



## Caregivers' perception of factors associated with a healthy diet among people with intellectual disability living in community residences: A Concept mapping method



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### ABSTRACT

**Background:** Many people with intellectual disabilities (ID) living in community-based residences have been found to have unhealthy diet and weight disturbances. In Norway, a majority of people with ID live in such residences.

**Aims:** The aim of the study was to examine factors affecting the caregivers' opportunity to promote a healthy diet among the residents.

**Methods and procedures:** A concept mapping methodology was adopted, including group-based brainstorming, idea synthesising, sorting, rating and analysis of the results. Informants were caregivers in four different community residences for people with mild to moderate ID in the southeast of Norway. A total of 13 informants were recruited (12 females and 1 male), and 10 informants completed two sessions.

**Results:** Eight clusters were identified as affecting the caregivers' ability to promote a healthy diet: "Availability and accessibility", "Guidance and autonomy", "Competence among staff", "Planning and involvement", "Customization", "External conditions affecting staff", "Legislation, rules and structure" and "Everyday challenges", each including both barriers and facilitators.

**Conclusions and implications:** Multiple factors affect the caregivers' ability to promote a healthy diet. Caregivers' opportunity to promote a healthy diet is complex. Availability and accessibility of healthy food is crucial, but a healthy diet also requires time and competence among the caregivers.

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### What this paper adds

This study examines factors affecting caregivers' opportunity to promote a healthy diet among people with ID living in community residences, and adds a new perspective to the public health challenges of unhealthy diets and weight disturbances in these groups. Few studies have been conducted using the caregivers' point of view when examining these health challenges. In addition, this study has applied a relatively new methodology called concept mapping, which is considered

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effective for capturing a group's perspective and informants' points of view. The study result shows distinct action areas that can be used effectively in working with people with intellectual disabilities living in community residences.

## 1. Introduction

The deinstitutionalization and establishment of community-based settings for people with intellectual disabilities (ID) in Norway was implemented in the 1990s. The intentions of the reform were to normalize the lives of people with ID, and to see and respect them as full-fledged citizens with the right to self-determination (Ministry of Children, Equality and Social Inclusion, 2012). Today all the institutions for people with ID in Norway are closed, with the law ensuring them the right to community services (Ericsson, 2002; Tøssebro, 2004). Furthermore, the service provision should not be linked to the residential unit, but should instead be customized to the individual resident based on his or her abilities and needs (Norwegian Ministry of Social Affairs, 1987). However, in practice, the service provided is determined by such factors as the number of staff, the organization of the residences and the education level among the caregivers, which is again related to the municipal economy and willingness to invest in this area (Eide & Breimo, 2013). This means that, despite good intentions, the deinstitutionalization of people with ID is associated with unexpected lifestyle challenges such as unhealthy diet and weight disturbance (Bryan, Allan, & Russel, 2000).

The International Statistical Classification of Diseases and Related Health Problems (ICD) defines ID as a condition with stagnated or deficient development of ability and capability (WHO, 1992). The term ID represents a wide spectrum, and individuals with ID have quite different needs for facilitation and monitoring (Norwegian Ministry of Social Affairs, 1990). An ID often implies difficulties dealing with the details of everyday life, while customization and enabling can help reduce limitations (The Norwegian Association for Persons with Developmental Disabilities, 2016). How the environment is tailored for these individuals is an important determinant that influences the quality of life and the individual need for care, regardless of the intellectual severity.

Traditionally, the health focus among people with ID has been directed towards the disease or disability itself, while prevention of secondary lifestyle-related diseases has not been given much attention (Hove, 2004; Nordstrøm, Hansen, Paus, & Kolset, 2013). More recently, disability has been linked to health inequality (Emerson & Hatton, 2007), and it has been suggested that the health status of people with ID living in community residences is worse compared to other groups (Heslop et al., 2013; Martínez-Leal et al., 2011; Rimmer, Braddock, & Marks, 1995). US and European studies show a higher prevalence of underweight, overweight and malnutrition among people with ID in comparison to the general population (Ministry of Children, Equality and Social Inclusion, 2012). In Norway, too, it appears that adolescents and adults with disabilities have a higher prevalence of overweight compared with the general Norwegian population (Hove, 2004). Several studies have identified poor diet and lack of physical activity as two risk factors which contribute to health differences among people with ID (Emerson & Baines, 2010; Sutherland, Couch, & Iacono, 2002). A study conducted in Norway found that a large proportion of persons with ID living in community residences frequently consumed precooked meals and showed a high frequency of soft drink consumption in comparison to persons with ID living with relatives (Nordstrøm, Paus, Andersen, & Kolset, 2015). These findings indicate that dietary behaviours must be reversed in order to improve the overall health condition of this group.

The study takes a closer look into community residences where the residents own or rent their own apartment. This type of community residence often has a common area for the residents and is staffed with permanent personnel (Eide & Breimo, 2013). The meals are prepared by the residents themselves or by the staff working with them. The residents have access to many types of food while the opportunity to buy and make their own food should be facilitated.

The Norwegian Ministry of Children, Equality and Social Inclusion argues that people with ID are in need of extra stimulation and facilitation concerning the promotion of a healthy lifestyle (Ministry of Children, Equality and Social Inclusion, 2012). At the same time, little research has been published that can uncover how to improve the dietary challenges in this group. One study conducted to explore the views of professionals working in group homes in Sweden found that important aspects for health promotion include: the residents' sense of security, knowledge among caregivers and motivation among the residents (Wahlström, Bergström, & Marttila, 2014). Furthermore, a study conducted in the UK found that greater ability and less restrictive residential settings are associated with poor diet and obesity (Robertson et al., 2000).

Self-determination implies that people have the opportunity and right to make choices that may eventually have adverse health consequences (Ministry of Children, Equality and Social Inclusion, 2013). Because people with ID may have limited cognitive ability for assessing the consequences of long-term poor food choices, these opportunities for making choices may have significant health consequences (Smyth & Bell, 2006). Both individual and social factors, such as staff and management, affect choice-making for people with ID (Smyth & Bell, 2006). Thus, in order to improve their health status, quality health services for people with ID should be implemented and provided within that community (Martínez-Leal et al., 2011).

Before initiating health promoting strategies, however, it is crucial to get to know the problem at hand (Fraser, Richman, Galinsky, & Day, 2009). It is therefore important to identify the broader determinants affecting the targeted health behaviour, such as the social and economic environment, the physical surroundings, and individual characteristics and behaviour (Contento, 2010; WHO, 2013).

Accordingly, the objective of this study is to identify factors that affect the caregivers' ability to promote a healthy diet among people with ID living in community residences in Norway. The research question is therefore: According to the

**Table 1**  
Socio-demographic information of the 10 informants (caregivers).

| Variable              | Category  | N (%)    |
|-----------------------|---|----------|
| Gender                | Females   | 9 (90)   |
|                       | Males   | 1 (10)   |
| Age                   | ≤ 25  | 0 (0)    |
|                       | 26–35   | 1 (10)   |
|                       | 36–45   | 2 (20)   |
|                       | 46–55   | 4 (40)   |
|                       | 56–65   | 3 (30)   |
|                       | >66   | 0 (0)    |
| Education             | Primary- and lower secondary school (grades 1–10) | 0 (0)    |
|                       | Upper-secondary school                            | 5 (50)   |
|                       | College/university ≤ four years                   | 5 (50)   |
|                       | College/university > four years                   | 0 (0)    |
| Work experience       | 0–5 years   | 1 (10)   |
|                       | 6–10 years  | 1 (10)   |
|                       | >10 years   | 8 (80)   |
| Occupational position | Leader  | 1 (10)   |
|                       | Non leader  | 9 (90)   |
| Ethnicity             | Norway  | 10 (100) |
|                       | Another country                                   | 0 (0)    |

caregivers, what are the factors that affect their ability to promote a healthy diet among people with mild to moderate intellectual disability living in Norwegian community residences?

## 2. Material and methods

### 2.1. Design

In this study, Concept Mapping (CM) was applied as a method to explore caregivers' perception of the health situation of people with ID, focusing on dietary behaviours. CM is a general term that could refer to any process that represents or visually illustrates the relationship between concepts or ideas. In this study CM refers to a procedure that combines quantitative and qualitative methods and is a form of structured conceptualization (Burke et al., 2005; Trochim, 1989). The methodology is appropriate for capturing the caregivers' perception of factors associated with a healthy diet among people with ID. It is an open-ended and exploratory inductive approach and is designed to establish a consensus that represents a groups' thoughts about a given phenomenon or issue (Concept Systems Incorporated, undated, a). The results can be used as a framework to guide future planning, research and evaluation (Burke et al., 2005; Trochim, 1989). Although CM has been used in a variety of public health contexts (Burke et al., 2005), as far as we know little work has been done using this method for the generation of knowledge concerning the health situation of people with ID.

### 2.2. Recruitment and sample

Caregivers in community residences were identified as key stakeholders due to their knowledge and experience with people with ID, and were thus used as informants. For practical reasons the informants were recruited from community residences in the southeast of Norway. The inclusion criteria included a minimum of one year's work experience in a care home for people with mild to moderate ID, in addition to reading and speaking fluent Norwegian. A total of 13 informants from four different residences participated in the first session, 12 females and one male. However, only 10 of the informants participated in the second session (further described below). Table 1 presents the socio-demographical statistics of the 10 informants completing both sessions. All but one of the informants were women. They were between 46 and 65 years old and had more than 10 years work experience. All informants were of Norwegian ethnic origin and one held a leadership position.

### 2.3. The concept mapping procedure

#### 2.3.1. Preparation-focus statement

In the preparation stage the focus statement and rating focus (Burke et al., 2005; Trochim, 1989) were elaborated by the research group. The focus statement was the key to the data generating process, being the statement to which the informants should respond. Possible interpretations were considered and different formulations were evaluated to establish the focus statement that would generate the most full-bodied material. The following statement was chosen: "What is needed for the resident to achieve a healthy diet?" The formulation of the statement was aimed at generating ideas that would describe

which factors affect the caregivers' ability to promote a healthy diet among the residents, including both barriers and facilitators.

### 2.3.2. Idea generation

The first session included a group-based brainstorming (Burke et al., 2005; Trochim, 1989) which lasted for about one hour. This was held in each of the care homes, with the exception of two care homes participating in the same session. Before initiating the idea generation, the informants signed an informed consent and were given an introduction to what the research group considered a healthy diet, referring to the Norwegian Directorate of Health, 2014.

Furthermore, the informants were asked to answer the focus statement. They were told that there should be no criticism or discussion regarding the legitimacy of statements that were generated during the session. The informants were thinking individually for about 10 min and writing down ideas on paper before sharing out loud with the rest of the informant group, one by one and mediated by the facilitator (first author). The statements shared by the informants were recorded by project staff (the last author) and displayed via a projector, to be confirmed by the informant generating the idea. All 13 informants participated in the brainstorming.

From the original 162 answers, 125 ideas were synthesised (Lebel et al., 2011) and were to be used in the second session. The idea synthesising was conducted to avoid duplicate ideas, to clarify any confusing language, and to ensure that the list of ideas was not too comprehensive. It also ensured a list of unique ideas which are understandable and relevant to the focus statement.

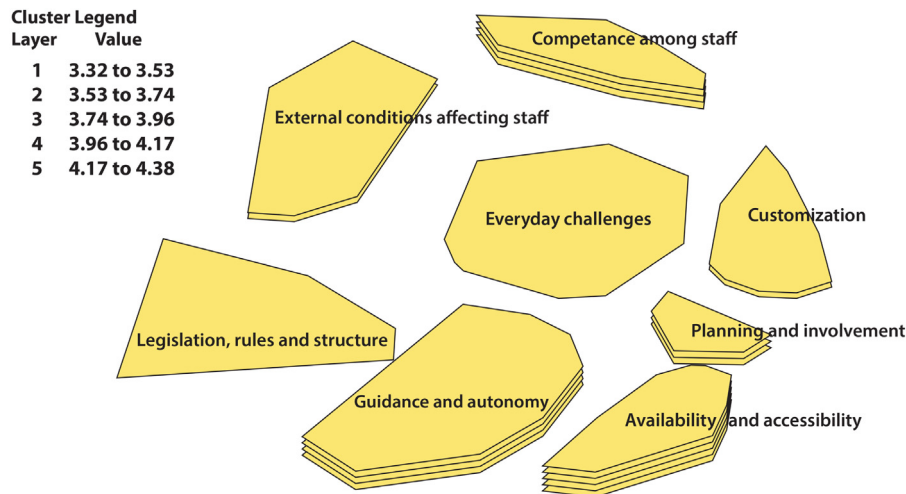
### 2.3.3. Structuring

The second session was conducted between eight and twelve weeks later, depending on when it was practically achievable in the different settings. The 125 ideas were individually printed on small cards and handed out to the informants. The session was guided by a facilitator and included a sorting and ranking of ideas. To obtain information about interrelationships between ideas, unstructured sorting by the informants was adopted (Burke et al., 2005; Trochim, 1989). Before initiating the procedure, they were instructed to sort the ideas into as many piles as they wished according to the ideas having something in common and to give each pile a name or a short description. They were allowed to place as many ideas as desired in one pile and to create piles of only one idea. It was not possible to add the same idea into various piles.

After completing the sorting, each informant was given a ranging sheet to rate on an ordinal scale the importance of each idea (Burke et al., 2005; Trochim, 1989). The scale ranged from 1 to 5, where 1 equals not important and 5 equals extremely important. At the end of the structuring, the informants were finally instructed to fill in a very short questionnaire assessing socio-demographic characteristics. The whole session lasted for about one and a half hour. In total, ten informants completed the sorting and rating. One of the informants only sorted half of the statements by mistake and was therefore asked to complete through e-mail. The already sorted piles with the following statements were then presented to the participant, together with the rest of the statements that were left out. The participant completed the sorting one week after the original sorting session. One of the informants sorted, but did not give names to three of the piles and left out three of the 125 ideas.

## 2.4. Data analysis and representation

The ideas and the ratings were added to the Concept Systems Incorporated software, to perform the statistical analysis and construction of the concept maps using two distinct statistical procedures. Multidimensional scaling (Concept Systems Incorporated, undated, a) locates each statement as a separate point spatially on a map (point map). It is based on the creation of a binary symmetric similarity matrix, identifying how the data was sorted. The final stress value (Kane & Trochim, 2007), indicating if the total model can be said to have structure or may have occurred at random, was 0.32 in the present study. This is below the critical value (0.38) that occurs in 1% of the time at random (Sturrock & Rocha, 2000). Cluster analysis places the points into clusters representing higher-order aggregates of the statements (cluster map). The cluster analysis draws boundaries around groups of ideas in a way that makes sense, to make them into conceptual clusters (Concept Systems Incorporated, undated, b). Clusters that are closer together on the map are more similar conceptually, compared with clusters farther apart. The next step was to decide the optimal number of clusters for the final solution. The number of clusters was determined according to the capacity to interpret cluster content, parsimony and preservation of the variety of item meanings. The authors examined cluster solutions from 5 to 10 and considered eight clusters as representing the informants' perception of the focus statement. A concept map was established, both with and without the informant who responded by e-mail and the one who did not complete names on all piles, to see the consequences of the deviation. The deviation had no effect on the overall rating of the concepts, and data from all ten informants were thus included in the analysis. Further, bridging indices (BI) (Kane & Trochim, 2007) were estimated for clusters and ideas. BI indicate the consistency of the sorting process among the informants, i.e. whether the ideas have generally been sorted with ideas nearby on the map (BI close to 0), or with ideas further apart on the map (BI close to 1). Finally, analyses were conducted to obtain average ratings of importance across informants for each cluster (Trochim, 1989). The clusters were visually inspected, labelled and renamed by the authors to represent the ideas that the clusters comprise.



**Fig. 1.** The resulting cluster rating map of the ideas generated by the informants. The number of layers represent the average rated importance (value) of the ideas pertained to the cluster.

**Table 2**

The clusters, with number of layers in the cluster map, average rated importance, minimum and maximum rate values and bridging indices (BI).

| Cluster title                       | Layers | Importance (min-max) | BI   |
|-------------------------------------|--------|----------------------|------|
| Availability and accessibility      | 5      | 4.38 (3.80–4.90)     | 0.12 |
| Guidance and autonomy               | 4      | 4.04 (3.00–4.60)     | 0.29 |
| Competence among staff              | 4      | 3.99 (2.90–4.60)     | 0.45 |
| Planning and involvement            | 3      | 3.77 (2.40–4.60)     | 0.06 |
| Customization                       | 2      | 3.58 (1.50–5.00)     | 0.22 |
| External conditions affecting staff | 2      | 3.63 (2.50–4.60)     | 0.60 |
| Legislation, rules and structure    | 1      | 3.32 (1.90–4.60)     | 0.61 |
| Everyday challenges                 | 1      | 3.42 (2.00–4.70)     | 0.22 |

### 3. Results

The final cluster rating map (Fig. 1) provides a visual summary of the structured conceptualization and the informants' perception. The map illustrates the average rating of importance for each cluster by layers. A large number of layers indicates importance perceived by the informants, and the map is presented with a legend that presents the values visualized by the layers. The *Availability and accessibility* of healthy food is ranked as the most important cluster related to the focus statement, visualized by five layers. This cluster also has a very low BI, indicating generally high consistency of the sorted ideas. *Guidance and autonomy* and *Competence among staff* are also ranked as important, visualized by four layers. Note however that the BI for the *Competence among staff* was relatively high (0.45), indicating that the ideas were not consistently sorted, but may have been sorted closer to ideas pertained to other clusters by some of the informants. *Planning and involvement* is visualized by three layers and should also be considered as important in relation to the caregivers' ability to affect the residents diet, seen from the informants' perspective. This is confirmed by the very low BI for this cluster (0.06). Furthermore, the four mentioned clusters had a narrower range between minimum and maximum values compared to the other clusters, which indicates that the informants were more in agreement that these were important (Table 2). The other four clusters: *Customization*, *External conditions affecting staff*, *Legislation, rules and structure* and *Everyday challenges* are ranked as less important, seen in relation to the other clusters. *External conditions affecting staff* and *Legislation, rules and structure* also had very high BIs, indicating low consistency in the sorting process.

Table 3 presents the 64 ideas distributed in the four conceptual clusters perceived as being most important, reported by the informants. Ideas pertaining to *Availability and accessibility* included having healthy food available at home, appealing presentation of healthy food, and the caregivers' responsibility to plan meals and participate in the purchase of food. Ideas sorted under *Guidance and autonomy* include those that describe the residents' own motivation, knowledge and self-determination, while also factors in the environment such as routines, diet plans, time and resources. *Competence among staff* can be exemplified by ideas such as the staff's own knowledge and need for knowledge about nutrition, but also food preferences and personal beliefs about what constitutes a healthy diet. Finally, ideas belonging to the *Planning and involvement* cluster include the establishment of nutritional plans for the residents, use of menu lists and attendant assistance. Due to the scope and length of this article, the four clusters perceived as being the most important by the informants and related ideas will be emphasized in the discussion of the findings.

**Table 3**

The four conceptual clusters perceived as most important, reported by the informants, presented with accompanying ideas and their rated importance and bridging indices (BI).

|  | Importance | BI   |
|--|------------|------|
| <b>Cluster: Availability and accessibility</b>                               |            |      |
| The employees' responsibility  | 4.90       | 0.15 |
| Start the day with a healthy breakfast                                       | 4.80       | 0.22 |
| Cooking healthy food so that it appears appealing                            | 4.80       | 0.12 |
| Residents must eat regularly   | 4.70       | 0.34 |
| Give the residents choices (e.g. topping)                                    | 4.60       | 0.07 |
| A varied diet available  | 4.60       | 0.02 |
| Healthy food available at home   | 4.60       | 0.13 |
| Make fruits and vegetables available   | 4.50       | 0.02 |
| A varied menu per week   | 4.50       | 0.14 |
| A specific shopping list   | 4.50       | 0.43 |
| Talk about healthy food/healthy recipes                                      | 4.40       | 0.04 |
| Make healthy shared meals  | 4.30       | 0.07 |
| Talk about weekly menu with residents  | 4.30       | 0.03 |
| Employee and resident agree on what should be purchased                      | 4.30       | 0.07 |
| Access to commodities  | 4.20       | 0.11 |
| Food presentation – enough and appealing                                     | 4.20       | 0.17 |
| What's available in the refrigerator   | 4.10       | 0.03 |
| Inform residents about the importance of a varied diet                       | 4.00       | 0.05 |
| Staff offers fruit and vegetables  | 4.00       | 0.11 |
| Good atmosphere in the shared meals  | 3.90       | 0.07 |
| Foods that are available are eaten/drunk                                     | 3.80       | 0.11 |
| <b>Cluster: Guidance and autonomy</b>  |            |      |
| Healthy food available in store  | 4.60       | 0.27 |
| Routines   | 4.50       | 0.25 |
| Plan in advance  | 4.50       | 0.41 |
| Vegetables in (between) meals  | 4.40       | 0.06 |
| Awareness among residents  | 4.40       | 0.10 |
| Use nutritional advice   | 4.40       | 0.24 |
| Repeat nutritional info multiple times                                       | 4.20       | 0.06 |
| Self-determination   | 4.20       | 0.65 |
| Residents' motivation  | 4.20       | 0.20 |
| Awareness-raising information to the resident                                | 4.20       | 0.09 |
| The residents' understanding of diet and health                              | 4.10       | 0.39 |
| Residents can eat healthier in the company of others                         | 3.90       | 0.31 |
| Residents should stick to their shopping list                                | 3.50       | 0.39 |
| Culture characterizes diet   | 3.30       | 0.26 |
| The fact that others eat something motivates residents to taste              | 3.30       | 0.77 |
| Other types of dishes can be made for a whole group versus a single resident | 3.00       | 0.13 |
| <b>Cluster: Competence among staff</b>                                       |            |      |
| Additional effects on residents from diseases/diagnoses/medications          | 4.60       | 0.50 |
| Knowledge of diagnoses (related to diet) among employees                     | 4.60       | 0.48 |
| Staff needs knowledge about nutrition  | 4.50       | 0.46 |
| Creating general rules for what is a healthy diet                            | 4.50       | 0.47 |
| Increasing competence among employees  | 4.40       | 0.49 |
| Courses for employees  | 4.30       | 0.49 |
| Serious diet-related illness can contribute to a changing diet               | 4.20       | 0.40 |
| Degree of intellectual disability among the residents                        | 3.80       | 0.45 |
| Nutrition is not a priority in the municipality                              | 3.70       | 0.48 |
| Courses in nutrition for relatives   | 3.50       | 0.41 |
| Increased weight caused by increased age                                     | 2.90       | 0.45 |
| Employees disagreed with nutritionist  | 2.90       | 0.38 |
| <b>Cluster: Planning and involvement</b>                                     |            |      |
| Good agreements with users that motivate                                     | 4.60       | 0.01 |
| Several small meals rather than just a couple big meals                      | 4.60       | 0.00 |
| Employees follow the menu plan   | 4.50       | 0.07 |
| Information about what is healthy  | 4.40       | 0.00 |
| Resident's involvement in the grocery shopping                               | 4.20       | 0.04 |
| Establish a nutritional plan   | 4.10       | 0.07 |
| Attendant assistance from employee   | 4.00       | 0.02 |
| Motivated to eat vegetables at common meal with other residents              | 3.90       | 0.06 |
| Distinguish between weekdays and weekends                                    | 3.70       | 0.11 |
| Grocery shopping with staff  | 3.70       | 0.12 |
| Customize meal portions according to activity                                | 3.40       | 0.11 |
| Openness to new dishes/meals   | 3.30       | 0.03 |
| Residents set up menu list of unhealthy foods based on personal preferences  | 3.00       | 0.17 |
| Shop one day a week, fruit and vegetables are left at the end of the week    | 2.70       | 0.01 |
| Order food   | 2.40       | 0.10 |



#### 4. Discussion

The objective of this study was to uncover caregivers' perceptions of factors associated with their ability to promote a healthy diet in community residences for people with mild to moderate ID.

The highest ranked cluster covers the *Availability and accessibility* of food and a healthy diet among the residents. It comprised ideas such as having healthy food available, food presentation and the caregivers' responsibility. The results of the study show that the informants believe that there is a correspondence between available food and the nutritional status of the resident. If one food type is more accessible than others, it will more likely be consumed regardless of whether it is healthy or not. To the best of our knowledge, no studies have assessed this topic among persons with disability. Among other groups depending on guidance and support in their everyday life such as children, attention has been given to the importance of availability and accessibility of food type (Cullen et al., 2003). Availability does here concern whether foods of interest are present in the environment, while accessibility concerns whether foods are available in a form, location and time that facilitates their consumption. Studies on children and adolescents have highlighted the importance of availability and accessibility to improve overall diet (De Bourdeaudhuij et al., 2011; Pearson, Biddle, & Gorely, 2009).

According to the informants, *Guidance and autonomy* is experienced as a barrier to a healthy diet. The duty of autonomy implies that the residents have the right to make unhealthy choices. Since the residents with mild to moderate ID have a sense of independence, they can acquire and prepare food on their own, including unhealthy food. They also have the right to do so if the duty of self-determination and autonomy is to be strictly followed. On the other hand, this collides with the caregivers' duty to promote a healthy lifestyle. These two potentially conflicting duties are set out in policy documents as being vital to the role as caregivers (Norwegian Ministry of Social Affairs, 1990). However, it is hard to balance the role of promoting the residents' health while also recognizing the residents' autonomy.

Time and resources are another aspect of the challenges related to autonomy. The results of the study indicate that the time and resources available affect the possibilities for realizing the residents' preferences and wishes, which in turn affects the residents' autonomy. This result confirms the findings of Eide and Breimo (2013), who point out that the number of staff and the organization of the residence determine the caregivers' opportunities. The limited resources, in terms of manpower undermine the autonomy and self-determination of the residents because of the staff's need to be efficient, and seems to be an important factor affecting the caregivers' ability to promote a healthy diet.

According to the concept map, the cluster concerning *Competence among staff* includes important factors related to the residents' diet and the caregivers' ability to promote a healthy diet. The informants of the study stated that caregivers working in community residences have different backgrounds and competence, and in general they do not have any specialised knowledge about health and nutrition. This was seen as a barrier to achieving a healthy diet among the residents. These results correspond with findings from Sweden, where low educational level among staff is regarded as a barrier to healthy lifestyles among residents in community residences (Elinder, Bergström, Hagberg, Wihlman, & Hagströmer, 2010). Meanwhile, the informants stated that an increase in knowledge concerning nutrition was not a priority in policy documents or in their municipality. This is seen as a barrier to the achievement of a healthy diet in community residences and may affect the overall priority of resources in community residences.

Another aspect concerning the *Competence among staff* is the staff's food preferences and personal beliefs. The informants mentioned that personal preferences and their private diet may affect their work unintentionally. These preferences may be affected by food trends which are not always valid or appropriate for all individuals, including the residents. On the other hand, they may not have other diet or nutritional references, as the informants mentioned that the municipality does not prioritize nutritional education. A study conducted in Sweden confirms these findings, arguing that the requirements of knowledge among caregivers has not been altered and in order to provide an appropriate support, an increase in knowledge is needed but is not always offered (Laursen, Plos, & Ivarsson, 2009).

According to the study results, *Planning and involvement* relates to the establishment of nutritional plans for the residents, grocery shopping, the use of menu lists and attendant assistance. All these factors include planning and involvement of the resident, as well as the caregiver. The residents' involvement in the grocery shopping may promote or hinder a healthy diet, depending on their knowledge and preferences. According to the informants, it is important to establish a nutritional plan and agreements with the residents as well as between caregivers, which motivate the residents to achieve a healthy diet. Agreements concerning a healthy diet might be easier to establish if the caregivers enlighten the residents and raise nutritional awareness. Once again, there is an issue concerning the residents' autonomy and knowledge. Although the residents possess nutritional knowledge and are accompanied by the staff while grocery shopping, there is no guarantee that they will buy and eat a healthy diet. There is also the issue of time and resources, and it was stated that the caregivers' time to involve the residents in the cooking might affect the residents' diet. The actions of planning and involvement may seem simple, but can be difficult to conduct and implement in practice. The resources at hand form the everyday conditions for caregivers, and the lack of time and resources may cause challenges and are seen as barriers to a healthy diet. The caregivers experience cutbacks and the focus on efficiency as limiting, and this entails that the most necessary tasks are prioritized. These factors are related to the *Everyday challenges* and *External conditions affecting staff*. Although the informants do not see these clusters as the most important, they are part of a larger system that interacts and sets guidelines for the caregivers' workday. *Legislation, rules and structure* are also factors affecting the caregivers' ability to promote a healthy diet among residents. Factors associated with these clusters may require mobilization on a higher structural level, concerning structures in the municipalities as well as the political priorities on a national level. This may not seem as important to the

informants, as these factors require overarching structural processes in order to be modified. At the same time they are important issues, setting conditions and frameworks for the caregivers' opportunities and abilities to affect the nutritional health situation of people with ID.

#### 4.1. Strengths and limitations

The limited number of informants ( $n = 10$  who fulfilled both sessions) makes it difficult to generalize the findings to other caregivers. However, given that they were recruited from four different residential areas and have ample experience as caregivers, the knowledge generated from the phenomena is likely to be relevant to other residences and settings as well. Meanwhile, further research in the field is warranted.

The facilitator role must be taken into consideration, given the interactive data collection procedure. However, being conscious about this, the facilitator encouraged the informants to confirm that their statement was recorded correctly, ensuring respondent validation (Kvale & Brinkmann, 2009).

In total, 125 ideas were sorted into piles by the informants. This may have been perceived as overwhelming and fatiguing and can be seen as a limitation to the validity of the material, since the participants may have been more careless in the sorting task than if the number of ideas had been smaller (Trochim, 1989).

CM can be regarded as an effective method for capturing a group's perspective and point of view. However, it may have "hidden" important findings that could have been highlighted using other methods, e.g. individual interviews. One example in our findings is that limited time and resources do not appear as a separate resulting concept. However, several of the ideas are related to these aspects, and if the caregivers had been interviewed, the results may have appeared differently.

The number of final clusters will always be a question of debate in a CM analysis. In the present study our approach was to find a balance between the capacity to interpret the cluster content, parsimony and preservation of the variety of item meaning. However, it can be argued that the consistency among the informants in the sorting procedure (BI) was low for some of the clusters in the final version of the concept map, and that other ways of clustering the data would have been more fruitful. The final number of clusters chosen in the data analysis process was decided in collaboration between the three authors, strengthening interpersonal validation.

## 5. Conclusion and implications for practice

The results of the study show that the informants consider *Availability and accessibility*, *Guidance and autonomy*, *Competence among staff*, and *Planning and involvement* as the most important factors affecting the caregivers' opportunity to promote a healthy diet among the residents. The findings also emphasize the importance of *Customization*, *External conditions affecting staff*, *Legislation, rules and structure* and *Everyday challenges*.

Availability and accessibility are factors that refer to initiatives that are relatively easy to implement, and do not require significant financial priorities. A specific example is buying vegetables (making it available), cutting them up and serving them with dip (making it accessible) as an alternative to fatty snacks and dip. By providing caregivers with competence, tools and recipes to use, and making healthy food available and accessible, these may be strategies that cause a health promoting effect among the residents. By establishing guidelines on how to balance the needs of health assistance and maintain residents' self-determination, it is also possible to modify these factors in a health promoting direction. Increasing the caregivers' formal nutrition knowledge can be accomplished by implementing nutrition courses as part of the caregivers' education and by providing continuing education in nutrition to the caregivers. The initiatives related to planning and involvement are also important but can be hard to conduct and implement because of time and resources at hand.

All of the eight clusters are important priorities in the field of public health, in efforts to promote a healthy diet, reduce the weight disturbance among people with ID, and to increase the overall health situation among these individuals. Meanwhile, time and people with relevant competence are required, as well as the will to prioritize health promoting initiatives at local, regional and national levels. Due to the limited scope of this study, more research should be conducted in order to better understand the interventions required to increase the quality of life among people with intellectual disabilities living in community residences.

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