

Nutritional Anaemia in the Elderly
The NOAH Design Thinking Challenge



Health Innovation and Design 2016



UCT KNOWLEDGE CO-OP

The UCT Knowledge Co-op facilitated this collaborative project with the Neighbourhood Old Age Homes.

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The Nutritional Anaemia in the Elderly Design Challenge

Introduction

The NOAH Nutritional Anaemia Design Challenge gave us our first opportunity of design thinking collaboration with a community partner, the Neighbourhood Old Age Home (NOAH) in Khayelitsha. Design thinking (DT) is an iterative approach to problem-solving, especially relevant to the healthcare situation (Brown, 2009). It has been said to promote sustainability, as well as user satisfaction and allows for the user to be an integral part of the proposed solution (ref). In this essay, I will examine the experiences, feedback and learning of our project, finally reflecting on group and personal insights gained from the process.

Background

The NOAH focus is on “active ageing”, that is, to actively seek out opportunities for wellbeing, social inclusion and security for the elderly, leading to enhanced quality of life (WHO, 2015). In design thinking terms, a well-designed product or service is one that is intuitive, contributes to quality of life and increases the independence of the user (McDonaugh, 2010). As the elderly are often separate from mainstream socialisation, they could be viewed as “extreme users”, much like people living with disabilities (PLWD). The use of design thinking for nutritional anaemia solutions in the elderly at NOAH was therefore appropriate.

Our challenge was posed to us by Sister Ada Kennedy, Clinic Manager for NOAH Khayelitsha and Woodstock. She had noticed that unlike NOAH Woodstock, the Khayelitsha NOAH members had a significantly higher prevalence of anaemia. Although NOAH had a clinic facility and doctor, a thorough assessment of nutrition was difficult and costly. She therefore attributed the anaemia to a diet deficient in iron and other nutrients, based on her observations of their staple diet. NOAH Khayelitsha provides a lunch meal two to three times per week for daycentre members.

The challenge was to find a practical solution to nutritional anaemia that was acceptable, affordable and could be implemented at NOAH.

Ageing as a Public Health Need

Evidence from disability research has shown that the combination of poverty, age, race, gender and location impacting negatively on access can create extreme vulnerability for those who experience overlapping risks (Emmett, 2012). For this reason, it is a public health need to increase social innovation for the elderly.

Furthermore, WHO has advocated a person-centred approach to public health initiatives for older people that emphasise their functional capacity, and address their role within their community. We therefore focused our attention on the stable and declining functional capacity groups of elderly at NOAH, depicted in the diagram below.

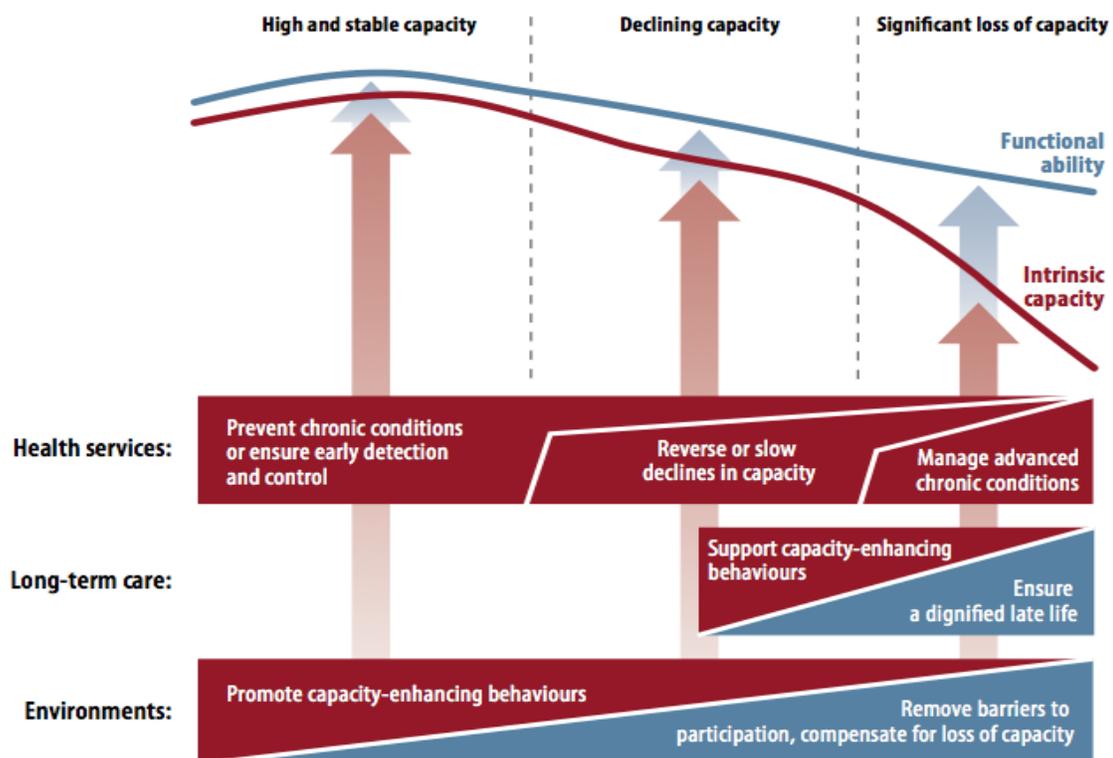


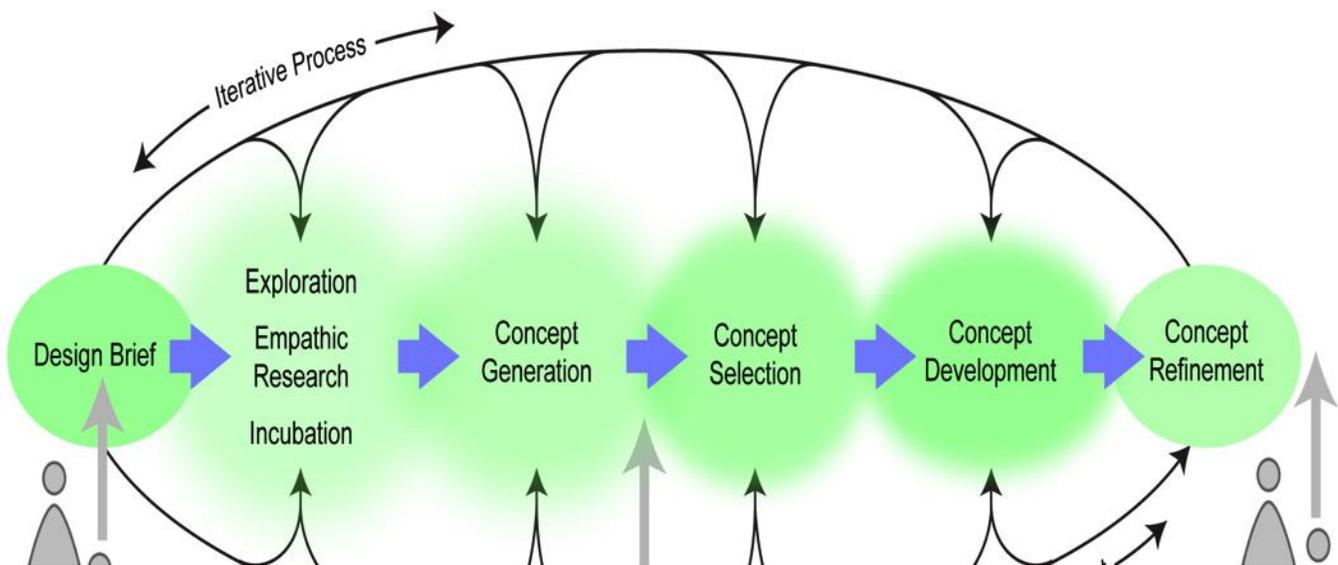
Fig 1. Public health framework for healthy ageing: opportunities across the life-course (WHO Ageing, 2015).

The physiology of Ageing

Ageing is accompanied by physiological changes that can negatively impact nutritional status (WHO, 2015). Gradual loss of taste and smell may cause reduced appetite and although older persons need less calories in their diet, they still need the same amount of nutrients. Absorption of nutrients may furthermore be compromised through poor oral health and reduced gastric acid and intrinsic factor secretion. This predisposes them to reduced absorption of iron and vitamin B12 from their diet. The progressive loss of vision, hearing, and joint mobility, may limit mobility and affect elderly people's ability to visit friends, prepare meals, or predispose them to injuries. Malnutrition has also been associated with diminished cognitive function, a diminished ability to care for oneself, and a higher risk of becoming care-dependent. Along with these physiological changes, ageing may also be associated with profound psychosocial and environmental changes, such as isolation, loneliness, depression and financial hardship, which may also have significant impacts on diet (WHO, 2015).

Design Thinking Process

The progression of the user-centred design or service design process begins with mapping the context in which it will be used. The driving factor towards the prototype is the design vision, which is informed by testing with the users, and represented in the diagram below (Stappers, 2009). Design thinking emphasizes sustainability that stems from human-centredness (Kimbell, 2012).



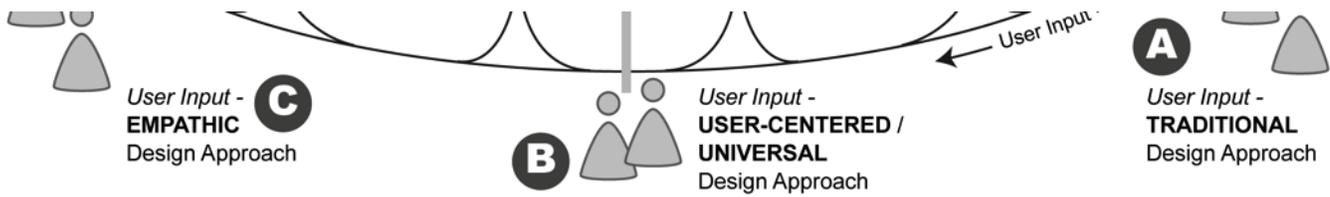


Fig 2. Design thinking process based on Empathic Design Research, (Christensen 2009).

IDEO refers to the DT process as a series of overlapping spaces, rather than sequential steps, referring to the iterative nature of the process (Brown and Wyatt, 2012). These spaces are inspiration, ideation and implementation. I will now discuss each of these spaces briefly, alluding to team insights from each.

Inspiration fuels the search for the solution, motivating collaboration. (Brown and Wyatt, 2012). We brainstormed before our first NOAH visit, based on the account from Sister Kennedy: NOAH Khayelitsha was a daycentre, (not a frail-care or assisted living facility, as we had assumed) and a lunchtime meal and snack with tea was served to members that attended there two to three times per week. There was also a clinic facility with availability of a doctor, nurse and social worker. This led us to identify initial themes of “Diet”, “Socio-economic factors”, “Pre-existing knowledge about anaemia”, and the relevance of “Other chronic illnesses” as a framework for our interview questions for the elderly and NOAH staff. The final questions are contained in Appendix 1.

A challenge to our team, was our small number. With only 4 members, we drew on the resources of our lecturer and student participant-observer and interviewed the head cook, a staff nurse, and three elderly people. Language was certainly a barrier, as we did not speak isiXhosa. Using the cook as a translator at that initial visit was perhaps counterproductive, as she had limitations on her time already.

We noted the predominance of female elderly at the centre, and our anaemia interview subject was Mrs Smith*, who we also based our persona on. She attended NOAH three days a week, and lived with her daughter and teenage grandchild. The other two days, she had a carer to stay with her at home, but was at home alone for the rest. Those who had anaemia were predominantly in the daycentre, where the meals were being served. We created an elderly persona, based on our initial

interview with Mrs Smith*, an elderly daycentre member living with her daughter and grand-daughter.

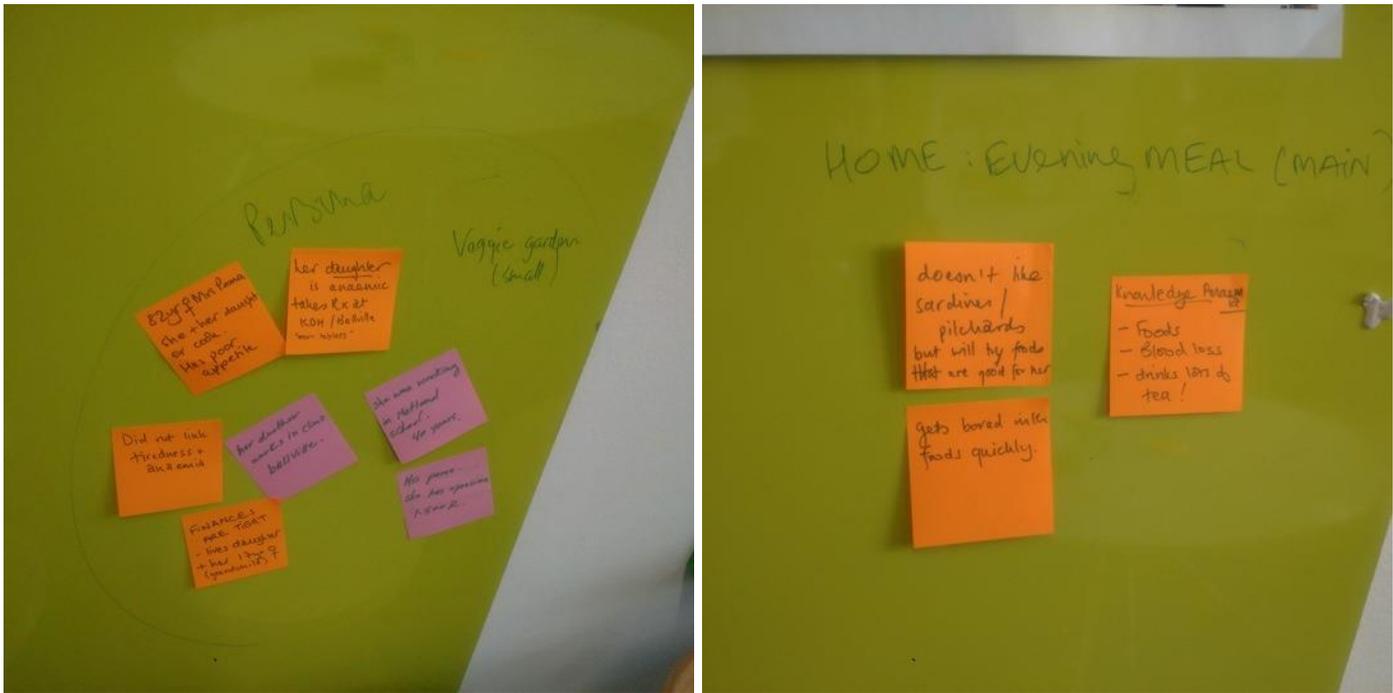


Fig 3 and 4: Persona map for Mrs Smith.

Mrs Smith helped us to identify further needs-A predominance of female elderly, social isolation of the elderly outside of the NOAH centre, a lack of transport impacting on access to community activities like shopping and seeing family. We did not get much information about diet itself from Mrs Smith, except that she had no reservation to eating iron rich foods, like sardines and legumes, so additional dietary information was gleaned through subsequent questions to the members and staff.

Ideation refers to the phases of generating, developing and testing ideas. (Brown and Wyatt, 2012).

An additional visit to NOAH to see the social worker and doctor supplemented our early knowledge, and gave us a snapshot into dynamics between the clinic and daycentre. The clinic (under Sr Kennedy) and daycentre seemed to function as distinct entities, and as the brief came to us via Sr Kennedy, we needed to reach out to the daycentre manager, to get daycentre buy-in; this would prove very important for later feedback to NOAH.

Interviews with our expert Groote Schuur Hospital (GSH) dietician and geriatrician provided new

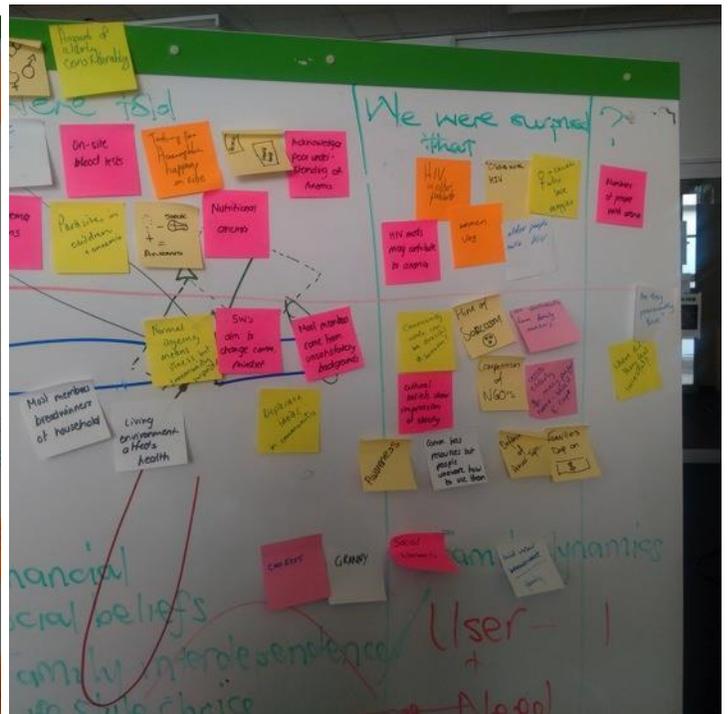
insights related to physiology of ageing. We learnt that it was important to advocate for change applied across the lifecourse, reinforce the positive role of the elderly, that muscle mass declines with increasing age, and that handgrip strength is a good indicator of functional capacity. This was emphasized in the literature, where poor grip strength was identified as an independent marker of mortality, more so than chronic disease (WHO Ageing, 2015). We had included the hand muscle exercises based on functional ageing principles, and not mortality risk, but this was a good reason to retain them.

The food-related problem of anaemia had different cost challenges and cultural meanings to all on the team. We couldn't merely advise the elderly to "eat better" as meals were not prepared or provided by them, as they often shared a household with much younger family members. There were limits to raw, vegetable-based suggestions due to poor dentition and access, as well as added cost of special foods. This meant that we had to look anew at existing resources, such as the garden at NOAH, optimize it, include the elderly, and make it more sustainable.

What we learned was important was the need for increased awareness, even among the patients, many of whom didn't know they had or were at risk of anaemia. What was more important that as users, they didn't feel defensive about anaemia. It wasn't that they used excessive sugar and salt, never exercised, skipped breakfast, binge-drank alcohol or chain-smoked to cause it (all "bad" things). It certainly wasn't something they had intentionally created or chosen to do against advice. It simply was. It was also something that affected them daily in terms of fatigue, sleep, and small changes could pay major health dividends. Although a starch-rich diet may be more affordable and easier to chew, it lacked the nutrients provided by meat protein and vegetables.



Fig 5-7 show our progress through ideation



To keep us focused on our challenge and generate as many ideas as possible, we generated a Point of View Statement (Brown, 2012), as “How Might we conscientise the community about the needs of Health Innovation and Design

the elderly?” We themed our insights under “Health promotion information”, “Habits and lifestyle”, “Nutrition” and “The home environment”.

Some Lifestyle ideas included encouraging movement, including that of hand joints to prolong independent functioning, and getting the elderly outdoors to develop the existing NOAH garden.

Under the theme of **Nutrition**, we thought of an occasional buffet-style meal at NOAH, both to monitor effectiveness of health information given through posters and the booklet on anaemia, as well as to highlight individual food choices more clearly. It was especially important for us to target the **home environment** and family members who cooked the main meal, for example. We thought of providing some sort of take-home booklet for the elderly to share with their families, and want to keep. In this, we also wanted to focus on the positive role of the elderly within their family, as someone able to influence healthy habits in younger generations.

Implementation refers to the stage that sees the process manifest into reality for the users (Brown and Wyatt, 2012). Following our mock presentation, we realized that we needed to strengthen the links between the existing stakeholders at NOAH and get buy-in to our solution from pivotal players, such as the Daycentre manager.

McDonahue (2010) says as users we engage with what is around us both emotionally and logically, in order to more effectively “communicate and construct who we are”. When presenting our prototype of the booklet, we could see this at play, and were surprised that the elderly engaged with our presentation and prototype, for as long as they did and as well as they did. Their comments were insightful and drew attention to their specific need and context (examples are the wheelchair-bound gentleman or the lady concerned that about youngsters incentives to eat good food).

Fig 8. The diverse stakeholders in the NOAH community is depicted in this mock-up poster. The rainbow symbolized a “darling” idea of ‘roadshow’ or health fair” to capture the community’s attention, with the buffet, booklet, posters, exercises and garden initiatives falling within it. This idea aligns with NOAH’s principles of active ageing. It also aligns with WHO guidelines of an age-friendly community, which is a community where elderly people enjoy growing old, as they retain dignity throughout their life course and remain functionally independent for as long as possible (WHO, 2015).

This presentation was for me validation of how we co-created with the user, as they were willing and keen to contribute, so as to make it even more relevant to themselves. I would have termed co-design of the booklet, the next step. But here I was thinking of strictly of the implementation of the booklet, which would need much closer collaboration with the NOAH community, in all its forms. We would also have to work on strengthening links to other players, like NGO’s, even if that meant initial hard conversations. Having something that was useful, usable, relevant and above all sustainable, was actually the goal. However, in design thinking terms “co-creation” could refer to any collective creativity. It is distinct from co-design, which refers to the “collective creativity applied over the whole span of the design project according to Sanders (2008). The literature on to co-design and iterative prototyping with users presented some interesting case studies and ideas for beyond our presentation and finishing our health information booklet (Stappers, 2009).

The vital feedback we received after our early presentation helped us to move rapidly to testing our chosen intervention, the information booklet. It also generated new ideas in the form of including recipes.

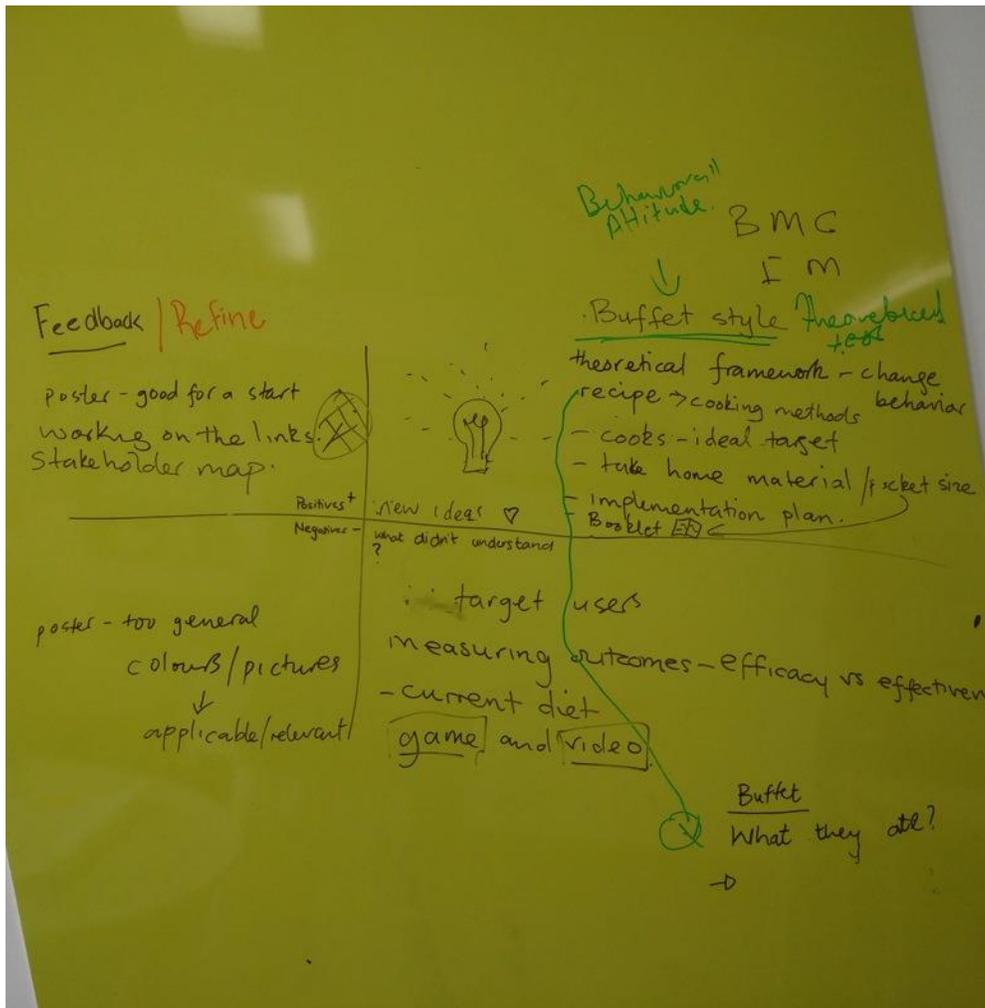


Fig 9: Feedback capture grid.

This feedback capture grid was very useful, in showing us constructive criticism, what worked about our existing ideas, new ideas stemming from the presentation feedback and what was unclear from the presentation.

It also identified areas we previously hadn't considered, as highlighted by a need to evaluate our intervention, once implemented. We realized that we wanted to raise awareness, but also needed to be able to evaluate that by understanding the theory behind behavior change.



Fig 10. Our final presentation at NOAH Khayelitsha 2016

Reflective Insights around the Challenge

Group insights: Interpreting the question and why it was important to innovate

Design theorists encourage a focus on the users' experiences, especially their emotional responses (Kolko, 2015). The emotional factors of isolation, loneliness, depression and financial hardship associated with ageing may impact directly on diet. We realized that we were becoming more attuned to emotional cues from our interviews, identifying potential burnout risk in frustration of the social workers, and hints at social isolation of the elderly that we interviewed.

We also learnt some things that surprised us- cognitive function was underestimated even though we thought it would be difficult given language barrier, they truly engaged with our presentation!

However, even having realized the need for the project, the question of anaemia as the focus seemed trivial, making me doubt the validity of the research question- surely there were more pressing needs? But stepping back from this doubt, as well as reviewing expert opinions from a GSH dietician and geriatric specialist, made us realize that the anaemia really wasn't the definitive problem. It could rather be seen as an entry point to a conversation around health promotion, habits that affected the

elderly. The resources needed to make a definitive diagnosis, like ferritin levels and B12 levels were not going to materialize. And they probably weren't that important in the community setting of NOAH.

There were also sticky points of friction between team members at times-beliefs that some ideas would be hard to implement depending on what our stance. For example, that recipes need not be included as we didn't understand what the elderly in Khayelitsha ate, we ourselves would not prepare food at home, etc. The result however, was that it was another opportunity to gain information, and we asked selected members for more information about their home diets that justified inclusion of some recipes. . Knowing this helped a lot when I would usually have not shared a thought for fear of being "pushy". It also helped me listen better to feedback, and try to be more attentive, as others noted things differently to the way I did.

Personal Reflection

My usual approach to problem-solving has been to rely on what is learned theory, apply it, and learn through experiences. But even with this overlapping greatly with the DT abilities of intuition, pattern recognition and insights from themes (Martin, 2009), the level of user integration in the process for me stopped at co-create ie empathy.

The DT approach differs from my knee-jerk thinking significantly and in ways I am beginning to understand more fully now. Fear of us "getting it wrong" with regards to cultural preference and diet was an obstacle to us. However, the DT principle would have been to get it wrong, but get it wrong early, and have the user help us make it a learning experience for all of us.

I noted some hesitation for collaboration with NGO's in the community of Khayelitsha from the clinic manager, Sister Kennedy. It also seemed that the daycentre and clinics did not necessarily work closely together to edify the other. This alludes to the conventional problem-solving approach of one assumed solution, "my solution", being the one that fits best.

Brown (2010) says that proficiency as a design thinker results in a "T-shaped person" where the "T" is represented by the user in the horizontal axis and the design thinker, in the vertical. Each team member's skill and participation in the vertical axis moves toward meeting the horizontal axis of co-creating with the user, advanced through curiosity and "learning through doing". The point where they

meet-at the “T-shaped” line at the top is where he says the “design thinker” is made. Previously, I was not that aware of my own responses to my team, to insights, to what it might be bringing up in me by stepping back from the process to reflect. I see now it is essential.

Interestingly, the interaction with the elderly was more stimulating than I thought it would be. They were attentive, keen to contribute and willing to change even some eating habits (One gentleman said after our presentation on the 21st that he did his shopping on the 1st of the new month; he really wanted to know what our final solution would be by then so he could buy more nutritious food and plan ahead).

David Kelley of d.school would tell new students that they were there to immerse themselves in a methodology that allowed creativity to be accessed when needed. “We have moved from thinking of ourselves as designers to thinking of ourselves as design thinkers. What we, as design thinkers, have, is this creative confidence that, when given a difficult problem, we have a methodology that enables us to come up with a solution that nobody has before...I really do believe I was put on the planet to help people have creative confidence. My contribution is to teach as many people as I can to use both sides of their brain, so that for every problem, every decision in their lives, they consider creative as well as analytical solutions.” (quoted in Fast Company magazine, 2009).

Conclusion

I would not necessarily have thought of nutritional anaemia in the elderly as a public health gap. I thought it was something that was observational, not well-diagnosed, and of little relevance. But in addressing the problem, I have learnt that access to relevant health service for the elderly is a core need. There are doubtless tensions in any collaboration. But collaboration across sectors will be needed to implement change worth having, that incorporate the user in design of the service. In summary, my belief is that we answered our brief to address nutritional anaemia at NOAH. More importantly, we began the journey to collaborate meaningfully with NOAH in a way that hopefully increases the personal agency of the elderly within their families and communities.

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Appendix 1: QUESTIONS FOR THE NOAH MEMBERS AND PATIENTS

1. Can you tell us where you live? Is it close enough to walk here?
2. Who do you live with, family or friends? How many of you are at home and who is working?
3. Where did you find out about NOAH and how long are you coming here? How often do you come?
What do you enjoy most or take part in?
4. Besides the meal at the NOAH how many other meals do you eat per day? What do the other meals usually consist of? (What do you usually eat and drink in a day, if you can give us an idea...from when you wake up to going to bed?)
5. Who shops for food? Who cooks meals at home?
6. What is your favourite thing to eat or drink? How often do you eat or drink it?
7. Do you or any other patients here have other illnesses that may cause anemia? Have you been told medicines you take could affect anaemia?
8. We've understood that everyone here today is a pensioner. Is that right? What kind of work did you do before and when did you stop working.
9. How do you add to the income from your pension? Are you involved in any of the soap and candle-making activities at NOAH?
10. Do you know what anaemia is? What causes it? How is it treated?

Appendix 2: QUESTIONS FOR NOAH DAY CENTRE / CLINIC STAFF

1. How long have you worked at this centre?
2. What does a normal day here look like (schedules, activities etc)?
3. Is there any continuity of care, i.e. do you deal with the same patients on a daily basis?
4. Are the patients aware of their conditions, the medications they must take and the types of food they need to avoid?
5. Do the patients do any physical activity?
6. Who is responsible for menu planning?
7. Who is responsible for making sure that the patients stick to their dietary requirements, especially “after hours” or outside of the senior center?
8. Are there any daily supplements given to the patients (if so which ones)?
9. What does the patient's diet generally consist of?
10. Is there an awareness of what kind of anaemia the members have? Have any tests been done?
How is it managed?
11. Do the patients have other illnesses or conditions that may cause anemia or i.e the medication they take for these other illnesses?