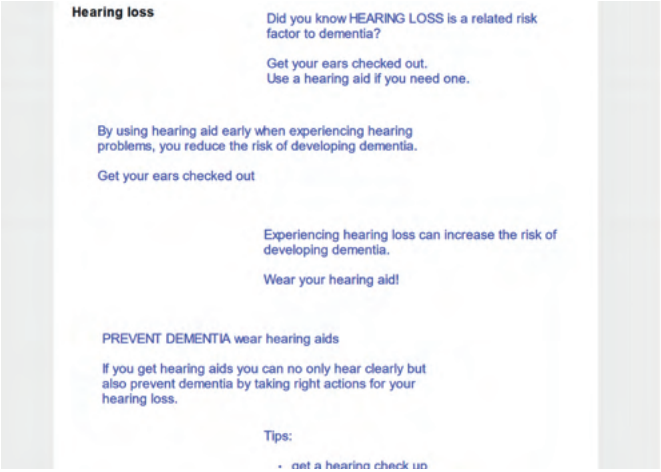
Testing

Phrasings and Imagery

We collected illustrations and photographs related to the prevention methods which could be used for social media posts on a platform like facebook. We concentrated on three of a handful of prevention methods so that we could establish a proof of concept efficiently which would be easier to test in the amount of time we had. The three prevention methods were wearing hearing aids, quitting smoking and being active to reduce the risk of developing dementia. Furthermore we analyzed words and phrases which would be suitable to use within these posts. After we mapped out different variants, with positive phrasings and imagery as well as negative ones, we tested them against each other with three persons from the middle age group to see if they had the same effect on them and how they reacted to positive and negative content.

The testing was done over online communication platforms by sharing the screen. We let them read the suggested paragraphs and view the imagery. We asked them about each image, let them compare and grade how much they liked either the image or the text suggestions. This gave us insight into their behaviour on social media and interests. We assumed that if they saw negative posts on social media that they would scroll over them faster to avoid looking at something that would make them uncomfortable.

The outcome of the test was that the participants were more affected by the positive posts which consisted of clear information. For example one participant liked the additional information about halving the chance of getting lung cancer (Røykesluttgevinster, n.d.) by quitting smoking since this shows that there are more benefits that come with it. Especially the texts which contained specific advice were found helpful because it was easier for the participants to imagine themselves in those proposed situations and actions. The same effect became clear when talking about the difference between illustrations and photographs. While they imagined illustrations to be more visible in a busy social media feed which most of the time shows photographs, they could connect to positive imagery showing people outside on hikes, in the forest and more. As for imagery which showed the effect of nicotine on lungs and teeth, the participants said they will most likely scroll over negative posts with these kinds of images as they generate fear or frustration.



Academic Research

Health Promotion Approaches

To make sure we were moving in the right direction, we seeked out academic research that had been done on health promotion and the effects of it.

We found that multiple sources suggested that the use of fear can be generally ineffective. "Frequent emphasis on a negative incentive may produce desensitization, as the audience becomes accustomed to this harmful outcome'' (Crano et al., 2001). If one were to use fear appeal it needs to follow some strict guidelines and be solution oriented to have any effect (Maibach & Parrott, 1995). On the other hand, a more positive approach can have many benefits. "Positive affect can be used to stress the benefits of healthy behavior, to give individuals a sense of control, and to reduce anxiety or fear. All of these tactics are likely to enhance the success of a communication campaign' (Maibach & Parrott, 1995).

The book Designing Health Messages also dives into and compares a positive emotional benefit approach to a positive heuristic appeal. A heuristic appeal would use positive imagery, happy music, language etc. that doesn't necessarily have a connection to the content of the message to evoke strong positive emotions right away. While an emotional benefit approach would construct a positive message and use ex. positive imagery that is connected to the message. A heuristic appeal is very effective at grabbing attention and making you remember a feeling, but does not perform so well when considering depth of processing, recall of message and attitude change. An emotional benefit approach however does not grab the same amount of attention, but elicits more thoughtful processing, better recall of both message and feeling and more stable long-term attitude change (Maibach & Parrott, 1995).

"Ineffective health promotion campaigns based on fear are likely to reduce the effectiveness of subsequent relevant health promoting action. Given the difficulties and potential harm involved in a fear-based campaign, the tendency to view health promotion as the removal of unhealthy behavior should be resisted in favor of viewing health promotion as the promotion (shaping and reinforcement) of healthy alternative behaviors" (Soames Job, 1988). The academic literature suggests that a more positive approach has more effect, and there should be a focus put on encouraging healthy behaviours.

TABLE 5.1 Effect of Positive Message Appeals on Cognitive and Behavioral Responses

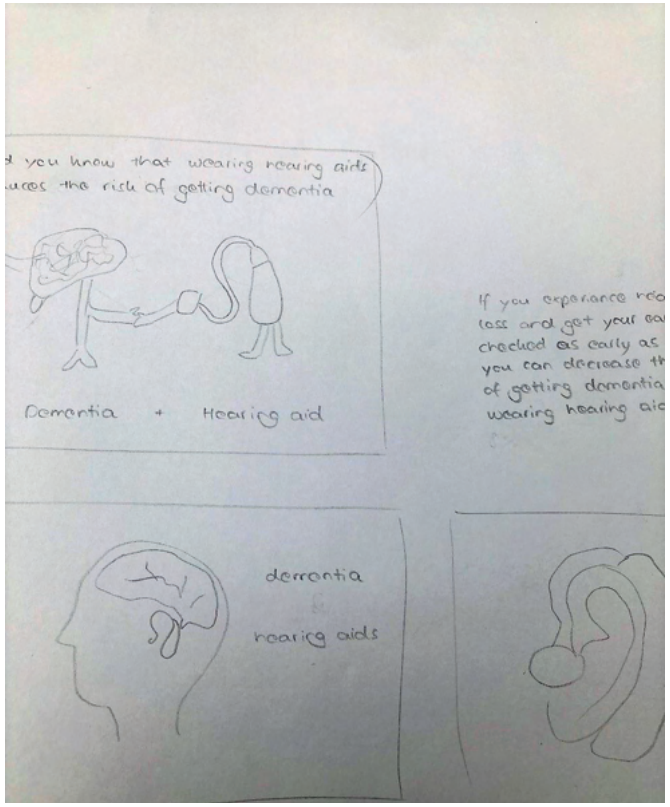
Type of Message	*Attention-Getting*	*Depth of Processing*	*Recall*	*Attitude Change*	*Compliance*
Positive Heuristic Appeals	Highly effective	Tends to elicit minimal processing	Recall enhanced for feelings but not message content	More likely to result in short-lived, fleeting effects	Effects unknown
Positive Emotional Benefit Appeals	Effective if incorporates heuristic component	Elicits more thoughtful processing	Recall for both feelings and message is enhanced	Results in more stable long-lasting effects	Increased compliance

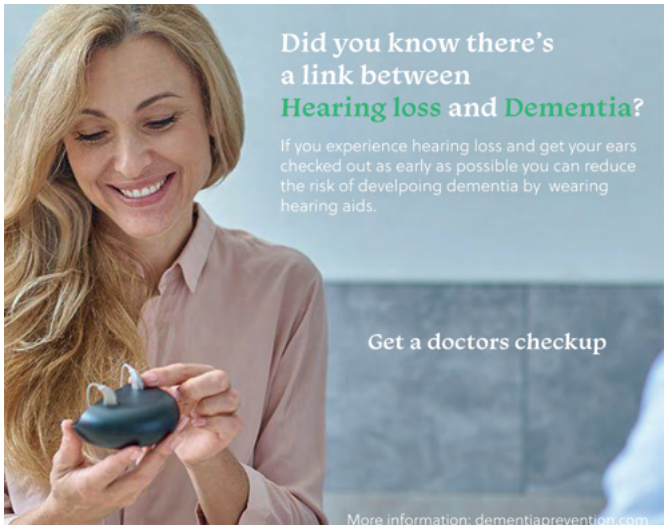
Figure: Designing Health Messages, p. 95, (Maibach & Parrott, 1995)

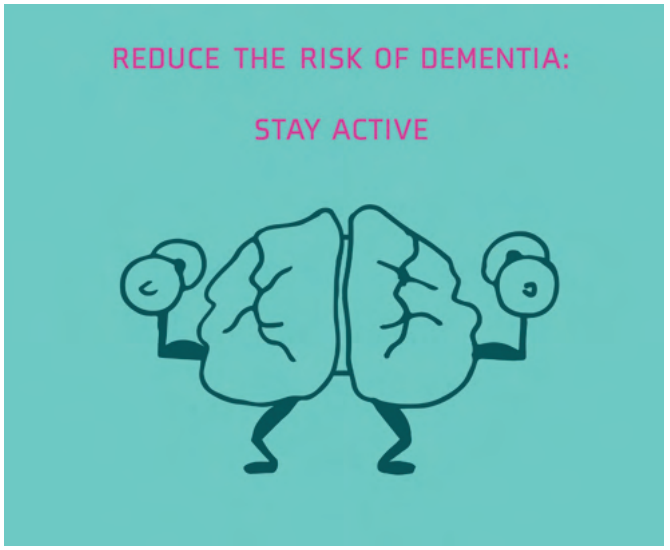
Develop

Sketching First Ideas

After having analysed and researched health promotion, tested imagery and phrasing with the target audience, we started sketching some suggestions for social media. We brainstormed some different illustrations ideas, and photography settings. We then picked some suggestions to move forward with. We decided to further develop both an illustration set and a photography set. This is also where we started brainstorming different ways of structuring the posts based on the phrases we tested. This was prototyping to explore. Where we used the low fidelity method of just sketching out many different ideas, that we could discuss together.







Deliver

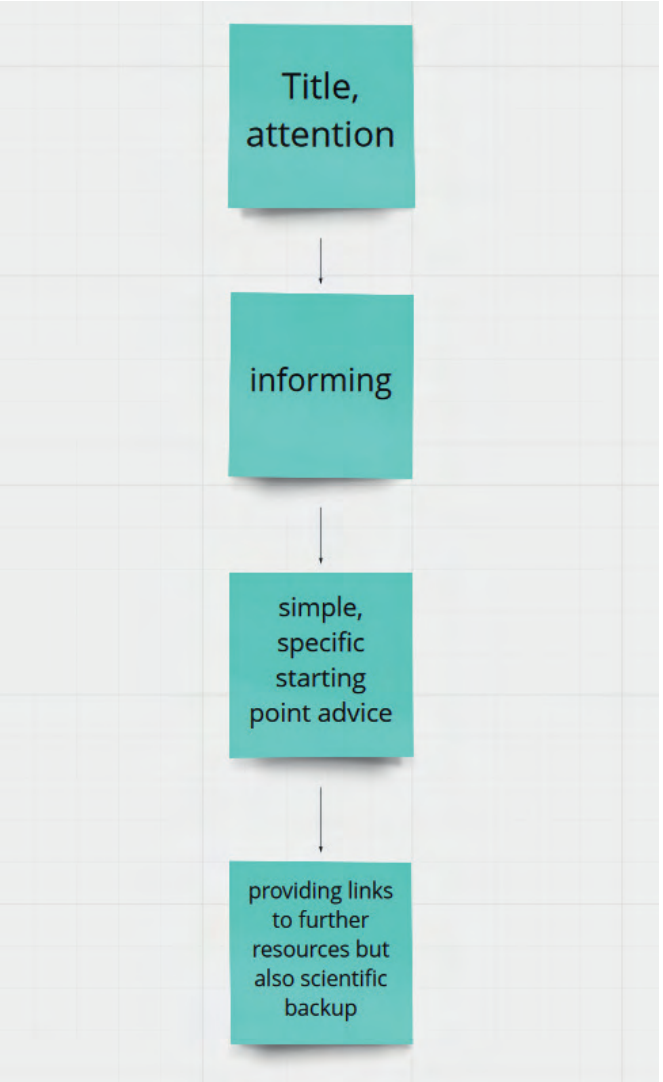
Deliver

Concept

We decided on using an emotional benefit approach because we saw a better effect on our target audience when stressing the benefits of healthy behaviour.

This positive and solution-oriented approach will lead to more self-awareness and hopefully lead to action. We hope to not only produce interest in the topic of dementia but meanwhile leading to a snow-ball effect where the middle age group gets proactive or inspired by reading these posts, clicking on further URL links with tips, advice or resources and starts talking about dementia and possible prevention methods with family members, friends, colleagues and more.

Our concept is based on **four steps**. First we draw attention by having a clearly formulated **headline** that states the main reason and topic of the posts. This should include an understandable message which explains the issue in a brief way. Otherwise people tend to skip over posts which include too much text or when the key message is not clear after reading the first sentence. We also made sure to include the modifiable risk factor and the word dementia in the same headline sentence. This way we quickly establish a connection between the two.
Secondly, we give a short **information** about the issue and explain a little more to the audience by formulating clear, positive sentences. These lead to the third step of giving **advice** as a call-to-action like "take a walk", "talk to someone" or "download this app as a first step" to motivate them and showing that with little effort they can take a step towards being healthy.
The fourth step is to include further **URL links** and information which will lead to external sites to various topics and further resources. These will give the audience the possibility to gain more information on the topic, discover further advice and research to reassure themselves if the content and information of the post is valid.



Deliver

Design Suggestions

Using the structure decided upon as our concept, sketches and the feedback from the initial testing we created nine suggestions for posts. Three suggestions for each risk factor we chose to focus on. This was our first prototype. From our nine suggestions we created two main sets of posts.

Illustration set

We started by creating some posts with simple illustrations and solid colours. The illustrations needed to clearly visualize a risk factor and the connection to dementia. This was not easy. To make sure the illustration could be associated with dementia we chose to create a character that was simply a brain. With this we could illustrate the different risk factors and their connection with keeping the brain healthy. Our character could easily be drawn to break a cigarette, lift weights or wear hearing aids. These illustrations would also be easily recognizable after having seen them once, this could strengthen the recall and depth of processing when seeing another part of the campaign later. We hypothesized by using two solid colours covering a large surface, the post would stand out in a busy facebook feed with multiple photos.

Photography set

We also wanted to explore a set of posts using photography. Our initial testing with the target audience suggested that the right photographs could elicit a feeling of relatability, where the audience could see themselves being in the position of the photos and taking the steps. For the post about smoking we picked a photo of a man outside seeming content and refreshed. This was meant to communicate a feeling of refreshment of being free of smoking. This way we put focus on the positive aspects, and hope to encourage the audience to want to obtain this feeling by taking the right steps. For the post encouraging physical activity we used the advice Start by taking some evening walks and combining it with a photo of someone walking in a forest. With these posts we've tried following the positive emotional benefit approach, where we combine related advice and information with relevant photos visualizing parts of the message.

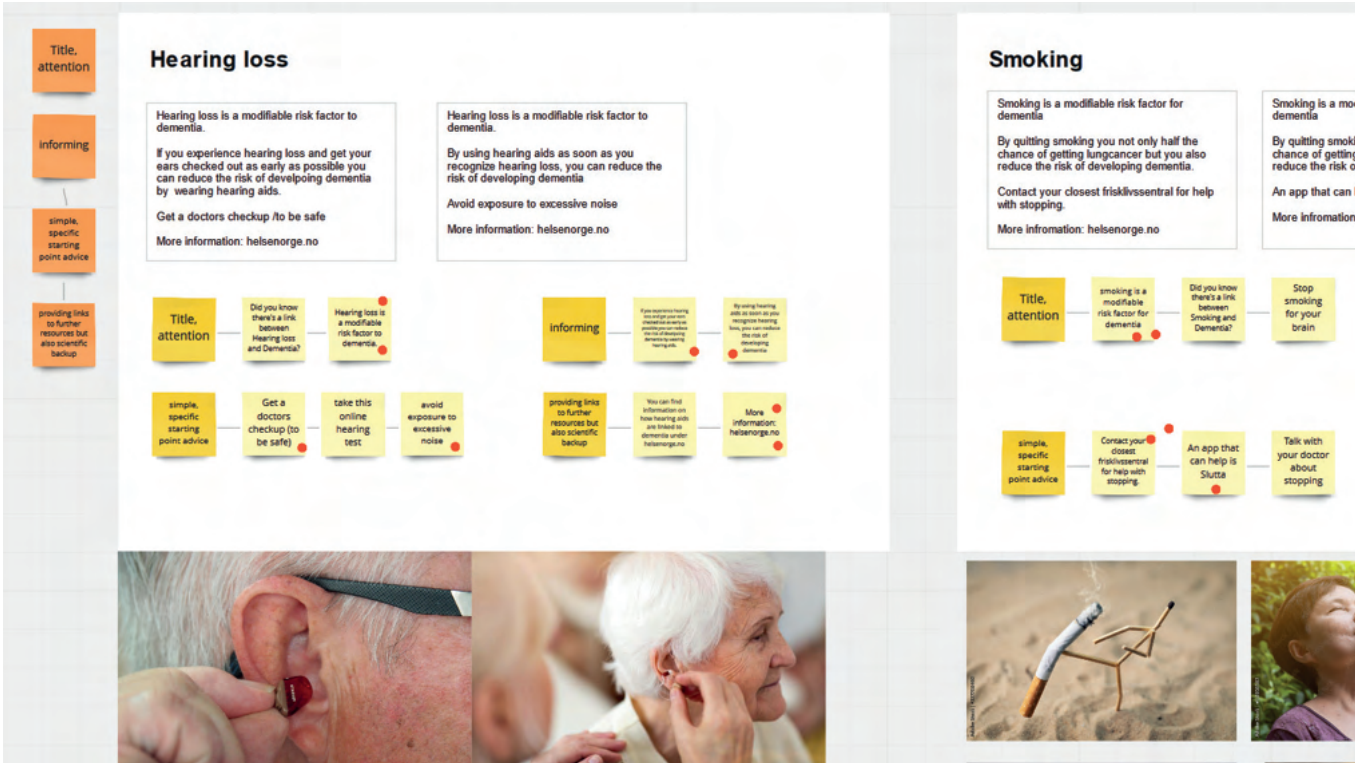
Deliver

Feedback and Iterations

As a next step, we presented our outcome through slides over 'Microsoft teams' to get feedback from a research worker from The Centre for Health Innovation who has expertise since working in different health departments. They liked the idea of having two different sets of posts. They gave us advice to select photographs of elderly people doing different physical activities as they experienced people to be inspired when they saw someone who is older than they are performing sports. Before that we chose photographs that showed the middle age group as they are the target audience which we want to adress or even younger than that.

This led us to search for a wider variety of photographs. We selected the text paragraphs and descriptions which were rated as positive by our interview participants. We structured those as well as the pictures by putting them into the form of our concept steps attention, information, advice, further links. We decided which texts were written in the most effective way by putting dots behind them to vote for those ideas if we felt they were valuable. While agreeing on most of them, there were some texts where one of us liked another version better. Especially regarding the advice we agreed to offer people different possibilities. We had in mind that for some people it was easier to approach help from the outside while there are people who first like to take steps on their own before talking with someone else about it like for example quitting smoking.

Our last step was to choose a readable font and colors that would help us to create consistent posts. We tried out different fonts and colors by using them in our posts. Finally we decided on both and put the posts together with all the requirements in mind.



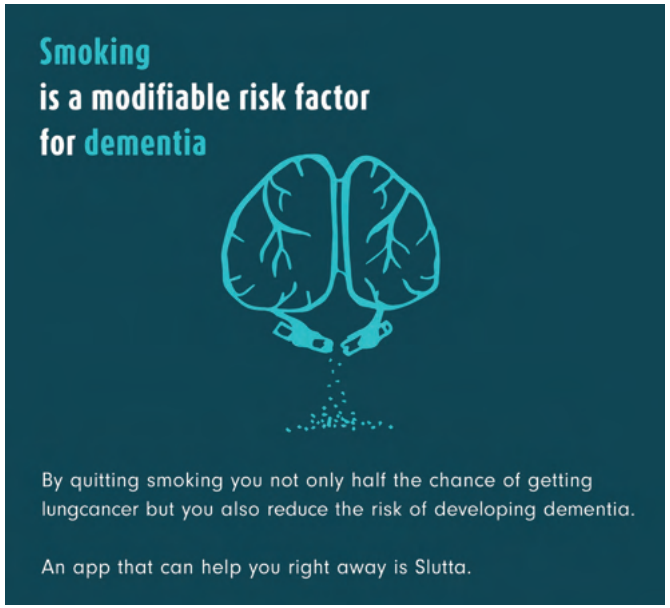
Final Proposal

Testing

To efficiently test our social media post suggestions we tried to recreate an authentic context, meaning an actual facebook feed. We therefore took some screencaps of a facebook feed and placed two posts from our campaign in one feed. One post from the photography set and one from the illustration set. We created three versions of this example feed so all six of our post suggestions were tested. We then tested these example feeds with the target audience.

The testing was done online and over screen sharing. We sent them the three website feeds in the interview, they opened them and could scroll through them one after one. We saw when they stopped by any of the posts and noted that down. After they did not view the feeds anymore, we asked them what they remembered. At the end we also showed them just our posts and asked them what they felt and thought when they saw the different versions.

Our hypotheses were confirmed through this round of testing. The participants noticed and recognized the illustrations quicklier, as they stood more out in the facebook feed. On the other hand, when shown the photography based posts they could better visualize themselves taking action, like taking a walk. The photos were more relatable. For example, one participant envied the perceived contentness of the man in the post about smoking. By using this type of picture with the context of encouraging quitting a smoking addiction, we hope to create an association between this relaxed/refreshed feeling and quitting smoking. This highlights the positive aspects of a healthy behaviour. Another comment we got was that one of the illustrations reminded more of a lung. Considering this we made some adjustments so it would look more clearly like a brain.



Final Proposal

Social Media Information Campaign

Our final proposal consists of advice on the approach of creating a message, a four step structure to a post and message, and two sets of three example posts focusing on three of the modifiable risk factors. The posts and their structure should be flexible enough to be adapted to different social media platforms.

The creation of a template helped to structure and define the requirements for the posts. In this way, there is a clear guidebook for both sets, the illustration one and the photography one.

Using this concept and these guidelines the health promotion campaign can be easily extended to include posts about all the remaining modifiable risk factors.

Structure

1. Title and attention grabbing device

Have a clearly visible title in the post, that connects the modifiable risk factor to dementia. Also use photography or illustration to grab attention.

2. Informative explanation

Include an informative phrase that explains the relationship between the risk factor and dementia, but also highlights positive aspects to taking steps to combat the risk factor.

3. Specific starting point advice

Provide a simple specific advice that can serve as a starting point of taking steps to combat the risk factor.

4. Link/path to further resources

Provide a link in either the description of the post, in the post itself or both, that leads the audience to further resources and information so they can find more help to live a healthier life and reduce their personal risk of developing dementia.

Final Proposal

Attention by headline

title includes the main topic as risk factor that can be avoided and the words „modifiable“ and „dementia“

Information

description focusing on positive approaches

Illustration

illustration portraits the brain doing the wished prevention method (here being physically active) to reduce the risk of dementia. Audience may take the time to understand what is visualized when the stumble upon it

specific advice or tips

small clue or advice that the targed audience can do as a motivating first step to take action

Final Proposal

Attention by headline

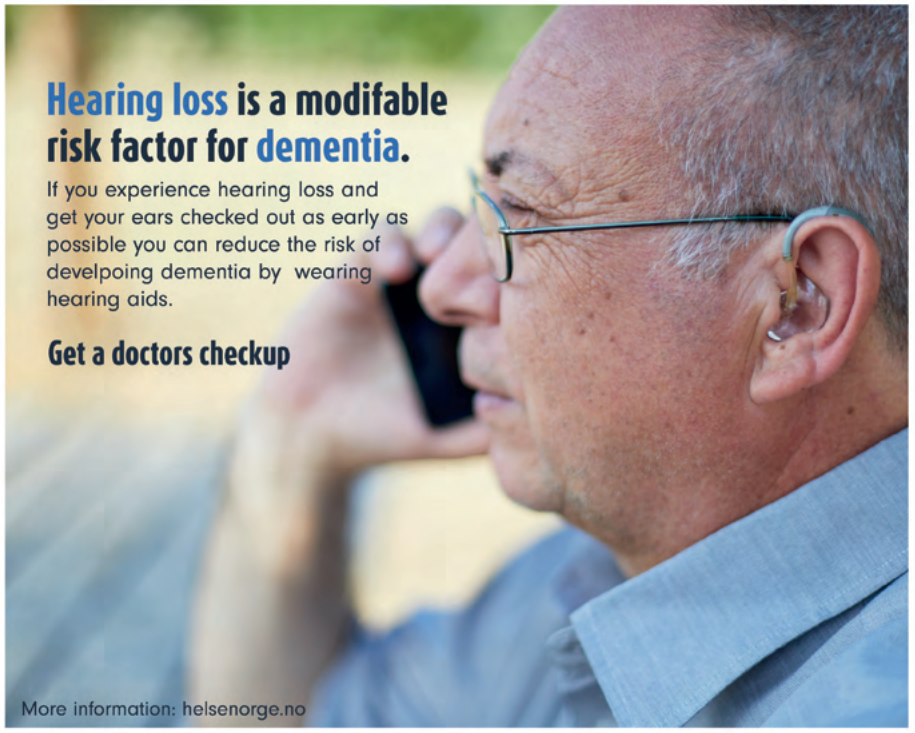
title includes the main topic as risk factor that can be avoided and the words „modifiable" and „dementia"

Information

description focusing on positive approaches

specific advice or tips

small clue or advice that the targed audience can do as a motivating first step to take action



Photography

photography visualizes a person doing the wished prevention method (here wearing hearing aids) to reduce the risk of developing dementia.

URL link

for further websites and resources

Examples

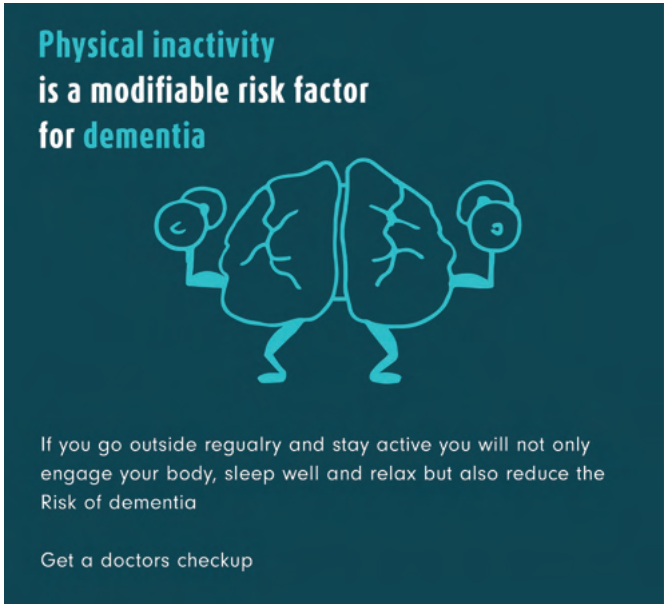
The Illustration set

These are our final post suggestions taking an illustrative approach. They use a simple illustration and three different colours. When picking the colours it should be made sure they pass the WCAG qualifications for colour contrast. Therefore we used an online contrast checker.

Illustration smoking
Illustration of our character Brian the brain breaking a cigarette.

Illustration activity
Illustration of our character Brian the brain lifting some weights and working out.

Illustration hearing aid
Illustration of our character Brian the brain getting ready to wear a hearing aid.



Examples

The photography set

These are our final post suggestions taking a photographic approach. Here we use photographs as backgrounds to help people better relate and visualize themselves taking actions. Creating a better visualization process with the target audience will improve recall of message and change of attitude.

Photo smoking

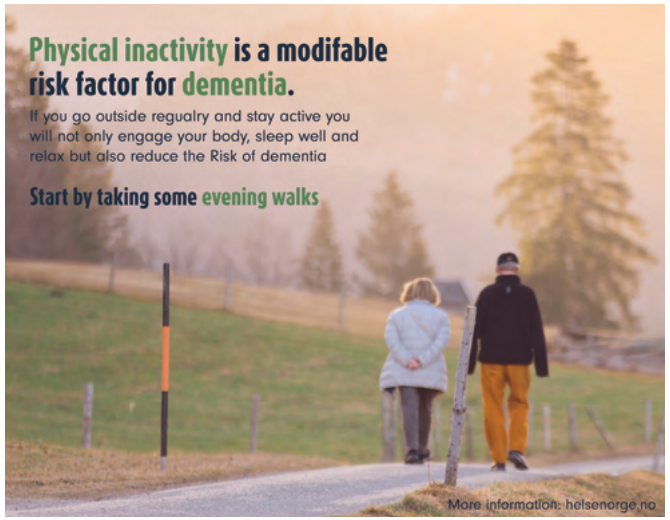
Used a man in a content and refreshed state to visualize the feeling of successfully having quit smoking. The message highlights positive aspects such as halving the chance of getting lung cancer and reducing the risk of dementia. The advice leads the audience to an app that can be used as a tool to help refraining from taking a cigarette by providing a tracker and helpful tips to shift focus and get through moments of craving.

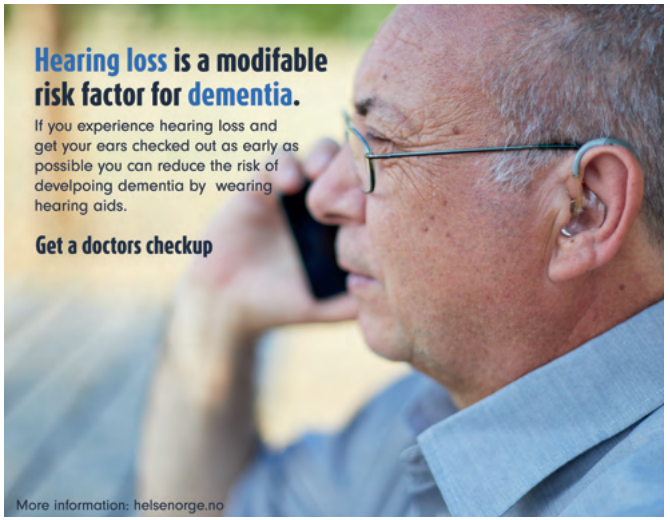
Photo activity

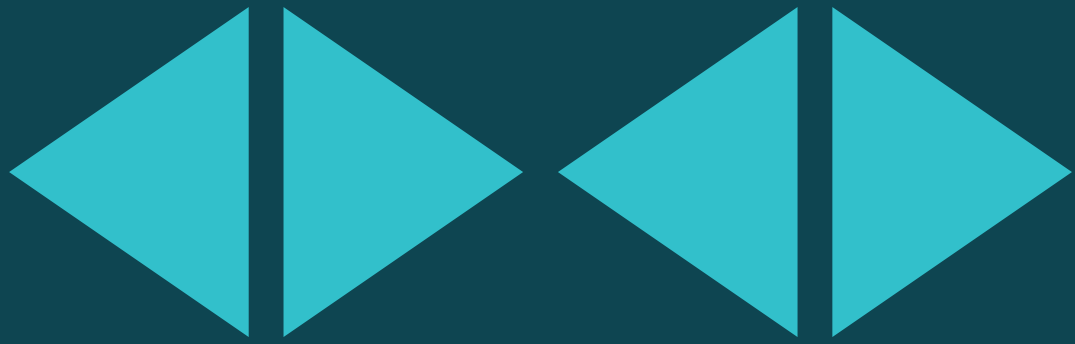
Used a photo of two people taking an afternoon walk. The message highlights positive aspects of living an active lifestyle in addition to reminding that it reduces the risk of developing dementia. The advice is to take an evening walk. This is an easy activity that will be accessible to most people, and a good place to start.

Photo hearing aid

Used a photo of a man wearing a hearing aid and talking on the phone which is an activity that requires hearing. This shows that a hearing aid does not need to be too intrusive appearance-wise. In the informative part we wanted to make the connection between hearing loss and dementia clear as it is not an obvious connection. It also encourages taking action as soon as you experience any symptoms. The advice thus encourages to get a doctor's checkup.







Reflection

Reflection

Online Communication

It was important for us to turn on our camera every time we talked to The Centre for Health Innovation since we never met in person. It helped us to see their reactions and connect with each other. We always spoke openly about ideas and opinions while showing respect to each other. Furthermore we found it helpful to prepare presentation slides for them. This way we updated them right in the beginning on our process and outcome from the last time we met. In the start we did not want to take up too much of their working time, for example when asking for longer workshops, however through our meetings with them they were very welcoming and helpful which helped us change our mindset and made it easier to request meetings and feedback. In general we experienced the meetings and their help as very valuable and essential to come to a service that we are satisfied with in the end.

Group Work

Our group of two worked really well together. What we can take away from our group work is that it is really important and efficient to meet in person when it comes to a project like this. In the first three weeks we were meeting online, after that we met once a week at campus and in the final phase we met every day. It made it easier to exchange and map out ideas and to create designs together. We learned a lot and evolved new skills throughout the process. It was helpful to get to know new methods for co-creation and ideation. In different stages such as the co-creative workshop, finding participants for interviews or testing it would have helped if our group consisted of more than two people.

Iterations

Talking to The Centre for Health Innovation and involving interview participants into the process, led to many iterations overall. It proved to us that it is essential to include experts and users, customers and the target audience into the steps of the service design process and review outcomes, ideas, plans or designs regularly. We wished that we could have included more people from the middle age group in our testing of prototypes to make not only a small sample check but getting a bigger picture of the target audience's interest in the topic of dementia as well as to test and validate our final solution broadly and iterate further.

Reflection

Testing

Throughout our testing rounds we tested our design on the same participants. These participants were also some of the ones we interviewed in our discover phase. If we were to do this project over again we would like to test with a larger group of participants, and include participants who were not previously familiar with the project. Our participants already knew what we are working on in one of our final tests, which was testing if they realize our posts within a facebook page.
Especially with this test also the comparison against the photography set and the illustration set to see which one of these is more visible within the busy facebook feed, was biased since the illustrations have a certain style and will be more distinguishable after either the first time of seeing them or the second time while the photographs look always differs. We questioned how our participants felt after the interviews. We found the CCSDI cards which were provided in the Service Design lecture to evaluate experiences really helpful. We received insight in how to improve the experience of those online testings for the next time. This helped not only for the further ongoing in the process but will also help for our future research work.

Process

In retrospect, we spent some time in uncertainty in the beginning. Since this is the first time that we both work on a real project that is accompanied by working with an external case provider, we had a lot of questions around that. We were learning about new methods and making use of them right away so that we experienced many first times like leading a co-creative workshop or getting in contact with external operators. The rapid testing which we made in connection with the Service Design class before this project started, was really helpful in this way. We personally would like to improve when it comes to contacting external operators and asking them for help as well as approaching a target group which we are not physically surrounded by very often like for this case the middle age group, to gain participants for our interviews. We would also have liked to facilitate more workshops with participants from different stakeholder groups, to make this whole project even more collaborative. The definition phase took as little longer than the other three phases as we did not know where to focus on because we saw many issues and challenges that were worth working on. Related to this we furthermore did not know how specific or narrowed down our problem definition had to be. Talking to both our professor and to The Centre for Health Innovation helped us to repeatedly gain focus again and reflect on the project from the outside again. Having sequences of the process and the methods in mind, we adjusted the process to our favor to validate our outcomes by doing further research in phases where it would not be expected as well as by iterations. For example we had some research in the develop face since it was necessary for us to back up our findings from the interviews to approach the right direction.

Reflection

Further Suggestions

The seriousness and effect of our post would be elevated by logos from official operators which would make it more trustworthy, for example from the helsedirektoratet or nasjonalforeningen for folkehelsen. By approaching those operators we could include them also in the iteration process, getting more insight and opinions from experts. Besides that social media is a fast changing environment with trends and changes in the target audience as well. It is a necessary step to analyse and adjust the posts to those changes. We could have asked a person that has quitted smoking what in their eyes were the most positive aspects of quitting and how they felt throughout the process to address people who are smoking more effectively.

Possible Unwanted Consequences

A possible consequence of our proposal would be a desensibilization of the risk factors. For example people who are smoking are used to seeing or not recognizing the pictures on the cigarette boxes consciously anymore. Some people might think that the illustration of the brain which does different activities is taken to be too light-hearted as dementia is a serious topic. We do not want to offend people by any means, we tried to be as careful, respectful and considerate as possible. That is why we also would check the posts by experts and the target group. In general it is difficult for us to phrase these medical conditions and effects. They might not recognize what is visualized in the illustration, do not understand the context or mistake the brain with a lung when it comes to the picture of smoking.

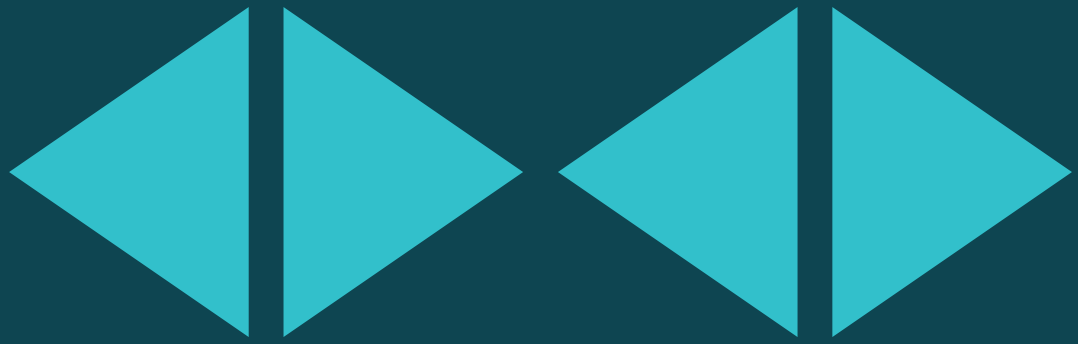
Our Role As Designers

As designers we like to think of our impact in this world. We wish to spread awareness and make information more accessible, relatable and understandable to every individual. Subjects which are sensible and serious since they are related to health need to be carefully conveyed to avoid misunderstandings. It is essential to keep a balance between informing about the seriousness and possible effects which every individual fears by providing enough necessary insight and information while not overwhelming the audience with too much information. To work human-centred is therefore important to us as designers since we have to find out how to approach and address them most effectively while keeping their interests and needs in mind.

Reflection

Health Promotion In A Larger Context

Our final proposal, if implemented, has the potential to reach a large audience throughout the country. It will help spread awareness of the risk factors of dementia and provide a starting point making it easier for people to take action. For every step that becomes easier and lowers the bar to start, more people will be able to better their lifestyle and live longer and happier. This health promotion campaign should however only be one of the steps facing the challenge of reducing dementia amongst the population. A further development that would strengthen the effect of the health promotion campaign would also develop and provide a source that collects all the information relevant to this topic and make it further digestible. By spreading information and educating people, society can challenge and overcome global problems. Today's society is ever changing and evolving. It is rapidly digitalising. In 2003 55% (SSB, n.d.-a) of households in Norway had access to the internett, today that number is 99% (SSB, n.d.-b). Today 90% of people in Norway between 16-79 years old use the internet everyday (Ni av ti surfer på nettet hver dag, 2017). Using social media then is one of the best and most efficient ways to reach a large target audience. Health promotion campaigns can greatly influence people to make better choices for their own personal health, as well lead to people encouraging and looking out for each other. By informing and encouraging people to be more proactive about their own health we can also reduce the number of patients needing the health services. This could stop an overload of the healthcare system before it breaks through its full capacity. All in all a healthier population will also lead to a more productive and happier one.



Conclusion

Conclusion

Final Thoughts

To conclude, we have designed a service that informs the middle age group about dementia and its modifiable risk factors to help motivate personal responsibility and effort. We have done that by developing a social media campaign which focuses on dementia prevention by giving clear information and advice on how to decrease the risk of developing dementia. The proposal which we made in the end is a solution which was developed after receiving the case proposal by our case provider. We wish that people stumble upon these posts on the social media platform facebook and after they read through the posts that they will read further information about dementia prevention and finally spread awareness by talking to other people about the modifiability of those risk factors.

Dementia is a serious disease which will lead to various problems in the future. There has to be more information about it that is accessible and understandable for the population. To understand the reasons, relations and influences on this topic, we have reviewed medical research and gathered information by interviewing the target audience. This topic includes sensitive information and we kept our ethical responsibilities in mind.

We have incorporated a lot of methods in our service design process and got to know new approaches. This helped us to evolve new skills and new knowledge that we can reflect on. We can make use of those methods and skills from now on and integrate them more appropriately into our design process and future work. There are things that we would have done differently, especially involving more participants into the design process to validate our designs and iterations.

Collaborating with people from various backgrounds and to involve them in this human-centred process, was a enjoyable experience for us. It was a nice experience for us to have a real subject which covers a serious medical disease and to analyse the real needs of our target audience.

References

Crano, W. D., Burgoon, M., & Oskamp, S. (2001). Mass Media and Drug Prevention: Classic and Contemporary Theories and Research (Claremont Symposium on Applied Social Psychology Series) (1st ed.). Psychology Press.

Demenskartet | Aldring og helse. (2020). Aldring og Helse. Retrieved November 19, 2021, from https://demenskartet.no/?doing_wp_cron=1637317028.4083280563354492187500

Elmansy, R. (2021, September 2). The Double Diamond Design Thinking Process and How to Use it. Designorate. Retrieved November 19, 2021, from https://www.designorate.com/the-double-diamond-design-thinking-process-and-how-to-use-it/

F. (n.d.-a). 06215: Andel som har tilgang til diverse IKT, etter familietype og husholdningsinntekt (prosent) (avslutta serie) 2003 - 2014. Statistikkbanken. SSB. Retrieved November 19, 2021, from https://www.ssb.no/statbank/table/06215/

F. (n.d.-b). Bruk av IKT i husholdningene. SSB. Retrieved November 19, 2021, from https://www.ssb.no/teknologi-og-innovasjon/informasjons-og-kommunikasjonsteknologi-ikt/statistikk/bruk-av-ikt-i-husholdningene

I., & Suri, J. F. (2021). The Little Book of Design Research Ethics (1st ed.). IDEO.

Livingston, G., Huntley, J., Sommerlad, A., Ames, D., Ballard, C., Banerjee, S., Brayne, C., Burns, A., Cohen-Mansfield, J., Cooper, C., Costafreda, S. G., Dias, A., Fox, N., Gitlin, L. N., Howard, R., Kales, H. C., Kivimäki, M., Larson, E. B., Ogunniyi, A., . . . Mukadam, N. (2020). Dementia prevention, intervention, and care: 2020 report of the Lancet Commission. The Lancet, 396(10248), 413–446. https://doi.org/10.1016/s0140-6736(20)30367-6

Maibach, E. W., & Parrott, R. L. (1995). Designing Health Messages: Approaches from Communication Theory and Public Health Practice (1st ed.). SAGE Publications, Inc.

Ni av ti surfer på nettet hver dag. (2017, September 12). ssb.no. Retrieved November 19, 2021, from https://www.ssb.no/teknologi-og-innovasjon/artikler-og-publikasjoner/ni-av-ti-surfer-pa-nettet-hver-dag

Omsorgsdepartementet, H. O. (2020). Regjeringen legger frem Demensplan 2025. Regjeringen.no. Retrieved November 19, 2021, from https://www.regjeringen.no/no/dokumentarkiv/regjeringen-solberg/aktuelt-regjeringen-solberg/hod/nyheter/2020ny/regjeringen-legger-frem-demensplan-2025/id2788494/

Roykesluttgevinster. (n.d.). Røykesluttgevinster. Retrieved November 19, 2021, from http://www.roykesluttgevinster.no/#del_2

Soames Job, R. F. (1988). Effective and ineffective use of fear in health promotion campaigns. American Journal of Public Health, 78(2), 163–167. https://doi.org/10.2105/ajph.78.2.163

Stapelkamp, T. (2020, September 19). Der Service Design Prozess 4+1. Torsten Stapelkamp- Experte in Online-Business,. Retrieved November 19, 2021, from https://www.torstenstapelkamp.de/der-service-design-prozess/

Stickdorn, M., Hormess, M. E., Lawrence, A., & Schneider, J. (2018). This Is Service Design Doing: Applying Service Design Thinking in the Real World (1st ed.). O'Reilly Media.

Swaffer, K. (2016, September 18). What is dementia? Part 2. KateSwaffer. Retrieved November 19, 2021, from https://kateswaffer.com/2016/09/19/what-is-dementia-part-2/

References

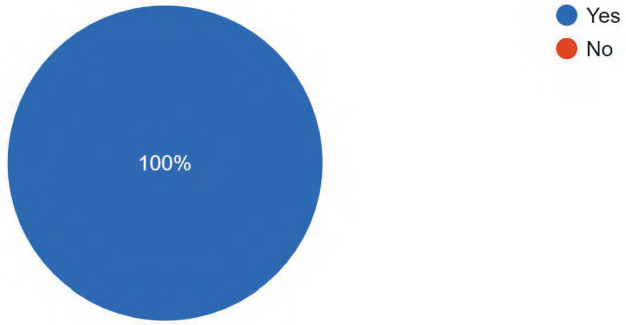
Welfare technology and research | Centre for Health Innovation. (n.d.). Helseinnovasjonssenteret. Retrieved November 19, 2021, from https://www.helseinnovasjonssenteret.no/en

What is dementia? (n.d.). Alzheimer's Society. Retrieved November 19, 2021, from https://www.alzheimers.org.uk/about-dementia/types-dementia/what-dementia

Attachment 1: Quantitative Interview Results

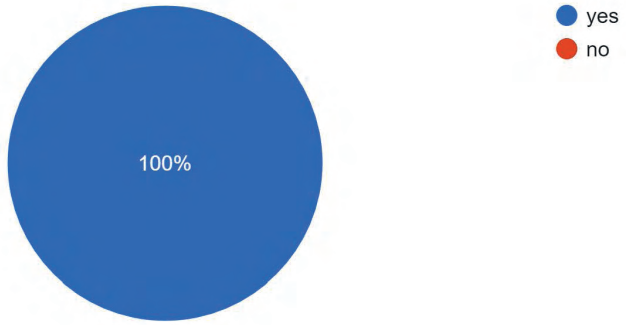
Do you have someone in your surrounding who has dementia?

5 svar



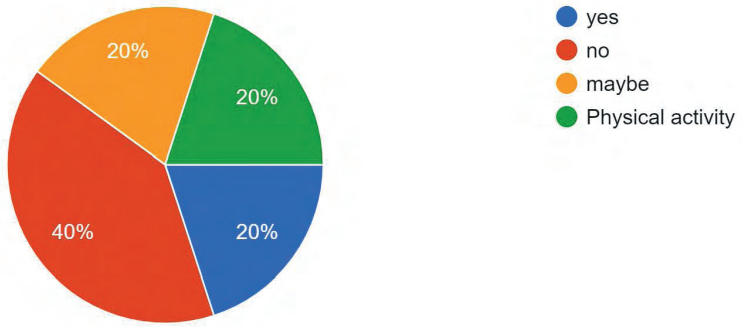
Did you know that dementia is hereditary?

3 svar



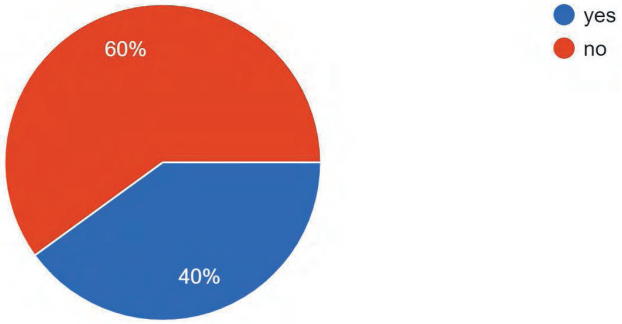
Do you know which factors can increase risc of having dementia?

5 svar



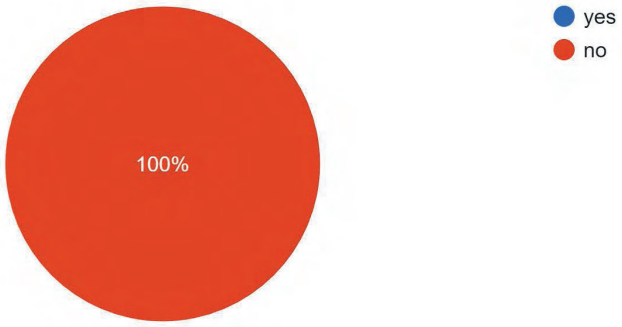
less education

5 svar



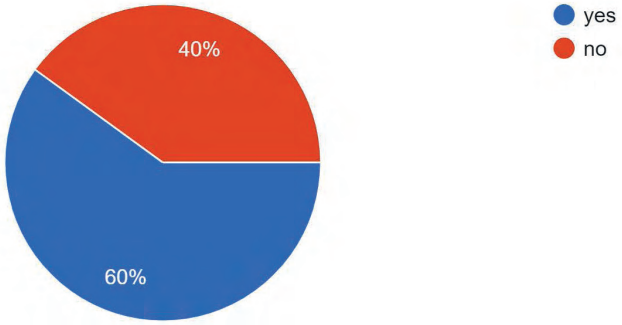
hearing loss

5 svar



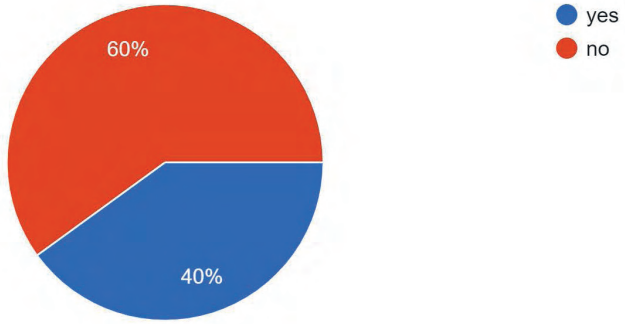
traumatic brain injury

5 svar



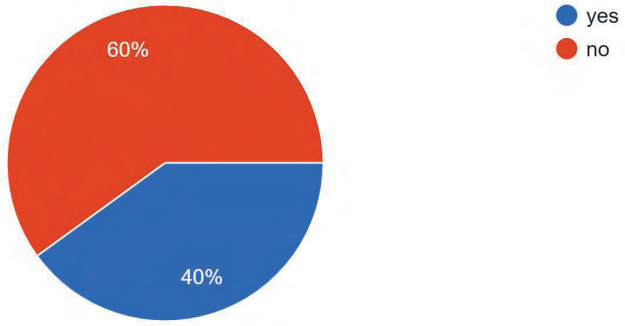
hypretention

5 svar



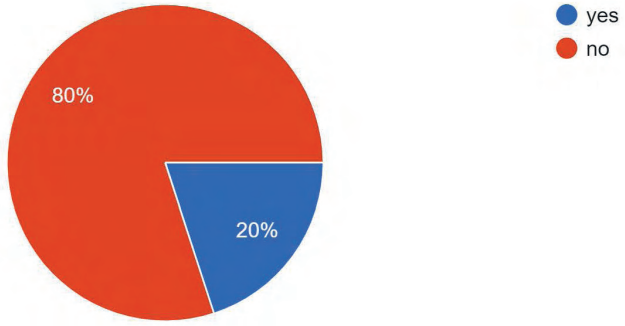
excecive alcohol use

5 svar



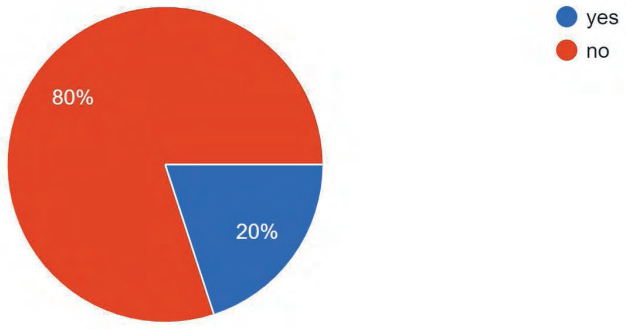
obesity

5 svar



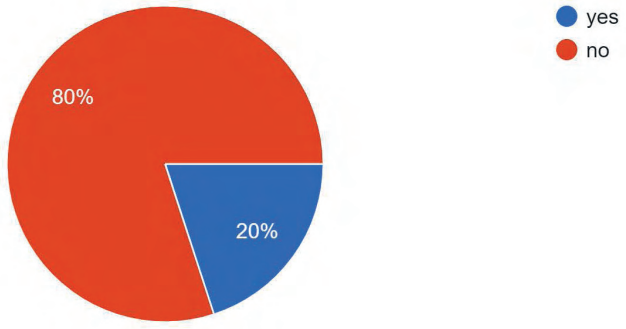
smoking

5 svar



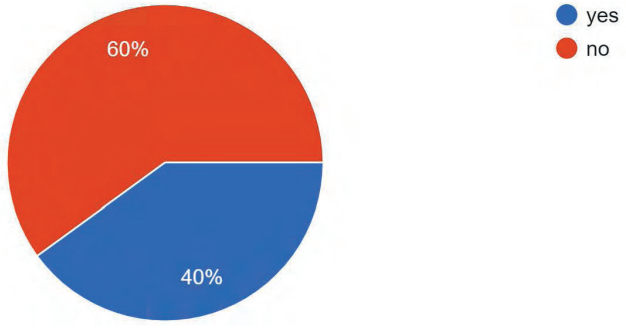
depression

5 svar



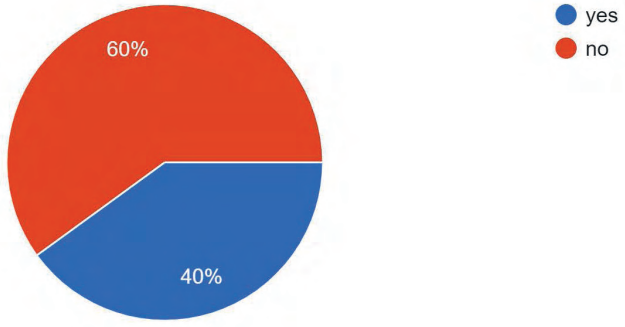
social isolation

5 svar



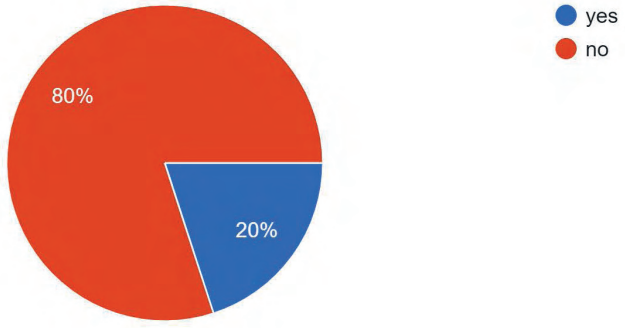
physical inactivity

5 svar



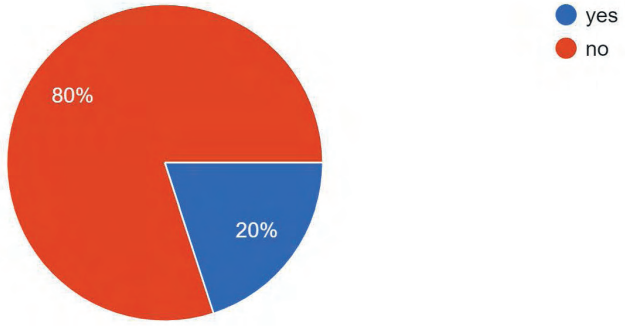
air pollution

5 svar

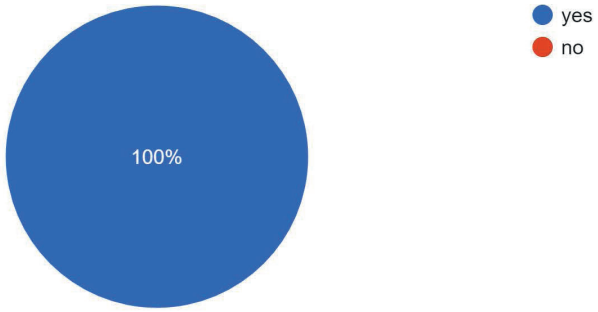


diabetes

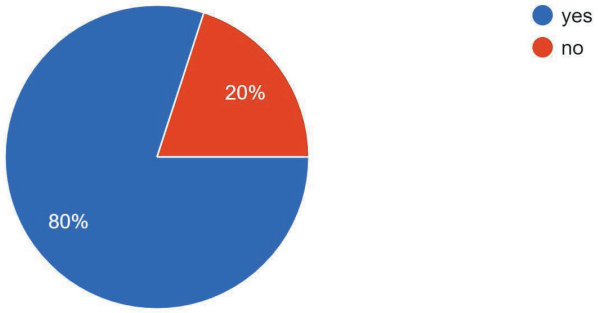
5 svar



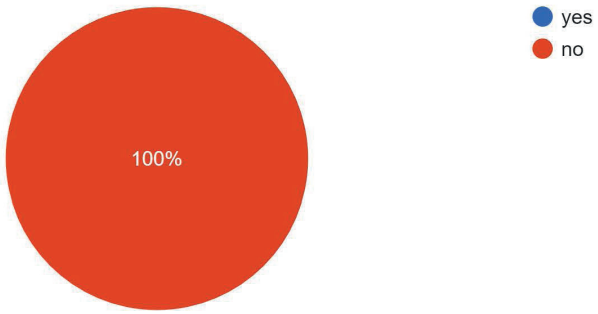
If you knew about those, would you do so to prevent dementia? (stop smoking, wear hearing aids?
5 svar



did you think about having dementia by now?
5 svar

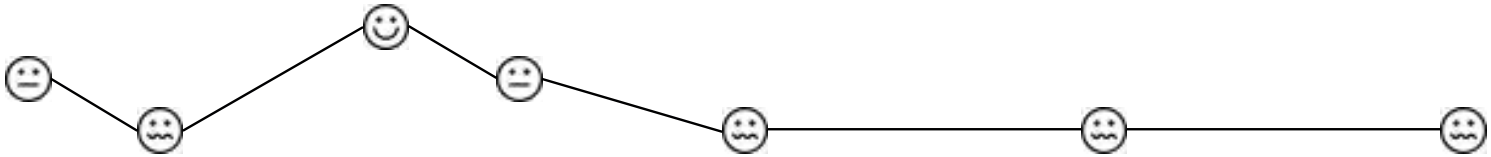


do you go on regular check-ups regarding dementia?
5 svar

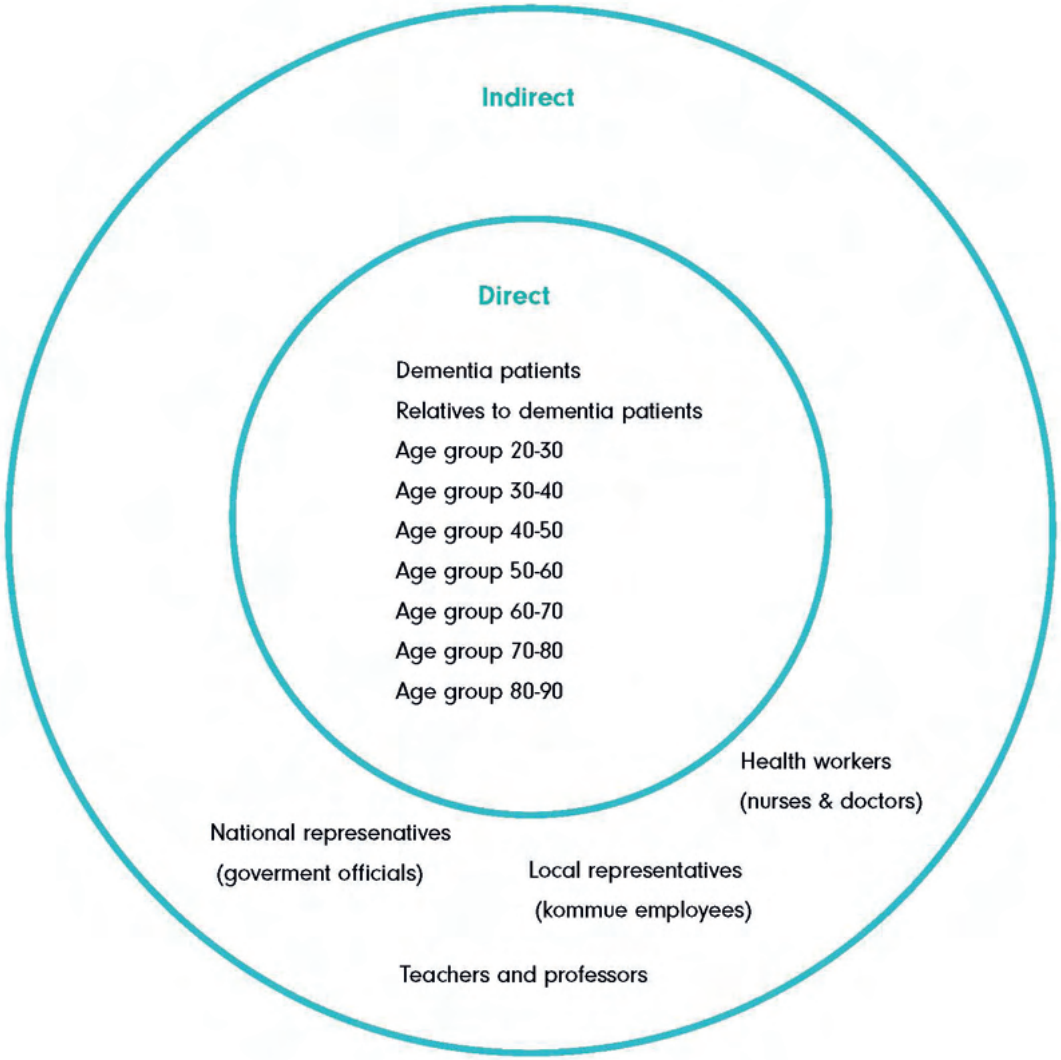


Attachment 2: Journey map

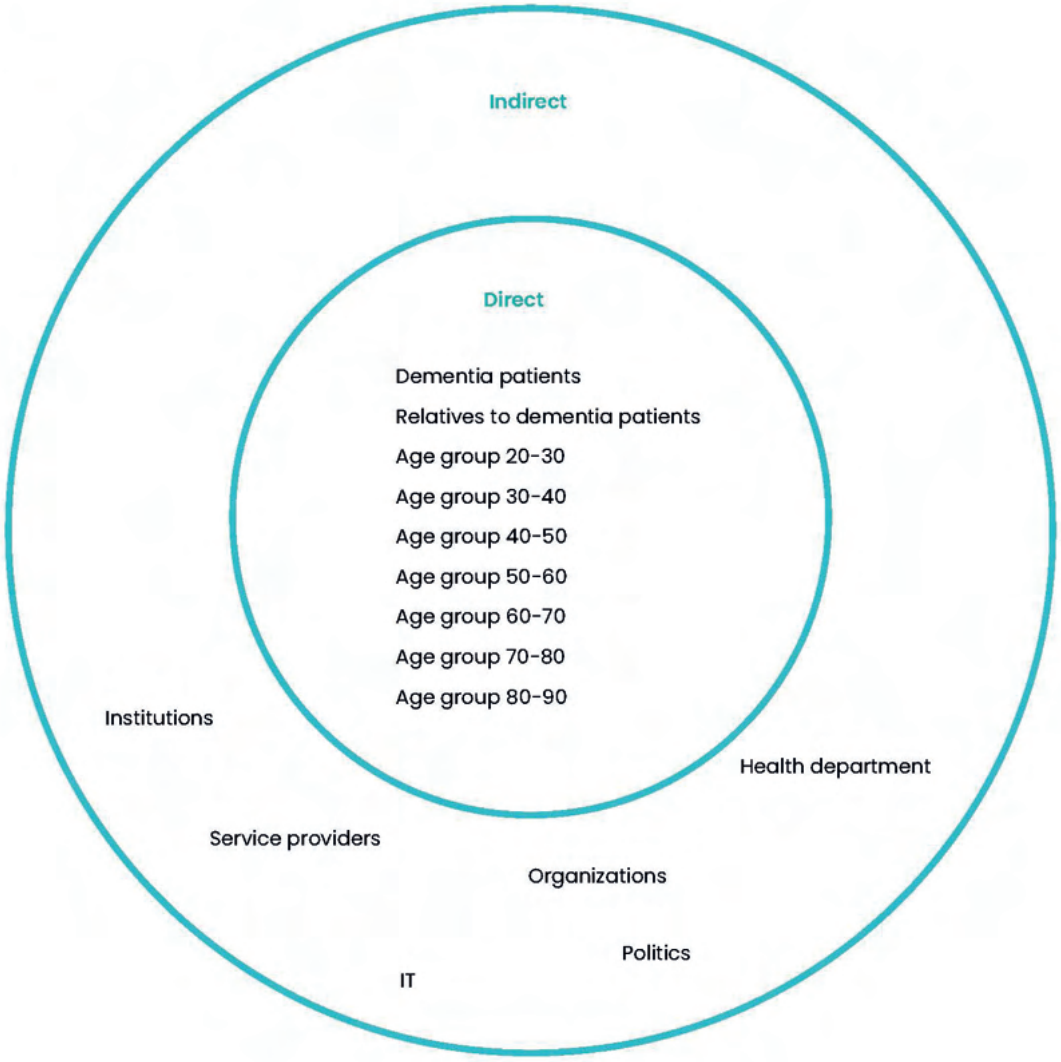
Stage	First hearing about dementia and personal responsibility	Looking up further information	Finding tailored advice	Finding available programs and services	Being informed and ready to take steps
Action	Hears about thorugh family/ friends, sees a article, sees a news feature on TV	Searches the internet, ask family and friends	Asking general practitioner	Looks up kommune website, ask kommune employee	Making plan with which steps to take
Emotions	Uncertainty, fear, interest	tiny relief and then uncertainty	helplessness, uncertainty	Overwhelmed, frustrated	Uncertainty, fear, frustration
Touchpoint	Friends, family, collegues, laptop, TV	Laptop, family, friends	Laptop/tablet, general practitioner	Laptop/tablet, general practitioner, kommune representive	Family, GP, laptop, community
Thoughts	I didn't know about the risk-factors before, I think about own chances of developing dementia	I found it difficult to find any elaborate information, but I found some genreal	Is it okay to ask a GP about this, or am I wasting his/hers time	Are there any programs, Where should I start	I don't really know where to start, I feel like everything is disorganized
Problems	Many open questions, doesn't really think about dementia at all and therefore never moves further, rarely sees it mentioned	Not able to find much relevant information	Different knowledge and education on dementia, prevention and experiences with it, don't know who to contact,	Hard to navigate kommune websites, and couldn't find many relevant programs	Hasn't really found much information or steps to take



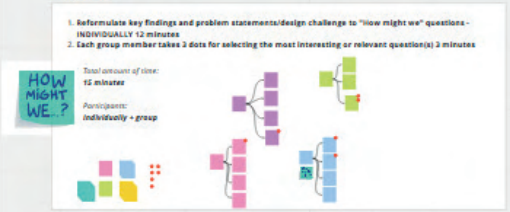
Stakeholder map general interest in dementia



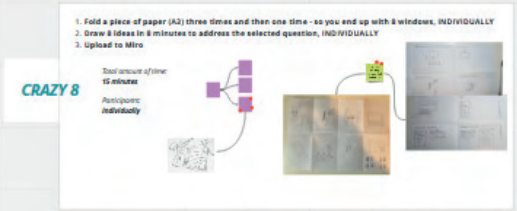
Stakeholder map for health website about dementia



Slides from co-creation workshop

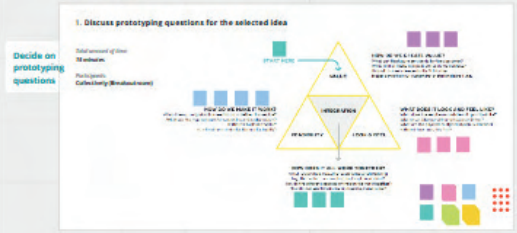


Frame 99

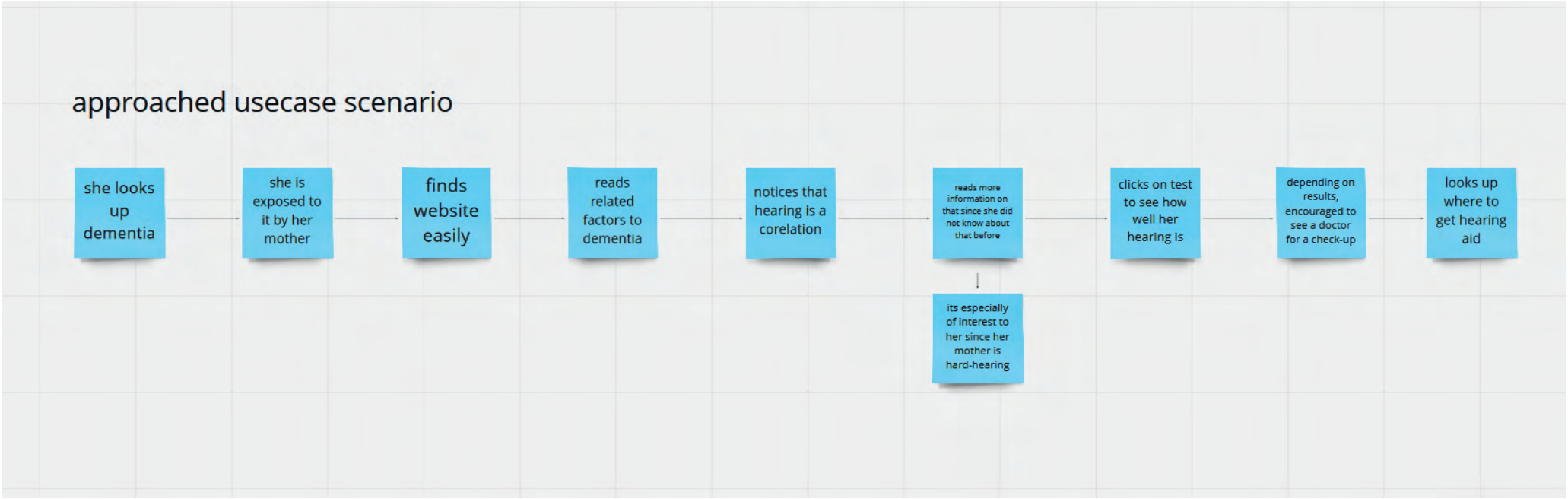


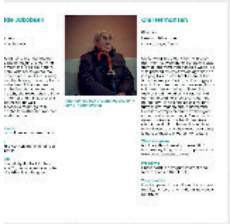
Frame 101

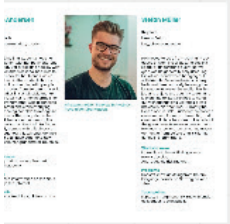
Frame 102

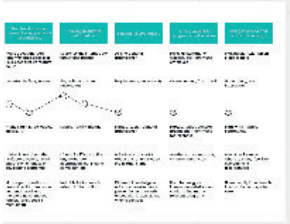


Mind-map for website (first idea)


approached usecase scenario
she looks up dementia
she is exposed to it by her mother
finds website easily
reads related factors to dementia
notices that hearing is a corelation
reads more information on that since she did not know about that before
its especially of interest to her since her mother is hard-hearing
clicks on test to see how well her hearing is
depending on results, encouraged to see a doctor for a check-up
looks up where to get hearing aid





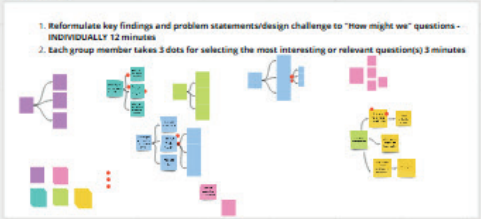


HOW MIGHT WE...?

Total amount of time:
15 minutes

Participants:
Individually + group

Frame 19



Frame 20

CRAZY 8

Total amount of time:
15 minutes

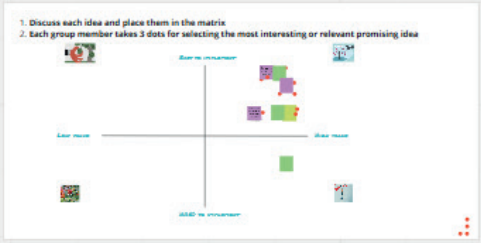
Participants:
Individually

Frame 22

Priority matrix

Total amount of time:
15 minutes

Participants:
Collectively

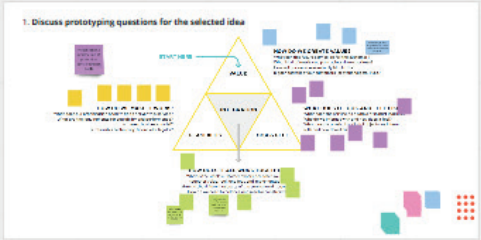


Frame 23

Decide on prototyping questions

Total amount of time:
15 minutes

Participants:
Collectively

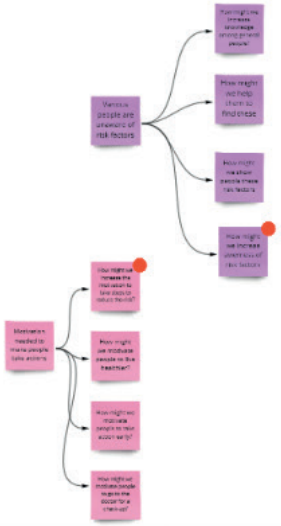


Frame 73

1. **Reformulate key findings and problem statements/design challenge to "How might we" questions - INDIVIDUALLY 12 minutes**
2. **Each group member takes 3 dots for selecting the most interesting or relevant question(s) 3 minutes**

Total amount of time:
15 minutes

Participants:
Individually + group



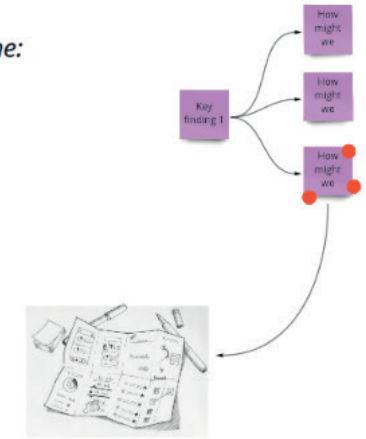
Frame 74

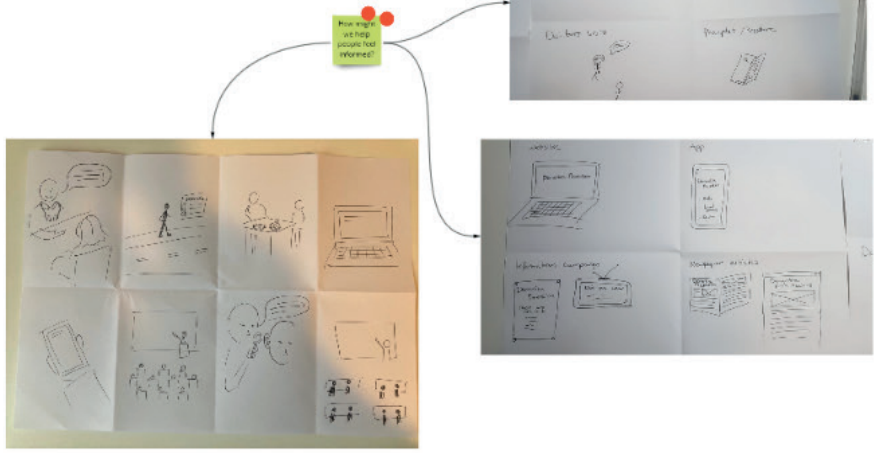
CRAZY 8

1. **Fold a piece of paper (A3) three times and then one time - so you end up with 8 windows, INDIVIDUALLY**
2. **Draw 8 ideas in 8 minutes to address the selected question, INDIVIDUALLY**
3. **Upload to Miro**

Total amount of time:
15 minutes

Participants:
Individually





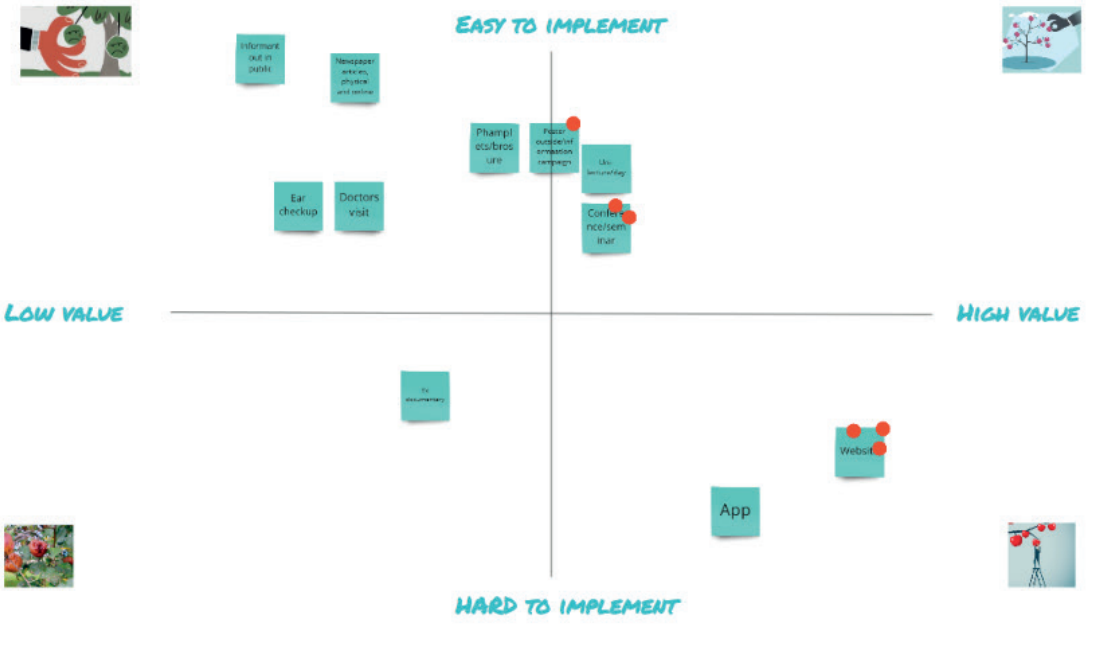
Priority matrix

Frame 76

1. **Discuss each idea and place them in the matrix**
2. **Each group member takes 3 dots for selecting the most interesting or relevant promising idea**

Total amount of time:
15 minutes

Participants:
Collectively (Breakoutroom)



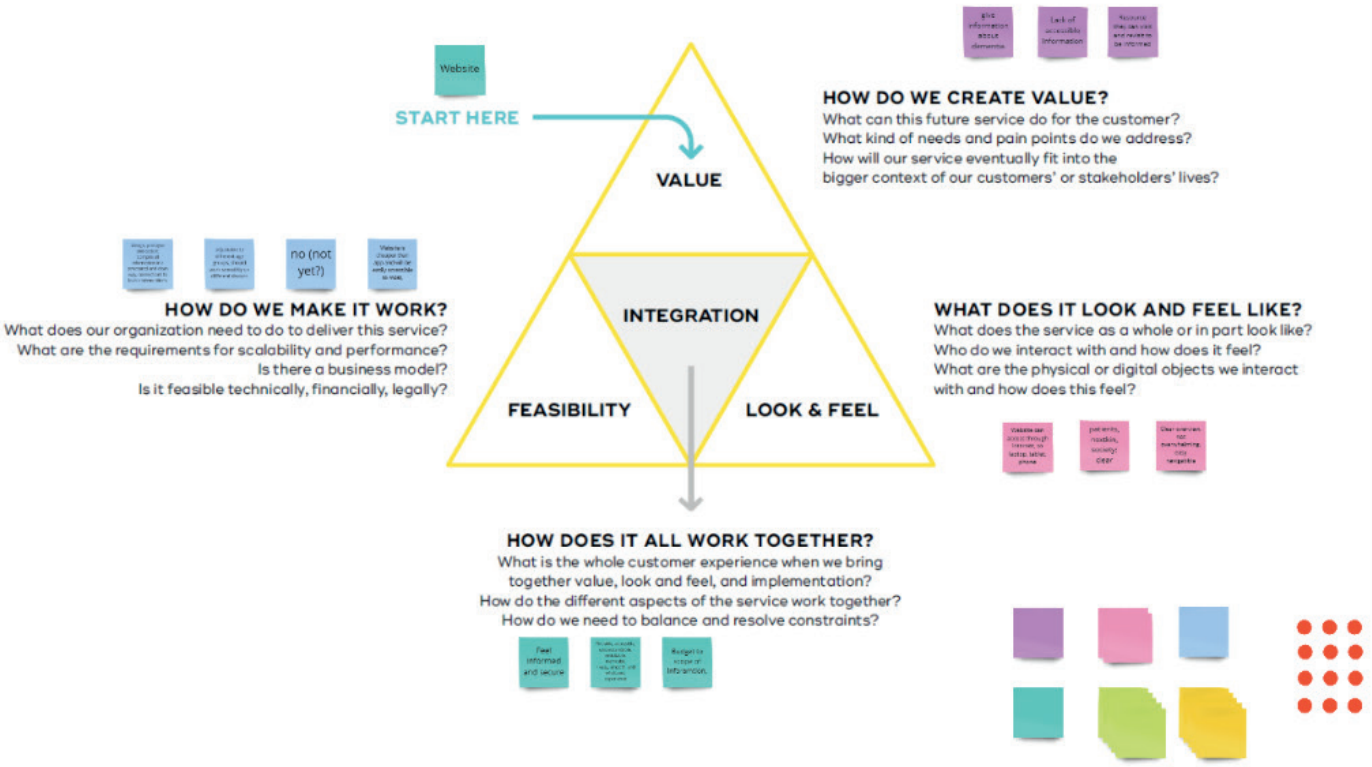
Decide on prototyping questions

Frame 77

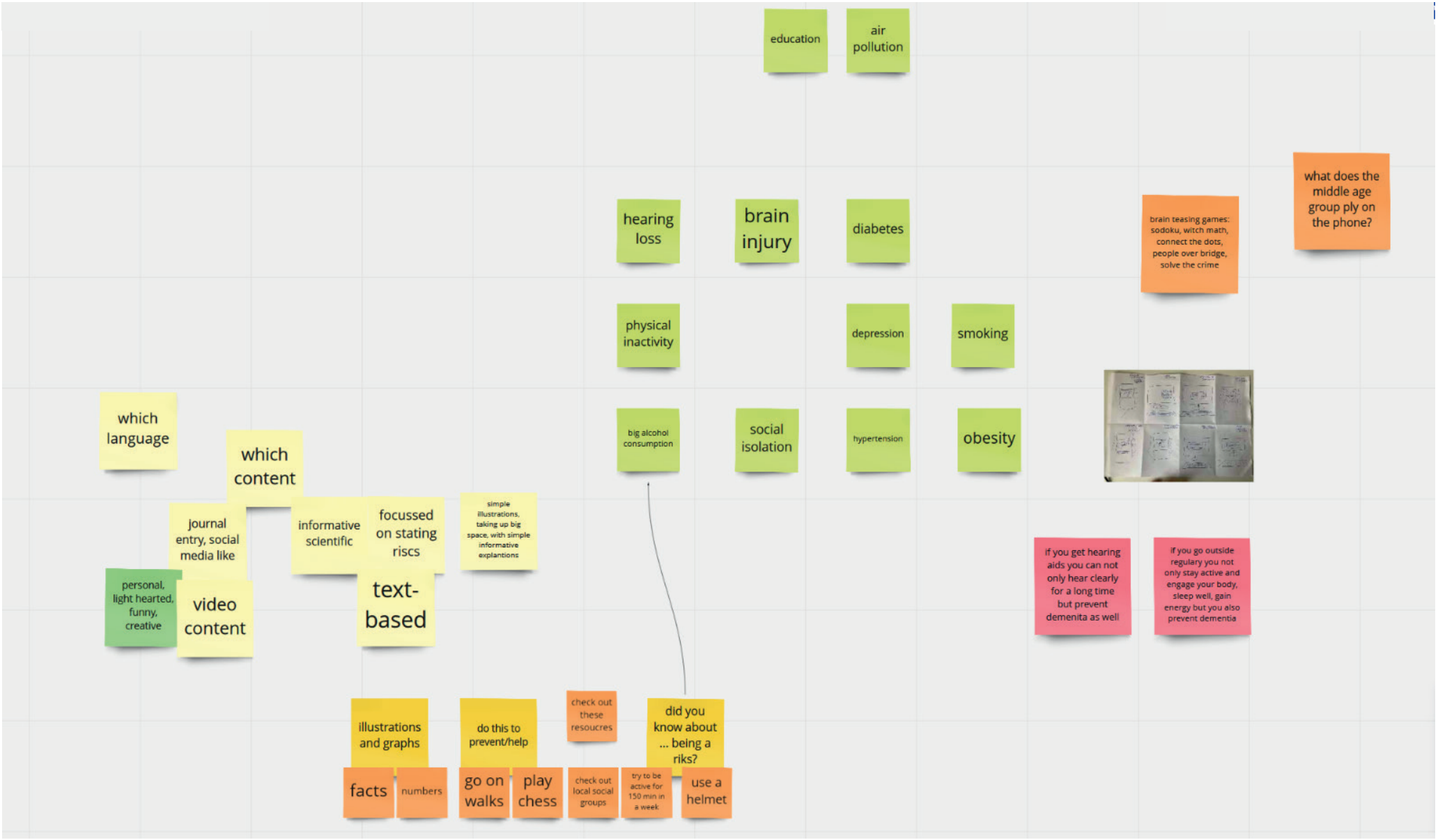
1. Discuss prototyping questions for the selected idea

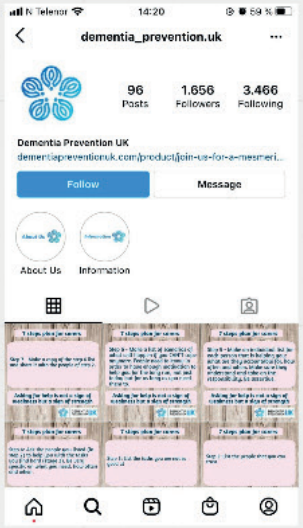
Total amount of time:
15 minutes

Participants:
Collectively (Breakoutroom)



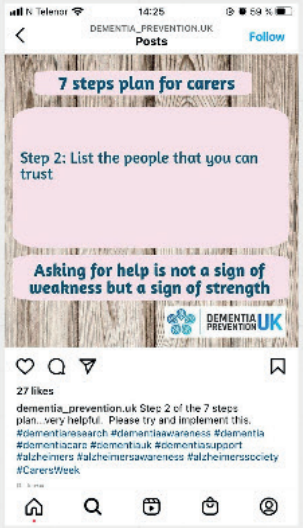
mind-map social media campaign

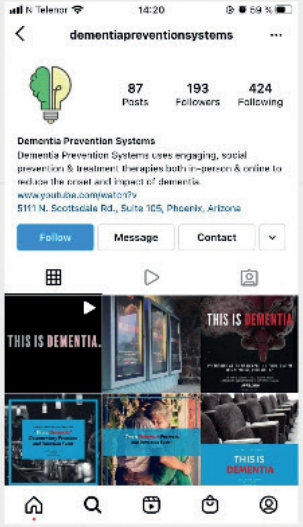


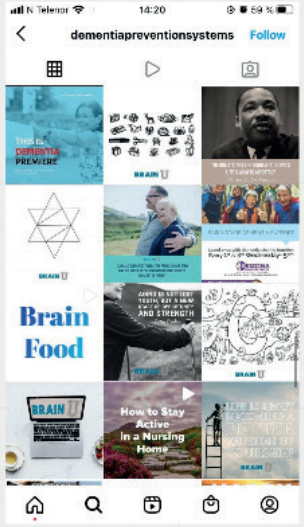

dementia_prevention.uk
96 Posts
1.656 Followers
3.466 Following
Dementia Prevention UK
Follow
Message
About Us
Information


dementia_prevention.uk
Follow


dementia_prevention.uk
Follow


DEMENTIA_PREVENTION.UK
Posts
Follow
7 steps plan for carers
Step 2: List the people that you can trust
Asking for help is not a sign of weakness but a sign of strength
DEMENTIA PREVENTION UK
27 likes
dementia_prevention.uk Step 2 of the 7 steps plan...very helpful. Please try and implement this.
#dementiaresearch #dementiaawareness #dementia #dementiacare #dementiauk #dementiasupport #alzheimers #alzheimersawareness #alzheimerssociety #CarersWeek


dementiapreventionsystems
87 Posts
193 Followers
424 Following
Dementia Prevention Systems
Dementia Prevention Systems uses engaging, social prevention & treatment therapies both in-person & online to reduce the onset and impact of dementia.
www.youtube.com/watch?v
5111 N. Scottsdale Rd., Suite 105, Phoenix, Arizona
Follow
Message
Contact
THIS IS DEMENTIA.
THIS IS DEMENTIA
THIS IS DEMENTIA


dementiapreventionsystems
Follow
Brain Food
How to Stay Active In a Nursing Home


DEMENTIAPREVENTIONSYSTEMS
Posts
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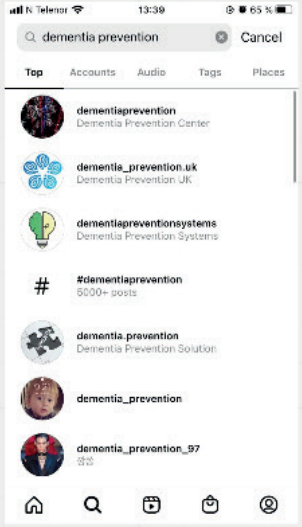
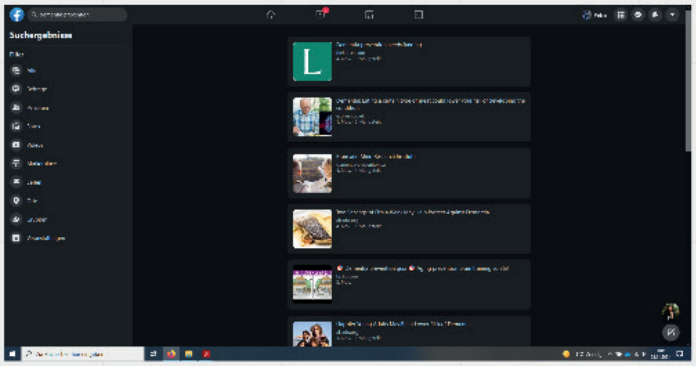
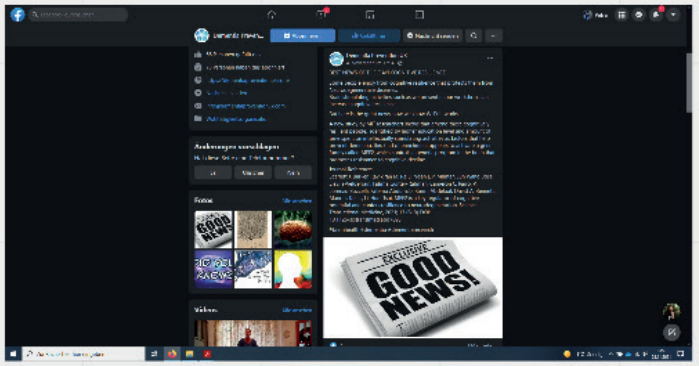
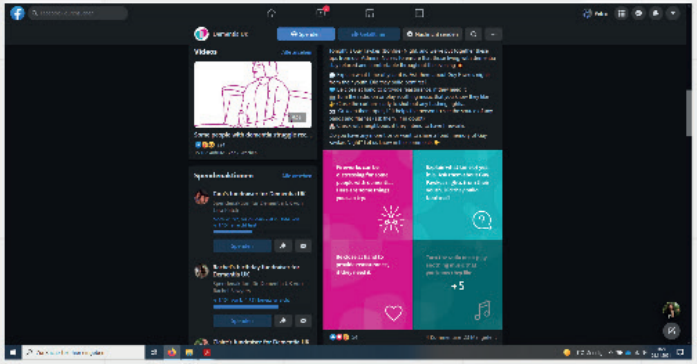
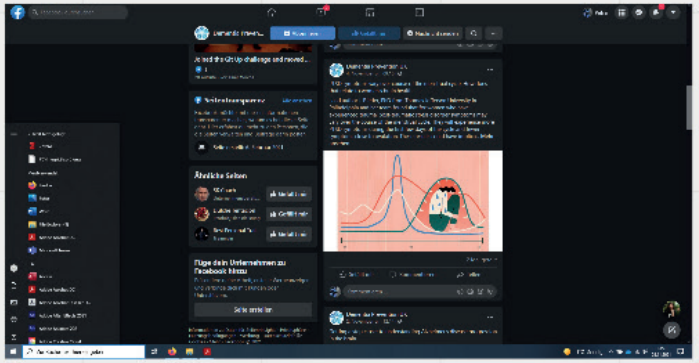
BRAIN U
CLINICALLY SUPPORTED TO DELAY THE PROGRESSION OF EARLY ONSET DEMENTIA BY 2.25 YEARS AND MITIGATE COGNITIVE IMPACT BY 45 PERCENT
20 likes
dementiapreventionsystems Brain U is the world's first dementia intervention program online. Clinically supported to delay the progression of early onset dementia by 2.25 years and mitigate cognitive impact by up to 45 percent. Best part is you can start for free
#dementia #alzheimers #alzheimersfight #alzheimerawareness #alzheimersawarenessmonth

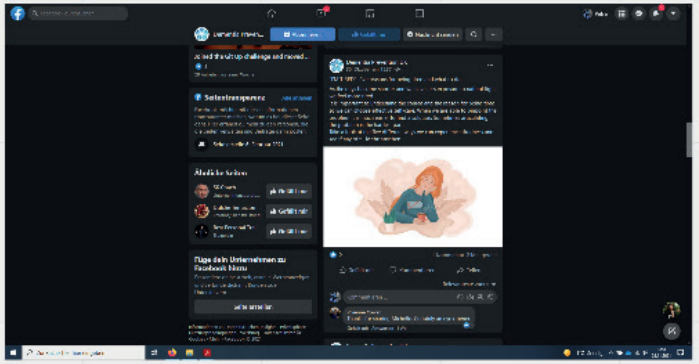

dementia prevention
Cancel
Top
Accounts
Audio
Tags
Places
dementiaprevention
Dementia Prevention Center
dementia_prevention.uk
Dementia Prevention UK
dementiapreventionsystems
Dementia Prevention Systems
#dementiaprevention
5000+ posts
dementia_prevention
Dementia Prevention Solution
dementia_prevention
dementia_prevention_97

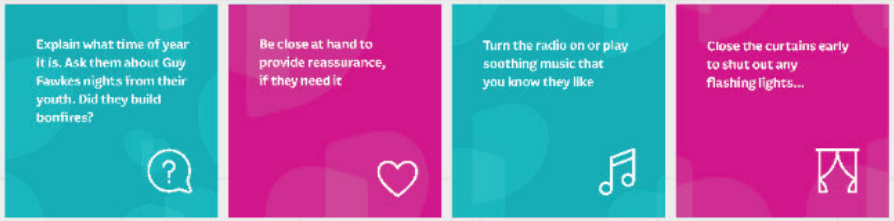



GOOD NEWS!








Explain what time of year it is. Ask them about Guy Fawkes nights from their youth. Did they build bonfires?
Be close at hand to provide reassurance, if they need it
Turn the radio on or play soothing music that you know they like
Close the curtains early to shut out any flashing lights...

Hearing loss

Did you know HEARING LOSS is a related risk factor to dementia?

Get your ears checked out.

Use a hearing aid if you need one.

By using hearing aid early when experiencing hearing problems, you reduce the risk of developing dementia.

Get your ears checked out

Experiencing hearing loss can increase the risk of developing dementia.

Wear your hearing aid!

PREVENT DEMENTIA wear hearing aids

If you get hearing aids you can no only hear clearly but also prevent dementia by taking right actions for your hearing loss.

Tips:

- get a hearing check up
- maybe link to online test
- use hearing aids
- avoid excessive noise exposure








Smoking

by quitting a smoking addiction you also reduce the risc of developing dementia

Here are some resources to combat a smoking addiction...

Smokers have a higher risk of getting dementia

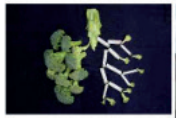
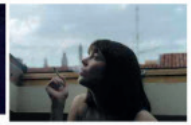
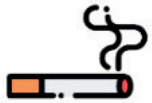
By quitting smoking you not only half the chance of getting lungcancer but you also reduce the risk of developing dementia.

Tips:

- stop smoking app.
- link to health sites
- contakt frisklivssentral
- talk with your doctor about stopping
-





Physical inactivity

Did you know physical inactivity is a risk factor for dementia?

By being physicaly active you reduce the risk of developing dementia

take some evening walks

Take walks

If you go outside regualry and stay active you will not only engage your body, sleep well and relax but also prevent dementia

Take an evening walk to reduce the risk of getting dementia
for more information see ...

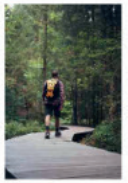
supply every hour of sitting still with at least 5 min of walking or standing

the national recommendations for adults is to be active for 150 min each week.

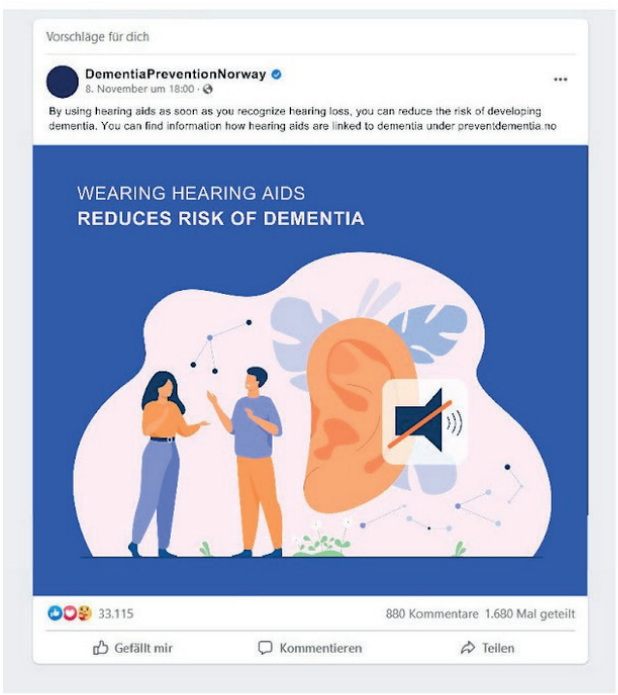
By living an inactive physical live, you will increase the risk of developing dementia











Vorschläge für dich
DementiaPreventionNorway
8. November um 18:00 ·
By using hearing aids as soon as you recognize hearing loss, you can reduce the risk of developing dementia. You can find information how hearing aids are linked to dementia under preventdementia.no
WEARING HEARING AIDS
REDUCES RISK OF DEMENTIA
33.115
880 Kommentare 1.680 Mal geteilt
Gefällt mir
Kommentieren
Teilen


Vorschläge für dich
DementiaPreventionNorway
8. November um 18:00 ·
By quitting smoking you can decrease the risk of developing dementia. Find helpful tips and applications that can help you to combat smoking under helpagainstsmoking.no
smoking is a modifiable risk factor for dementia
33.115
880 Kommentare 1.680 Mal geteilt
Gefällt mir
Kommentieren
Teilen


Vorschläge für dich
DementiaPreventionNorway
8. November um 18:00 ·
Supply every hour of sitting still with at least 5 min of walking to decrease the risk of developing dementia. You can find different activities, facts and numbers under activepreventdementia.no
PHYSICAL ACTIVITY
REDUCES RISK OF DEMENTIA
33.115
880 Kommentare 1.680 Mal geteilt
Gefällt mir
Kommentieren
Teilen


Vorschläge für dich
DementiaPreventionNorway
8. November um 18:00 ·
Decreasing the risk of developing dementia with a couple of daily activities. Find useful tips for staying active troughout the week under this link preventionmethods.no
If you go outside regualry and stay active you will not only engage your body, sleep well and relax but also
REDUCE THE RISK OF DEMENTIA
33.115
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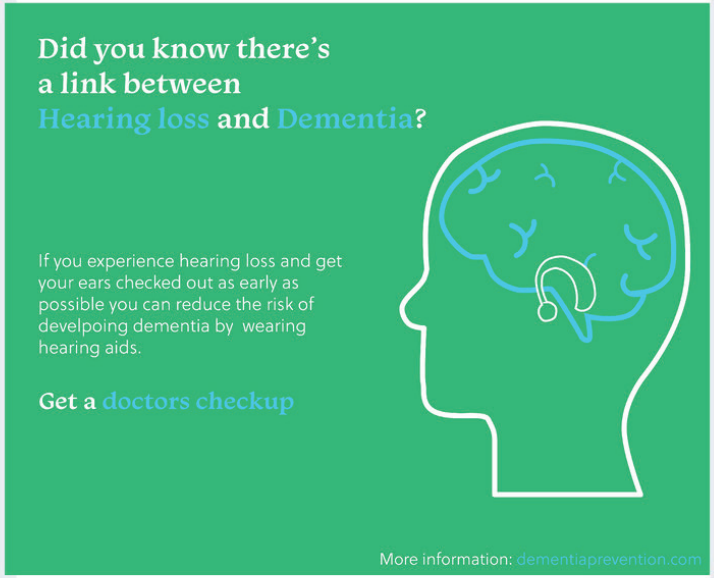
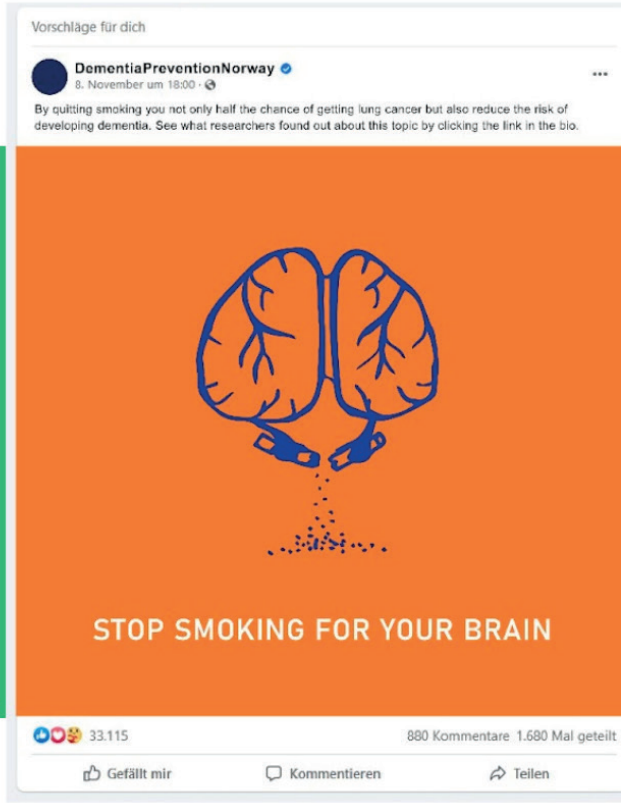
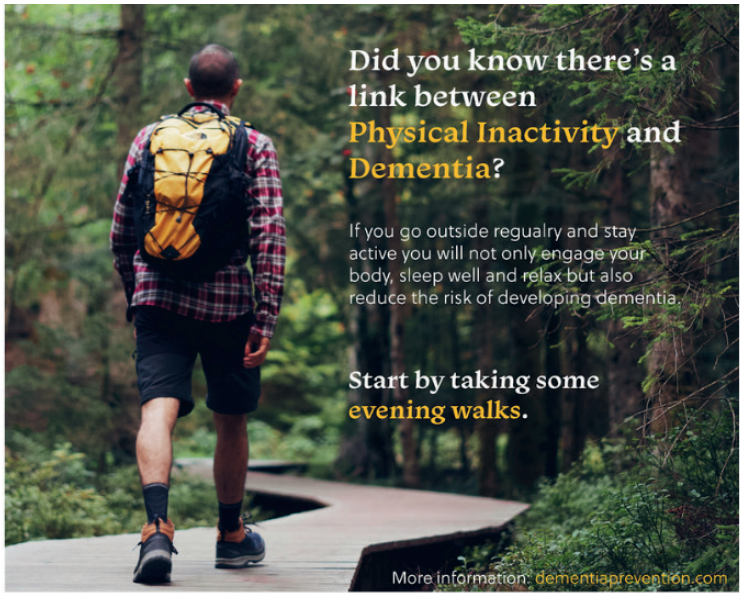

Did you know there's a link between Hearing loss and Dementia?
If you experience hearing loss and get your ears checked out as early as possible you can reduce the risk of develpoing dementia by wearing hearing aids.
Get a doctors checkup
More information: dementiaprevention.com


Vorschläge für dich
DementiaPreventionNorway
8. November um 18:00 ·
By quitting smoking you not only half the chance of getting lung cancer but also reduce the risk of developing dementia. See what researchers found out about this topic by clicking the link in the bio.
STOP SMOKING FOR YOUR BRAIN
33.115
880 Kommentare 1.680 Mal geteilt
Gefällt mir
Kommentieren
Teilen


Did you know there's a link between Physical Inactivity and Dementia?
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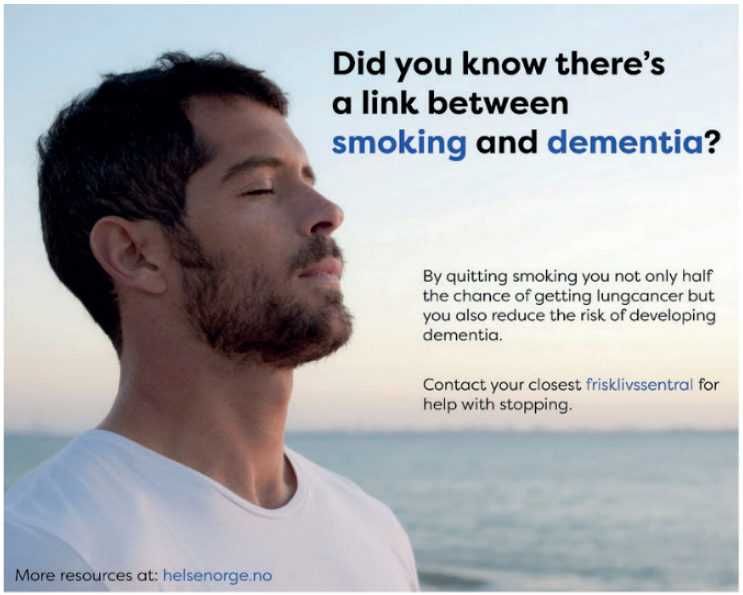
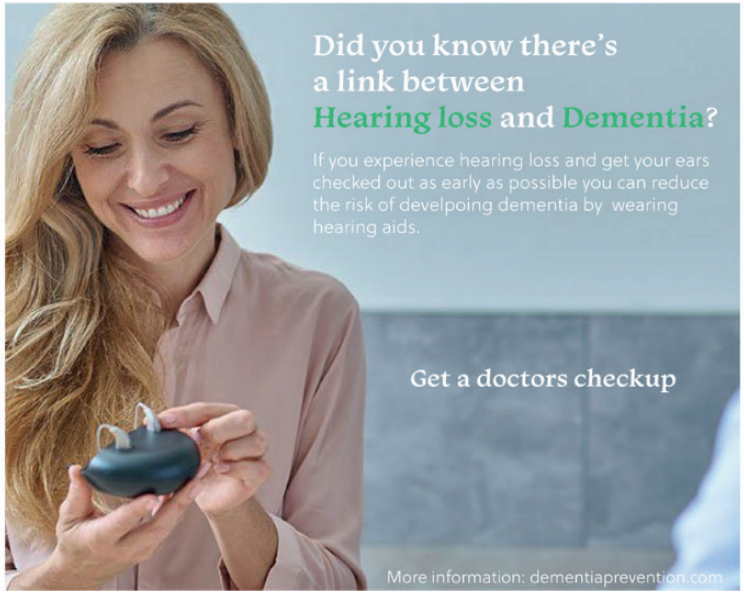
Start by taking some evening walks.
More information: dementiaprevention.com


Did you know there's a link between smoking and dementia?
By quitting smoking you not only half the chance of getting lungcancer but you also reduce the risk of developing dementia.
Contact your closest frisklivssentral for help with stopping.
More resources at: helsenorge.no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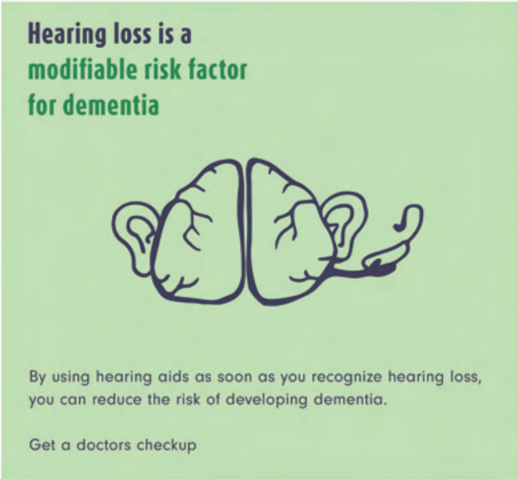
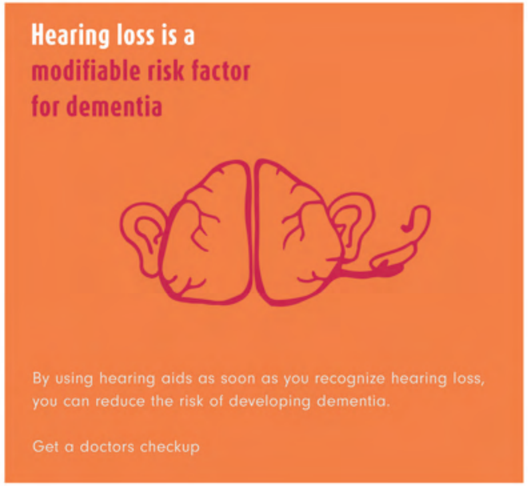
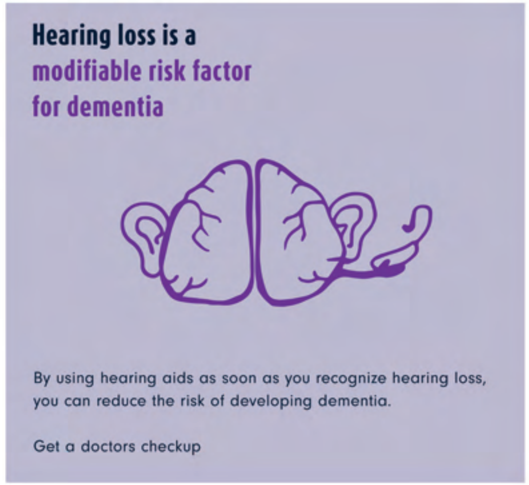
mind-map to iterate posts after feedback

explorations for color selection







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Monarcha Semibold
Solei Light

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Filson Bold
Filson Book

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PT Serif Pro Bold
ITCFranklinGothic LT

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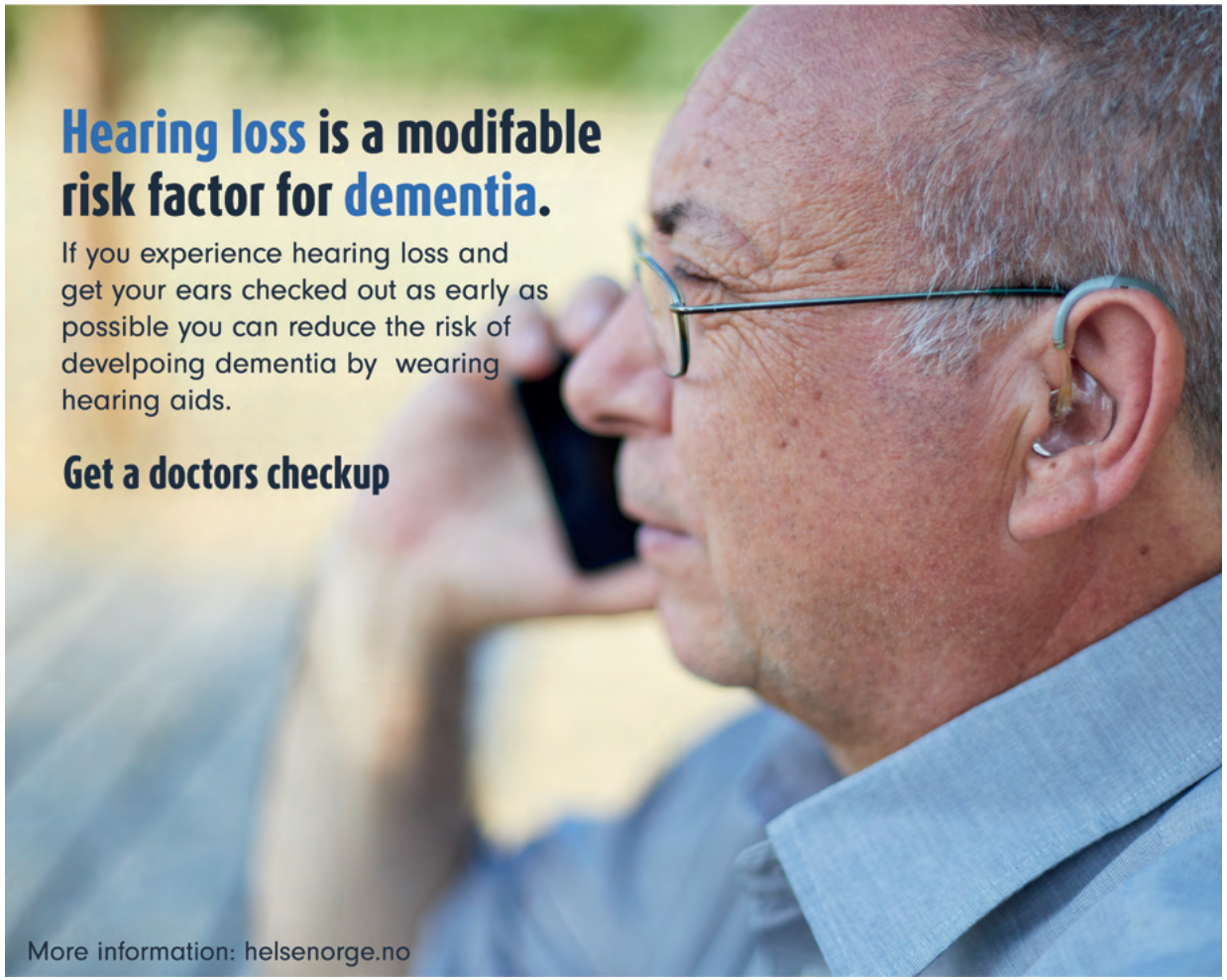
DaxCompact Pro ExtraBold
Neuzeit Grotesk regular

facebook screencaps with our embedded posts from the testing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An app that can help is Slutta
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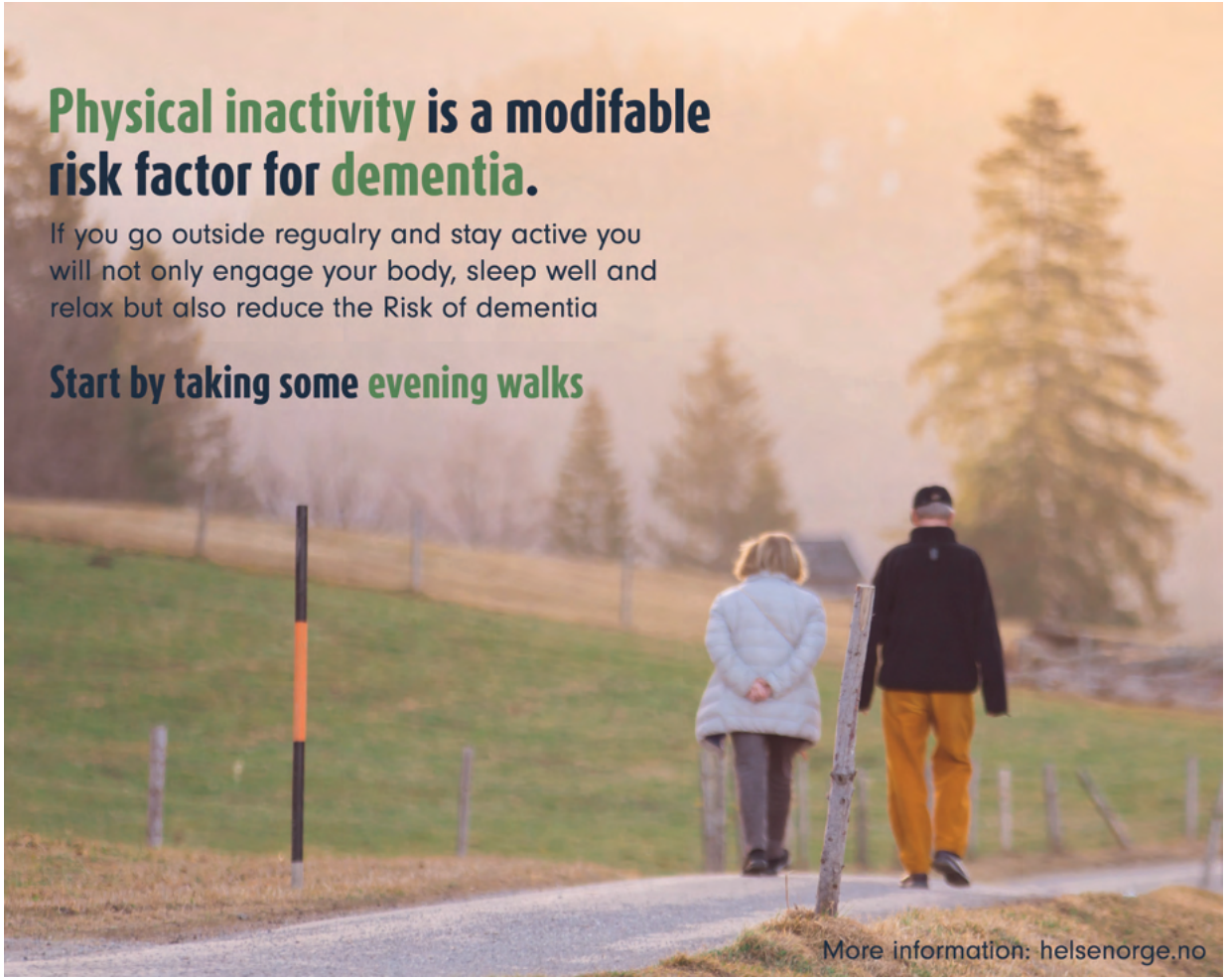
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