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## The encounter between two research disciplines

– innovation through rethinking values and mealtime in nursing homes

### **Abstract**

*More than 44,000 Norwegian citizens live in nursing homes. Many health problems are related to malnutrition and under-nourishment. Registered nurses are responsible for the care quality in nursing homes. Due to limitations with respect to workforce and budget, it is of importance that staff discovers new mealtime solutions. In the field of industrial design, the profession is continuously proliferating in specialized directions concerning both design tasks to solve, design approaches, as well as the span of technological and human-oriented means as part of solutions. The aim has been to explore how to improve the quality of mealtime in nursing homes. We have included: 1) observations 2) dialogue meetings and 3) workshops. The final result of the study is seen as two-fold: the value platform and five design concept ideas. Within the field of clinical nursing research, the hunt for new solutions is a challenge. In this work, crossing disciplinary frontiers is of great importance. In the present study, we have tried to implement this approach and experience. Through rethinking values, we have discovered innovative solutions and strategies that might have been difficult to discover within a traditional, single disciplinary method.*

**Keywords:** development project, multidisciplinary encounter, values, co-design, design for sustainability

### **Introduction**

This article reflects on a development project evolved in cooperation between clinical nursing research and industrial design research. The project lasted 2.5 years from 2007 to 2010. The focus of the project was mealtimes in nursing homes (NH), and the aim was to explore how to improve the quality of mealtimes in NHs. According to statistics, in 2010, there were more than 625,000 Norwegian citizens aged 67 or older (Statistics Norway, 2010). More than 44,000 Norwegian citizens live in NHs. Nearly 73 percent are more than 80 years of age. Norway organises its care of older people through municipalities, and the municipalities own and run most of the NHs (Nakrem, 2011). Most Norwegian NH residents have advanced chronic illnesses and multiple diagnoses with as many as 80 percent of these individuals suffering from dementia (Nygaard, 2002; National Guidelines, 2009; Romøren, 2005). Residential care in NHs is necessary for those individuals who are no longer able to live at home comfortably nor safely (Nakrem, 2011).

Many health problems in NHs are related to malnutrition or undernourishment. In many cases, it is the eating situation that is dissatisfactory (National Guidelines, 2009). A varied and appetising diet is regarded as essential to maintain physical functioning, and mealtimes can be the highlight of the day for many residents. Meals are usually consumed in the dining room at each ward, but some NH residents prefer to have their meals elsewhere. Registered nurses (RNs) are responsible for the care quality in NHs. There is a legal requirement that they are on-hand 24 hours a day (Nakrem, 2011). The care quality is often influenced by factors, such as heavy workload, economy and culture. Nursing care includes, among other things, help with nutrition and care in eating situations. Work tasks in connection with the meals are often delegated to nursing assistants or nurse aides. Due to limitations with respect to workforce and budget, it is of importance that staff discovers new solutions for the mealtime situations.

In the field of industrial design, the profession is continuously proliferating in specialized directions concerning both design tasks to solve, design approaches, as well as the span of technological and human-oriented means as part of solutions. The field of industrial design is a true transdisciplinary field (Klein et al., 2001).

Transdisciplinarity is a new form of learning and problem solving involving cooperation among different parts of society and academia in order to meet complex challenges in society. Transdisciplinary research starts from tangible, real-world problems (Håberli et al., in Klein et al., 2001).

This article discusses how designers and nurse practitioners can recognize the characteristics of a clinical setting and, thereby, define the relevant level of processes in order to choose relevant approaches and work methodologies. The project chose a process-oriented approach and aimed to explore how the field of nursing practice and industrial design may interfere and collaborate in order to reveal new perspectives and appropriate design concepts for meal situations in today's nursing homes in Norway. This open-ended project resulted in five concept ideas.

### Theoretical Background for the Research-based Design Methodology

The data gathering and design approach was supported in the development project by the Thinking Model (Wigum, 2004). The Thinking Model is constructed by four dimensions. Each dimension is deepened by three levels of detailing going from a general level to a specification level: sustainable principles (1), sustainable guidelines (2) and sustainable criteria (3):

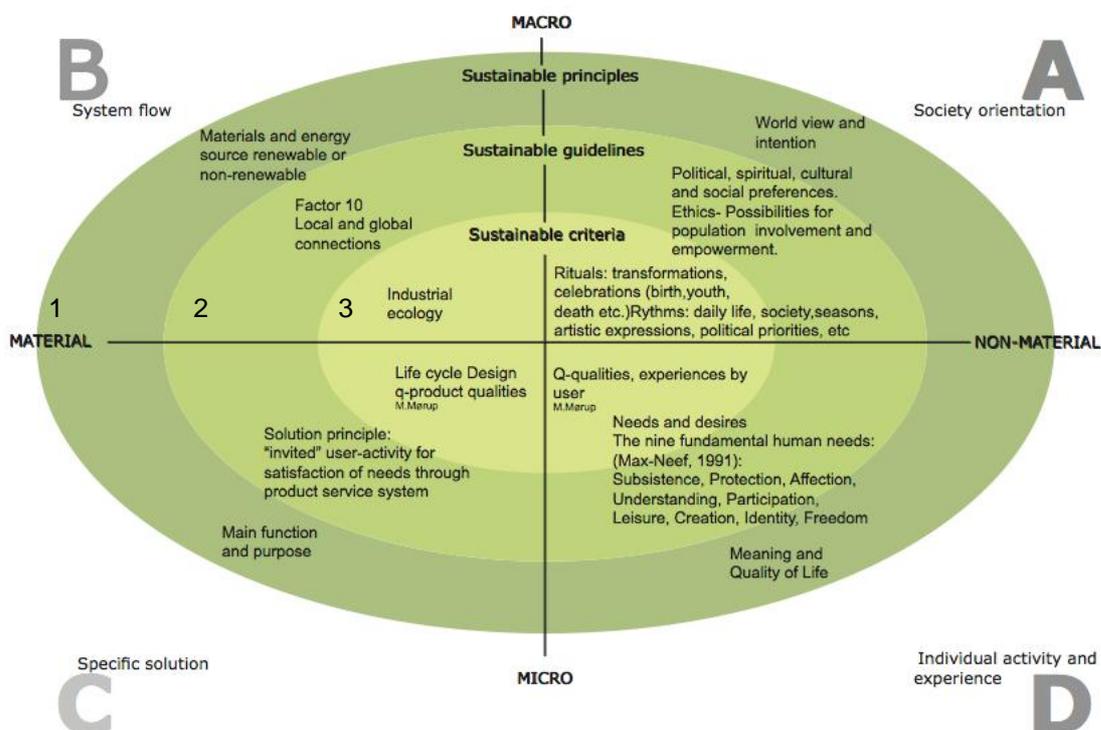


Figure 1: (Wigum, 2004) The Thinking Model, a tool for broadening and connecting values and perspectives through different steps in the design process.

*Dimension A.* Macro – non-material; main content in this dimension is society orientation and intention. This dimension reflects the values of society in rules, laws and regulations, the level of citizens' empowerment, culture and traditions as well as rhythms and life phases of the human in relation to nature.

*Dimension B.* Macro – material; main content in this dimension is the larger system flows of material and energy as well as their sources. This dimension connects global resources to the choices of local solutions and how they support an ecological sustainable lifecycle way of thinking and industrial ecology practice.

*Dimension C.* Micro – material; main content here is the specific solution designed to satisfy certain needs or human desires. The dimension covers the main function of a solution, the principle structure choice of a solution as well as the detailing, production and lifecycle of material elements of the products and service system.

*Dimension D.* Micro – non-material; in this dimension, content is individual activity and final experiences. This area discusses what main needs and satisfaction the solution is supporting, as well as what needs and desires the individual in the target group actually has within the given context.

## **Methods**

This development project was accomplished with the following methods:

### ***1. Observations***

The project included observations, workshops and dialogue meetings. The initial work started with observations at one municipal nursing home in Trondheim and a visit to the output kitchen that produces food for all institutions in the Trondheim region. Data was collected by photos and field notes. After analysing the data, the findings were discussed in a workshop with the employees and some experts in the field of clinical nursing.

### ***2. Monthly Dialogue Meetings***

Two researchers (the authors) met monthly over a two-year period. Theory was discussed regarding how knowledge is actually created in the field of nursing practice as well as the interrelation between dreams and wishes, practice in daily work and, finally, evidence-based knowledge.

### ***3. Workshops for Value Discussion and Evaluation***

The results from the workshops and the discussions with the nurses and other employees gave directions to a *value platform*. The design researcher used the platform and information gathered to generate *five concept ideas* for the “future nursing home.” The concepts were finally evaluated in relation to the value platform that was developed as well as the degree of practical expected success.

The development project results were finally evaluated and discussed in a seminar workshop, this time with a broader group of experts in nursing, including international research colleagues. The evaluation provided feedback that favoured the simple, practical thinking of interventions through new solutions in the nursing homes. The elderly, as a user group, need to be carefully understood and should not have to adapt to new ideas, but rather be supported and stimulated by new solutions.

## Analyses

The information and knowledge gathered from the observations, workshops and literature was analysed, sorted and discussed in the four main dimensions and three levels of the Thinking Model (Figure 1). Problems found through observation at the nursing home and dialogue with employees were extracted and organised on different macro and micro dimensions, and the different three levels in the Thinking Model. The findings were then discussed in the initial workshop with employees and experts within clinical nursing research. The workshop revealed several dilemmas between system, culture and individual value sets. Table 1, therefore, represents the value discussion in its third column.

Table 1. Analyses of problem findings

Dimension and level	Problem findings	Value discussion
1. Laws and regulations (dimension A/2, macro, non-material, political and cultural standing for laws and regulations, A/1 intention and worldview)	Quality and value guarantee legislation. General understanding of the employee's role in the meal situation. Priority to seating at the table and contribution to a relaxed atmosphere. Systems for purchase seem to be an obstacle for change in priorities.	The employees should be encouraged through regulations to give high priority to focus on a quiet and participative meal for all patients. Legislation should open for employees to eat together with the patients.
2. Local organisation system (dimension A/3, macro level, non-material, rhythms and daily life in common)	The individual nursing homes practice different routines to serving their patients. At the single case study, the preparation of food was executed by different shifts at work and was relying on good communication between the employees, the shifts and the institution.	It is, however, critical that the routines are robust and give opportunity for employees and maybe patients as well to prepare for enjoyable meals for increased appetite.
3. Practice (service) (dimension C/2, micro level, material solutions/service design and logistics, D3 micro level, individual activity and experience)	There is no chef at the nursing home. Each health personnel takes his or her turn in preparing the prefab food from the output kitchen. During the preparation, there might come other emergency tasks to perform concerning the patients. This is an interruption of the process in preparing and serving food.	Hygiene is critical for the preparation and serving of food. The sequence of the serving should also secure a visual aesthetic experience, and the condition of the food should be satisfactory in terms of temperature and amount.
4. Products (dimension C/2 micro level, material product solutions, D/1,3, individual meaning and quality of life, experience by the individual user)	The tableware, trays and napkins are designs from the fifties—trays with commercial images and messages and napkins that cover the torso.	The products used today at the nursing home are typical for institutions and do not represent the home or a meal for well-being and dignity.

## Results

The final result of the study is seen as two-fold: 1) the value platform and 2) five design concept ideas. In the light of information, discussions, and dialogue meetings within the project team, a value platform based on the Thinking Model was developed.

### *The Value Platform*

Table 2 displays a so-called ‘value platform’ according to alternative design strategies in order to unravel and develop new concepts in the meal situations in nursing homes. New concepts can be evaluated according to these values and, therefore, are of great importance when best praxis is benchmarked.

Table 2. Value platform for redesign and new solutions in future nursing homes

	<b>Macro Non-material A Orientation</b>	<b>Macro Material B System flow</b>	<b>Micro Material C Concrete solutions</b>	<b>Micro Non-material D Activity and experience</b>
<b>1. Sustainable principles</b>	The society wishes to give citizens a dignified old age.	Raw material and products purchased with the intention to maintain good health and physical functioning.	The function of the meal.	A sensible daily living in nursing homes. What does this imply for the individual?
<b>2. Sustainable guidelines</b>	Patient’s right of co-determination. Respect for the next of kin. Respect for the employees. The institution is a part of the whole culture and society.	The output kitchen and the nursing home as a part of the local community according to service and product flow.	Adaption of an innate, everyday living pattern as well as real encounters between residents, families, friends and society.	Meet basic needs, such as physical, social, mental and spiritual needs.
<b>3. Sustainable criteria</b>	Assurance of rhythm and cycles defined by, but still flexible, routines. Workmanship in accordance to seasons of the year, rhythm of the day, and festivals.	The nursing home is both a home and a long-term institution offering good care quality according to residents’ chronic and acute medical problems.	Aesthetics, functionality, choice of materials and systems are considered carefully according to possibilities for modification and adjusted for residents’ and staffs’ needs.	The developed concepts should be considered and experienced “more than good enough.”

A macro-oriented perspective (A) focuses on the values that the whole society perceives as premises for good quality care, and the superior objective for a society is that citizens have a secure and dignified old age. The institution is an integrated part of the culture and society; hence, the quality of care in nursing homes is a public concern. Sustainable principles are a concern for public authorities, and are regulated by legislation and reflected in public plans for elderly policy and care. Sustainable guidelines should include the patient's right of co-determination, respect for the next of kin, and respect for the employees. Further, it is of utmost importance to discover solutions that reflect the values and traditions of the society. In this work, it is a criterion that workmanship is in accordance to seasons of the year, rhythm of the day, and public festivals.

In a macro system flow perspective (B), raw materials (here included: ingredients) and products are purchased with the intention to maintain good health and physical functioning. The output kitchen and the nursing home are seen as part of the local community according to service and product flow. Criteria for solutions are that nursing homes have to meet the residents' need for a home as well as their need for a long-term institution that offers good care quality according to residents' chronic and acute medical problems. In this work, it is important to consider the communities' access to natural resources and networks.

In a micro system where concrete solutions are sought (C), the main principle is to define the function of the meal by means of cultural importance and nutritional consequence. To lay down guidelines for adaption of an innate everyday living pattern as well as encounters between residents, families, friends and society is of great importance. Criteria to be met are careful considerations of aesthetics, functionality, choice of materials and systems according to possibilities for modification adjusted for residents' and staffs' needs.

In a micro system where activity and experiences are in focus (D), the sustainable principle is that the residents should have a sensible daily life in the nursing home. An important question arises: What does this imply for the individual? Developing guidelines in order to meet residents' basic needs will be a challenge. Examples of basic needs include: physical, social, mental and spiritual needs. The concepts developed should be considered and likely experienced "more than good enough."

### **The Five Design Concept Ideas**

The design concepts are premature (therefore, mentioned as ideas). However, they indicate relatively strong the core of the value platform and how these values can be represented through both high-technology products as well as low-technology and service systems based on human activity with simple tools.

#### ***1. Joy of the Four Seasons***

Framing the meal connects the elderly to local surroundings and to the seasons of nature as well as to traditions related to meals and food (Area A, rhythms, rituals; Area B, relation to local resources; Area D).

*Joy of the Four Seasons* is a concept bringing the four seasons alive to the elderly at the nursing home. This concept is related to meals as well as social and cultural events. In Norwegian nature, the seasons dominate our rhythm of life, food and holy day traditions. All senses tune into spring when it arrives, and summer is the open and special season for gardening and growing vegetables and flowers. Fall represents, to many, hunting and spending days in the forests picking mushrooms and berries. These activities may be continued in some degree at the nursing home as well, either as outdoor activities or indoor elements and happenings.



Photo collage 1. Existing solutions for many nursing homes today are taller buildings where the residents have little or no contact with outdoor seasons. Bringing the seasons into the dining room through natural elements and food of the season stimulates some of this basic relation. (Photo: K.S. Wigum)

## 2. *Universal tableware*

Design of tableware that supports individual needs of use, however, is not stigmatizing to the user (Area A, dignified old age; Area D, individual experience).



Photo collage 2. Existing solutions at nursing homes in Norway: cups for special needs. (Photo: K.S. Wigum)

What values are represented in the existing solutions for cups for special needs? There is most likely a functionalistic and efficiency demand that has been driving forces for the cups available for older people at the nursing homes when they are in need of special care to enjoy something to drink. The research team actually addressed this question to a producer of china tableware in Norway. The economic dimension, however, was steering the entire discussion of possibilities for new designs. Other material than china must probably be brought for these products, but the expression of aesthetics should with any material choice be carefully considered.

## 3. *Accessories and napkins*

The seating around the table is important, as well as the elderly residents' feelings about appearance. Idea: nice napkins to protect clothing as well as a proper name sign to give identity and belonging to the people living together (Area D, social needs; Area D, individual experience).

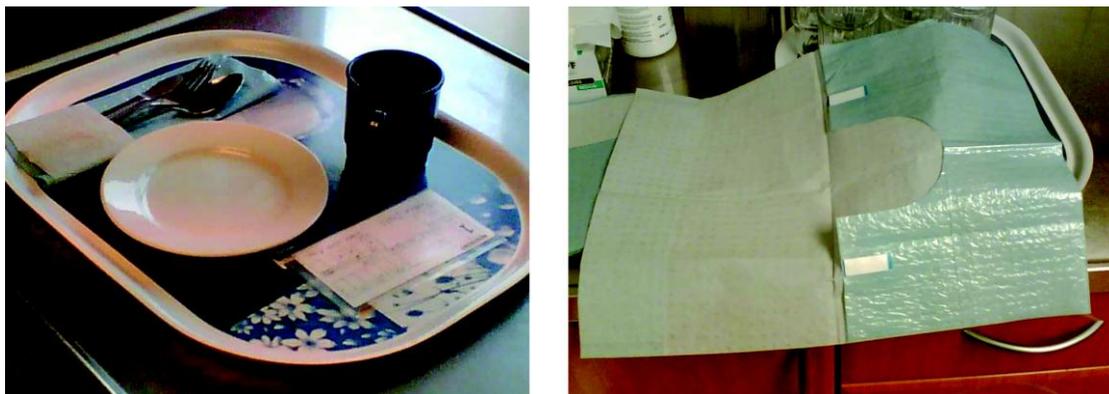


Photo collage 3. Existing solutions at Norwegian nursing homes. (Photo: K.S. Wigum)

In society in general, identity and individuality are strong drivers for choices in clothing as well as indoor products. The relations to social status, cultural boundaries and religious expressions support individual identity and consciousness of roots. Why would society wish to exclude these values and symbols in nursing homes?

#### ***4. The freshly baked coffee cake***

This concept supports the vision “better than good enough.” It should evoke memories as well as provide context for the elderly to have guests (Area D/1, 3, principles/criteria; Area A).



Photo collage 4. Existing kitchen solutions at most nursing homes have appropriate equipment that makes frequent baking activity possible. (Photo: K.S. Wigum)

The frequency of baking activity at nursing homes depends on the health personnel as well as sometimes the elderly living at the nursing home. Is it possible to introduce a service offering a system that supports the activity of baking? This would create a context for the elderly to invite others for coffee and empower them in the role as host or hostess for their guests.

#### ***5. Digital information system and menu exposure***

This concept is meant to empower the elderly by supporting individual choices in the daily menu and exposing forthcoming meals as well as other activities at the nursing homes (Area A/2, empowerment). Digital solutions, exposed on larger touchscreen solutions, could empower the elderly in ordering their choice of meal by themselves or with some help of the employees. The digital announcement should be of high visual character and address the services of the nursing home to the patients and their next of kin.



Photo collage 5. The existing situation at nursing homes today. (Photo: K.S. Wigum)

### **Evaluation of the Concepts in the Context of the Value Platform**

The concepts were evaluated in relation to the value platform as well as the degree of practical expected success. Naturally, assumptions must be discussed for concepts that so far have not been developed or realized. However, one of the concepts, *Joy of the four seasons*, has already been realized. The Foundation Joy of Life for the Elderly (NO: Stiftelsen Livsglede for Eldre) was interested in developing and integrating the concept idea as a part of their pilot-project and certification programme for nursing homes in Norway.

#### ***A. Macro – non-material view***

The five concepts all demand for a change in the culture and priorities of nursing homes. They represent the wish of society that the institution provides to the citizens a dignified old age, not only in terms of medical and physical well-being, but also culturally and spiritually (value platform, A1).

The *Joy of the Four Seasons* concept seems to provide a creative arena for employees as well when the concept is anchored in a holistic system, such as the certification system for Joy of Life Nursing Homes. The introduction of the certification prepares the nursing home for the mental change that is needed in order to succeed with the *Joy of the Four Seasons* concept (value platform, A2). Bringing in elements from nature and creating meals together based on raw ingredients of the seasons connects both employees and the elderly with local resources as well as food traditions and culture. The concept highlights festivals as well as transitions from one season to the other. This introduces the natural rhythms and cycles of the year (value platform, A3).

#### ***B Macro – material view***

This dimension, the main flow of resources and the choices of raw materials in the food as well as the production of the food, is so far mostly under the control of the output kitchen (value platform, B1). However, nursing homes have on several occasions made special appointments, and ordered a more seasonal dish for their feasts, such as for the spring feast and summer party. For further development of the concepts, especially 1) *Joy of the Four Seasons* 4) The freshly baked coffee cake and 5) the digital information system, the relationship with the output kitchen should be strengthened for better support of the local seasonal use of ingredients, local traditions, and in general—easy information flow (B2). The waste treatment of food and other types of waste from meals has not been an object of study in this project, and neither have energy consumption nor transportation and logistics. The total

project aims for improved health—both physical and mentally (B3). This type of result, however, must be systematically evaluated as the concepts are implemented and enjoyed.

### ***C. Micro – material view***

The *Joy of the Four Seasons* is a product service design intended to create a natural and stimulating meal experience by bringing nature inside and providing sense experiences through sight, smell, texture and taste. This may bring up memories and inspire themes for conversation around the table as well as a connection to time, place and life (C1). For idea concepts 1, 4, and 5 to be implemented on a regular basis, the systems must be included in daily routines of task distribution on the same level as other more critical tasks (C2). Idea concepts 2 and 3 challenge society's awareness of aesthetic values of products and how they either bring dignity or stigmatization to the patients (C3).

### ***D. Micro – non-material view***

What do these concepts imply for the individual? The experience of living a sensible life, connected to one's own senses, mind and nature can be defined as “more than good enough” and measured in the context of traditional medical treatment with the human body as the main objective (D1, 2). In an institution, its leadership and employees are responsible for serving to the elderly opportunities for sensible daily living; therefore, the system must provide employees with the tools and rhythms to do so, and help them to see the possibilities through daily routines. The concepts so far may not be evaluated as experienced as “more than good enough” (D1) because that would require a realization of all concepts as well as evaluation research.

### **Methodological considerations**

The project may have benefited from a somewhat higher speed and a few more “intensive” phases in the process. This would have brought a stronger continuity to the discussions and less repetition. However, the slow speed gave the material time to mature and opened the process to more impulses from “outside” and personal reflections by the researchers.

### ***Preparations for Co-design***

Co-design happens when the designers design together with other professions or the targeted users. Co-design is a design methodology that empowers users or other stakeholders to have a clear influence on the final result of the solution (Sanders, 2008). Initially, the first workshop of this project was planned to bring out future scenarios of the “wished future nursing home” and to generate new ideas for the meal situations. However, this was far too ambitious. The nurses, health workers and researchers were neither prepared for this switch of mindset nor familiar to its design thinking. Recent design research within the specialization of co-design shows that non-designers need to be guided and prepared for co-design sessions, similar to the way designers must carefully explore user needs and design context before designing (Hussain, 2011).

The program of the first workshop was therefore changed along the session and adapted to the need of creating a common understanding to the problem findings and the development project as such. This introduction created a trustful atmosphere to discuss the values and culture priorities related to the problem findings from the observations and dialogues at the nursing home. All together, this brought valuable information to the project as part of the analyses.

### ***Awareness of the role as designer versus design researcher***

The “hybrid practitioners,” practitioners with training in a practical profession as well as scientific research, are new types of design performers as a result of changes in the higher educational system. This situation sets the scene for new types of designers performing as researcher and, sometimes, both as researcher and designer in the same project.

In the case of the story just told, the designer had a rather clear change in tasks to perform; however, this might not be clear initially in the projects. The dialogues in the project team were very open, and the two researchers did not know what concrete results the process would give. However, during the process, the design researcher adopted a role more as a designer than researcher. The material was brought into specific concept ideas and brought to the dialogue meetings as concrete input to the open process. It was important throughout the project that the design researcher did not become biased to one or more of the concepts. This could have been a disturbing mix of roles in the process of evaluating the concepts. As a multidisciplinary cooperation, the evaluation should be open and anchored in the field of nursing just as much as design.

### ***Ethics***

Design processes with close interaction with the end-users have become a methodological approach in universal design (Eikhaug, 2010) as well as (product) service design and interaction design. Designers want to come as close to the users as possible and try to understand their minds and feel their feelings. Nurses have guidelines for nursing ethics and have personal responses to ensure that practice is professionally, ethically and legally accountable (yrkesetiske retningslinjer, 2011). Each nurse has a duty to protect the dignity and integrity of individual patients. These perspectives can lead to dilemmas, and the nurses have to make sure that patients are treated in a way that does not cause offence. This obligation of maintaining patients’ privacy might be a hindrance when someone from “outside” wants to go close to the user for purposes other than specific health treatment.

Ethical principles for medical and health science research involving human subjects are anchored in principles from the Declaration of Helsinki and under Norwegian law (Simonsen, 2010, etikkom.no). Each potential subject must be adequately informed of the project and the right to refuse to participate in the study or to withdraw consent to participate at any time without reprisal. After ensuring that the patient has understood the information, the patients must freely give an informed consent to participate. In NHs where so many of the patients suffer from some degree of dementia, this criterion can be difficult to fulfil. This was also the reason why we instead chose to include staff in this study.

Industrial designers have ethical guidelines in the form of unwritten rules of loyalty and trustworthy behaviour—usually practised in relation to a producer and company contract. Designers are also trained to be aware of the rights to their designs. Design researchers, however, must be aware of ethical situations when working on the borderline between design research and design in close relation to vulnerable users and sensitive knowledge.

Co-designing introduces user expectations when users are invited to involvement and commitment in the design process. Further, a design process with users as partners reveals personal vulnerability in the encounter with the designer who wants to know “everything.” Does the designer have ethics and guidelines as well as personal integrity to protect the co-designing user in this professional context? Does the designer have capacity and even mandate to secure and meet the expectations from the user? This project has not involved the elderly nor their family or friends in a one-to-one relationship. The development project is based on the employees at the nursing homes as the users and as advocates for the elderly. Further work with the concepts might demand testing and direct involvement with the elderly.

This must, however, be anchored in ethical guidelines as well as consciously prepared processes and chosen methods.

### Conclusion

Within the field of clinical nursing research, the hunt for new solutions is a challenge. In this work, crossing disciplinary frontiers is of great importance. In the present study, we tried to implement this approach and experienced that through innovative thinking we discovered solutions and strategies that might have been difficult to discover within a traditional single disciplinary method. The encounter between two research disciplines—nursing research and industrial design research—was based on the researchers' desire to explore new and user-friendly solutions in a field where this is in demand. Through a reciprocal exchange of knowledge and experience, researchers and clinicians achieved a broader understanding of factors that can contribute to make solutions possible and the platform of values where new concepts in the meal situation should be rooted.

The encounter between two research disciplines made it essential for us to go through with a stepwise process in order to make sure that the participants understood what we were aiming to achieve. It is uncommon for a practitioner to think that expressed needs and wishes can be transformed to concrete solutions. The follow-up project, *Joy of the Four Seasons*, has already been realized and this project gives good evidence that encounters between disciplines might lead to new and different solutions.

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- Foundation of Joy of Life for the Elderly: (Norwegian only) <http://www.livsgledeforeldre.no/>