

Feeding difficulty in older adults with dementia

Chia-Chi Chang and Beverly L Roberts

Aims and objectives. To use concept analysis to identify characteristics of feeding difficulty and its antecedents and consequences that provide direction for assessment and management.

Background. Feeding difficulty is often recognised as a common problem for older adults and is associated with weight loss, poor nutrition and risk for aspiration pneumonia. The cognitive impairment found in persons with dementia impairs the ability of these adults to complete motor and perceptual tasks required for eating and often prevent the older adult from accepting help with feeding from caregivers.

Design. Systematic review.

Methods. In 2006, literature searches using keywords (feeding, eating, nutrition, malnutrition, feeding assessment, dementia, ageing and concept analysis, dementia and feeding and excluding enteral feeding, tube feedings, PEG and enteral nutrition) were done in Medline, CINAHL, AGELINE and Social Science Full Text. Seventy relevant articles in English were found. After a review of the relevant articles, concept analysis was used to develop a definition of feeding difficulty, its defining characteristics and to delineate feeding difficulty from its antecedents and consequences.

Results. Feeding difficulties arise at the interface between the caregiver strategies to assist the older adult with getting food into the mouth and chewing and swallowing food. A model of feeding difficulty delineates the antecedents and consequences of feeding difficulties.

Conclusions. The conceptual model of feeding difficulties provides a strong and clear organising structure for research that can be used to develop evidence based guidelines for practice.

Relevance to clinical practice. The conceptual model provides directions for assessment of feeding difficulties and their antecedents. The model can be used to identify interventions that address antecedents of feeding difficulty (risk factors) and different types of feeding difficulties.

Key words: dementia, feeding difficulty, nurses, nursing, nutrition, review

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Introduction

Feeding is the last activity of daily living lost with disability and is a common problem for older adults (Kolodny & Malek 1991, Kayser-Jones 1992, Herne 1995, Kayser-Jones & Schell 1997a, Berry & Marcus 2000) especially those with dementia (Watson 2002, Manthorpe & Watson 2003). With cognitive impairment associated with Alzheimer's disease and dementia, the older adult does not have the cognitive ability

to initiate or continue effective feeding strategies. In contrast, those with neuromotor disorders, such as stroke or Parkinson's disease, the older person can cognitively manage feeding but do not have the neuromotor skills to get the food into the mouth or chew or swallow effectively. Although the cognitively impaired older adult may also experience neuromotor disorders adversely affecting chewing and swallowing (Ikeda *et al.* 2002), their ability to initiate and complete the tasks related to eating are impaired (LeClerc &

Authors: Chia-Chi Chang, PhD, RN, Assistant Professor, Taipei Medical University, Taipei, Taiwan; Beverly L Roberts, PhD, FAAN, FGSA, Annabel Davis Jenks Professor, University of Florida, Gainesville, FL, USA

Correspondence: Beverly L. Roberts, Annabel Davis Jenks Professor, University of Florida, PO Box 100187, Gainesville, FL 32610-0187, USA. Telephone: + 1 352 273 6330.
E-mail: robertsb@ufl.edu

Wells 1998). Caregivers may require more training to help cognitively impaired adults consume adequate amounts of nutrition, calories and fluids (Bonnell 1995, Amella 1999, 2002, 2004).

Eating is a major source of pleasure and health care providers struggle to help older people maintain this source of enjoyment (Berry & Marcus 2000). The emphasis is typically on maintaining food intake or nutrition to keep older adults healthy because feeding difficulty often leads to malnutrition and contributes to morbidity and caregiver burden. Moreover, it is often an important factor in the decision to place older people in long term care (Athlin & Norberg 1998). The older adult with cognitive impairment often does not perceive the caregiver as helpful when feeding assistance is provided and the caregivers experience difficulty providing feeding assistance.

Even so, the factors contributing to feeding difficulty among cognitively impaired older adults and strategies to overcome these difficulties are often misidentified as only feeding problems and not factors that contribute to these difficulties and their consequences. Watson (Watson 1993, 1994a,b,c, 1996, Watson & Deary 1994, 1997a,b) has developed an instrument of feeding problems that includes factors that are related to these problems but does not adequately assess the range of feeding difficulties often experienced in persons with dementia. Other investigators have documented these problems but do not separate the antecedents and consequences of feeding problems in a way that would provide a more logical and coherent view of these difficulties. Watson and Green (2006) found 13 articles reporting the effects of interventions. They noted that, except for music, there was not consistency in the interventions studied and no randomised clinical trials have been done. Hence, the purpose of the present study was to use concept analysis to clarify the defining characteristics of feeding problems and delineate them from their antecedents and consequences. The proposed model will provide direction for refining measures of feeding difficulty and for developing nursing interventions.

Search methods

In 2006, the literature was reviewed to identify articles and other sources of information about feeding difficulties in older adults. Using the Google search engine, the internet search revealed mostly commercial sites for food products, nutritional advice and only a few sites that were relevant to this search. In CINAHL and Medline searches, the keywords used were feeding, eating, nutrition, malnutrition, feeding assessment, dementia, ageing and concept analysis. Using

individual keywords yielded an exceedingly large number of articles that were not relevant to this concept analysis. Combinations of these terms yielded 1912 from CINAHL and 25,192 from Medline and yielded a large number of articles that were not relevant feeding difficulty. The search was narrowed by using additional keywords, dementia and feeding, while also excluding enteral feeding, tube feedings, PEG and enteral nutrition. This final search strategy yielded 253 from CINAHL with 71 relevant articles. An additional 15 studies were published before 1990 and five of these were not included in this analysis because more recent studies with similar designs and empirical results were found. From the search of Medline, 26 of 123 were relevant and all of these were duplicates of those found in CINAHL. The search of AGELINE revealed 18 relevant articles out of 55 and all the relevant articles were duplicates of those found from the search of CINAHL. The search of Social Science Full Text yielded three articles that were not relevant (all regarding tube feeding). This review is based on the 71 articles that were relevant to feeding difficulties among persons with dementia. Articles were included in this analysis if they addressed feeding difficulties in older adults with dementia and articles related to infants were included if they provided information regarding conceptual clarity of feeding difficulties in older adults.

Concept analysis

Concept analysis described by Walker and Avant (1995) was used for this analysis. Concept analysis is used when there has been a lot of work done in the area and conceptual clarification is needed related to the concept and conceptual model. In this analysis, theoretical and empirical definitions are compared and contrasted. Defining characteristics of feeding difficulties are identified and the adequacy of current measures is used to determine the adequacy of this definition and the consistency of the theoretical definition and current empirical indicators. Antecedents and consequences are delineated from the concept of feeding difficulties. With this method, model, borderline, related and contrary cases are used to provide more information about the defining characteristics, antecedents and consequences of feeding difficulties.

Results

Theoretical definitions

Feeding and eating are two common words that appear in the literature and are often used as synonyms. The standard

dictionary description of feeding is 'to give food' or 'furnish something essential to the growth, sustenance, maintenance, or operation' (Morris 1969, Pugh 2000). Similarly, the medical dictionary definition is 'administration of nourishment' (Dox *et al.* 1993). In contrast, both sources of definitions define eating as, 'to take solid food' or 'to chew and swallow any substance as one would food' (Morris 1969, Pugh 2000).

Feeding and eating are also inappropriately used in nursing practice and research as synonyms. Even in infants, feeding is confused with the interaction between the baby's visual, expressive, vocal and motor reactive behaviours during eating and the attempts of the caregiver to provide food (Mentro *et al.* 2002). Similarly, Siebens *et al.* (1986) defined eating in older adults as the ability to move food from a plate to the mouth and then to swallow it. They identified five components of eating as: (1) the behavioural and cognitive abilities to recognise that food is present and should be eaten, (2) the upper extremity function to transfer food from plate to mouth, (3) the oral phase of swallowing, (4) the pharyngeal phase of swallowing and (5) the oesophageal phase of swallowing. In older adults, feeding includes getting food to the mouth (eating) and is conceptually distinct from the antecedents (recognising food and that it should be eaten) and the physiologic mechanisms of chewing and moving food from the mouth to the stomach (swallowing).

Watson (1993) used the definition of eating from Sieben *et al.* (1986) and renamed it feeding. This definition includes the same components as delineated by Sieben *et al.* (1986). The quality and quantity of what a patient chooses to eat reflects neither feeding nor eating but only the food consumed. In Watson's definition, the older adult may have problems in choosing food but still have the ability to get food to the mouth (eating) and the ability to move it into the stomach (chewing and swallowing). Others attempted to define feeding by breaking it down into two stages: offering food and the acceptance of food placed in the mouth (Athlin *et al.* 1989a,b, Sanders 1990). These broader definitions still confuse getting food to the mouth with chewing and swallowing as well as with the antecedents and consequences of feeding and eating.

Feeding problems emerge at the interface between the older adult and the caregiver and reflect difficulty in the caregiver's ability to feed the older adult. Hence, feeding problems more accurately reflect this interaction between caregiver and the older adult than the term 'feeding' in general. Feeding problems provide more information to the nurse who must select appropriate interventions to effectively deal with specific feeding problems.

Antecedents and consequences

Antecedents are events that occur prior to feeding difficulties and consequences are events that occur after these difficulties. The evaluation of antecedents and consequences allows for further refinement of critical attributes of feeding difficulty.

Antecedents

Lack of clarity in the concept of feeding difficulties is reflected in the view that these difficulties are multifactorial in nature. The defining attributes of these difficulties are often confused with antecedents such as social, psychological and medical history as well as ethical and cultural issues. Patients who have different diseases may display different feeding problems. The most common diseases leading to feeding difficulty are characterised by perceptual deficits, cognitive impairment or a lack of motor control required to (1) recognise food and eating utensils, (2) effectively use these utensils to get the food into the mouth, or (3) effectively control chewing and swallowing food. Dementia patients, for example, may experience difficulty in handling food on the plate, transporting it to the mouth, manipulating it in the mouth and swallowing (Athlin *et al.* 1989a,b, Morris *et al.* 1989, Sanders 1990, Watson 1993, 2002, Priefer & Robbins 1997, Watson *et al.* 2003).

A related antecedent is the preparation of food that is often culturally bound. Older adults from other countries who do not speak the native language may be offered food they have never seen or eaten before. They may refuse to eat this food because of the way it looks, smells, or because it conflicts with their culture or personal history, even if they are capable of feeding themselves (Pierson 1999, Kayser-Jones 2000).

Consequences

Consequences of feeding difficulties are related to nutrition and inadequate motor control for propelling food from the mouth into the stomach. These difficulties impair the ability of older adults to self-feed and consume adequate amounts of food to meet their nutritional needs, leading to malnutrition and weight loss (Franklin & Karreck 1989, Du *et al.* 1993, Wang *et al.* 1997, Young & Greenwood 2001, Young *et al.* 2001, Wang 2002, White 2005, Keller *et al.* 2006). When motor control of swallowing is poor, food is not propelled effectively through the oesophagus and aspiration of food into the lungs can lead to pulmonary complications. Furthermore, the inability to self-feed may increase the burden to the caregivers who assist them (Osborn & Marshall 1993, Ford 1996).

Defining attributes

Defining attributes of feeding difficulty are specific behaviours elicited while the caregiver is feeding the individual. Although somewhat similar to defining characteristics of feeding and eating, these attributes refer to the problems the caregiver experiences while feeding an individual. These difficulties include problems the caregiver encounters in getting food into the mouth and in assisting the individual to overcome or compensate for problems with chewing and swallowing. In addition, feeding difficulties also include difficulty in assisting the individual in initiating feeding and maintaining attention to the feeding task. Physical, psychological and social factors contribute to difficulties in these areas but are not defining characteristics of these problems among older adults with dementia. Inadequate food intake and aspiration are consequences of these difficulties but, again, are not defining characteristics.

Conceptual model of feeding difficulty

Conceptual models for feeding difficulty must include antecedents and consequences to provide direction for assessment of factors that contribute to these difficulties. Results of these assessments can be used to select interventions to reduce factors contributing to feeding difficulties and to address specific types of feeding difficulties. The consequences of feeding difficulties can be used to assess the effectiveness of the interventions (Fig. 1).

Model case

A model case is an example of feeding difficulty that has all the defining attributes of the concept (Walker & Avant 1995). For example, Mr Smith is 80 years old and his daughter comes daily during lunch time to help him with feeding (often requiring two hours). While his daughter was feeding him, Mr Smith was easily distracted by TV programs and background noise (antecedents). Occasionally, he was able to feed himself, but most times he refused to open his

mouth, chew or swallow the food. Mr Smith lost 80 pounds after entering the nursing home three years ago and was diagnosed with malnutrition (consequences).

Related case

A related case is one that does not have the defining attributes of feeding difficulty but includes concepts related to it (Walker & Avant 1995). For example, Ms. Lee is able to feed herself if someone sets up the tray and food so that she can reach them. She has no trouble getting food into her mouth, chewing or swallowing. However, all of the nursing assistants are busy and unaware of Ms Lee's desire to eat. She asks one nursing assistant to help her, but this person answers the phone and forgets to come back and help her. In this example, Ms Lee does not have a feeding difficulty but cannot feed herself because of the food on her tray is inaccessible (an antecedent).

Borderline case

A borderline case contains some, but not all, defining attributes of feeding difficulty (Walker & Avant 1995). Mr Chan, 70 years old, had a stroke ten years ago. He has poor hand-motor control and cannot reliably get food into his mouth. If provided with a large-handled spoon that he can easily grasp, Mr Chan can eat all the food on his plate. Daily, his wife brings food for him to eat between meals (antecedent) and Mr Chan has maintained good body weight (consequence).

Contrary case

A contrary case is a clear example of what feeding difficulty is not (Walker & Avant 1995). For example, Lisa cannot recognise her family and is unable to walk (antecedents). However, she can feed herself and maintains an adequate food intake (consequence).

Measurement

Several instruments are available to measure feeding difficulty. None adequately assess feeding difficulty of the

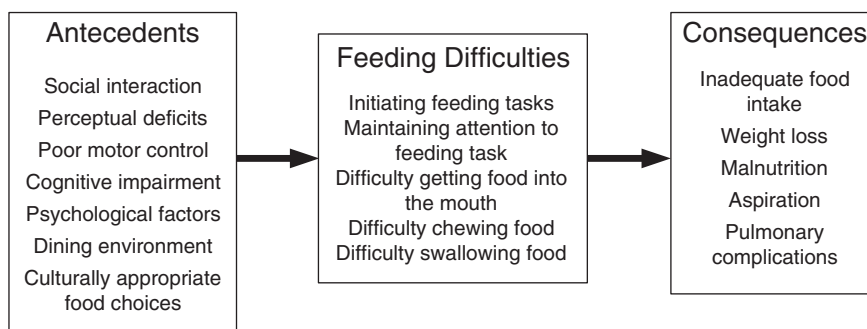


Figure 1 Model of feeding difficulty.

cognitively impaired adult and often confuse antecedents of these difficulties with factors that contribute to feeding difficulty. The Edinburgh Feeding Evaluation in Dementia (EdFED) scale was first developed for the assessment of feeding difficulty in older adults with dementia and was translated into Chinese with fair reliability and validity (Lin & Chang 2003). Using the 11 items of the EdFED, nurses rate older adults on a three point scale from 1 'never,' 2 'sometimes,' and 3 'often' (Watson 1994a,b,c,d, 1996, Watson & Deary 1994, 1997a,b). In 196 older patients with dementia, Watson and Deary (1994) used factor analysis to identify three factors – patient obstinacy or passivity (six items), nursing intervention (three items) and indicators of feeding difficulty (two items). The six-item patient obstinacy/passivity factor also assesses feeding difficulties but does not assess all aspects of this difficulty. While the latter factor assesses feeding difficulty, it does not assess all aspects of this difficulty that is common among persons with dementia. The nursing intervention factor assesses the need for nursing interventions in addressing feeding difficulty.

The Feeding Behaviours Inventory is another measure of feeding difficulties of dementia patients and includes 33 mealtime behaviours (Durnbaugh *et al.* 1996) based on clinical observations from a long-term quality assurance program to manage problem behaviours at mealtimes. The score is the sum of the behaviours observed. Validity has not been established, but it has moderate internal consistency with Cronbach's alpha of 0.58 (Durnbaugh *et al.* 1996). Unlike the EdFED, the Feeding Behaviours Inventory only assesses feeding difficulties and does not include antecedents and consequences these difficulties.

The Eating Behaviour Scale (EBS) measures the functional ability during eating in patients with Alzheimer's disease (Tully *et al.* 1997, 1998). The six-items include 'initiates eating', 'maintains attention to meal', 'locates all food', 'uses utensils appropriately', 'bites, chews and swallows without choking' and 'terminates meal'. The ratings include the type of assistance needed, verbal prompts and caregiver assistance with feeding. The EBS is simple and easy to use in clinical practice. Content validity of this instrument is good and criterion validity is moderate with a correlation of -0.66 of the EBS with length of mealtime.

Video-taped observations of persons at meal time were used to identify feeding problems (Van Ort & Phillips 1992, Phillips & Van 1993, Ragneskog *et al.* 1996) that can be reviewed many times and used to document changes in feeding behaviour (Costantini *et al.* 1998). The limitations of this measure include poor inter-rater and test-retest reliabilities. Video-taped observations also reduce privacy of patients who may make an effort to hide their eating problems

because they know that they are being observed (Watson 1993, Costantini *et al.* 1998).

Interventions

Little has been done to assess interventions to minimise feeding difficulty and increase nutritional intake (Watson & Green 2006). Most studies were descriptive (Cullen *et al.* 1997, Kayser-Jones & Schell 1997a, McGillivray & Marland 1999) and identified feeding problems of older people with dementia and the relationship between feeding difficulty and nutritional intake (Berkhout *et al.* 1998, Porter & Kayser-Jones 1999). The few studies of interventions for feeding difficulty were small and lack control of confounding factors (Watson & Green 2006).

A variety of feeding difficulties are amenable to simple interventions. Some patients need only physical assistance or verbal cuing to feed themselves while others who are able to chew and swallow the food effectively may need someone only to get the food to their mouths. Some feeding difficulties are related to antecedent problem behaviours such as inattention or easy distractibility and interventions may vary dramatically if the feeding difficulty is related to poor motor control, cognitive impairment or inattention.

Eaton *et al.* (1986) assessed the effects of touch and verbal cueing on nutritional intake among older patients without cognitive impairment and others assessed the intervention among older patients with organic brain syndrome (Lange-Alberts & Shott 1994). In previous studies, touch and verbal cueing were effective to help patients with feeding difficulties but have limited generalisability because of small sample sizes in these studies (Eaton *et al.* 1986, Lange-Alberts & Shott 1994, Coyne & Hoskins 1997). Music can reduce the agitated behaviours during mealtime (Denney 1997) and might have positive effects on feeding problems and food intake among dementia patients (Ragneskog *et al.* 1996).

Some investigators have suggested that good feeding skills, food appropriate for the abilities of older adults and adequate time for eating may improve food intake during meals. In addition, providing food supplements or snacks may improve food intake in patients with dementia (Nangeroni & Pierce 1985, Michaelsson *et al.* 1987, Suski & Nielsen 1989, Hall 1994, Hellen 1998, McGillivray & Marland 1999, Wasson *et al.* 2001). Kayser-Jones and Schell (1997b) studied the mealtime experience of cognitively impaired older people and documented counterproductive care strategies that included negative labelling of the resident, lack of assistance and supervision at mealtime and mixing food together. Forced feeding may be a strategy used by caregivers but raises ethical issues (Norberg & Hirschfeld 1987). Effective strategies

included encouraging independence while providing supervision and assistance, creating a social mealtime environment (Melin & Gotestam 1981, Diaz 1999) such as using family-style meals (Altus *et al.* 2002) and simplifying the process of eating. Hellen (1998) suggested using other interventions that included multi-sensory cueing, task simplification and sequencing, mirroring, hand-over-hand approach, bridging and eating facilitation techniques. Although Chang (2005) included those interventions in the nursing assistants' feeding skills training program, individual intervention effects on reducing feeding difficulties among people with dementia have not been empirically tested (Chang & Lin 2005, Chang *et al.* 2006).

Discussion

Although feeding difficulty in older adults is often recognised as a clinical problem, current clinical and research applications related to feeding difficulty do not conceptually separate the process of feeding (getting the food to the mouth) and into the stomach (chewing and swallowing) and their antecedents and consequences. Not only is getting food into the mouth important but also effective chewing and swallowing are necessary to transport food into the stomach without aspiration into the lungs or dribbling from the mouth. Measures assessing feeding difficulty often confuse antecedents and consequences and do not adequately address refusals of food and assistance, inability to attend to the task at hand and difficulty with chewing and swallowing food. Furthermore, interventions for feeding difficulty are underdeveloped and currently do not delineate and address the specific problems related to difficulties in feeding older adults with dementia.

Feeding difficulty of older adults with dementia is a multidimensional phenomenon that is within the purview of nursing care. Through concept analysis, an in-depth understanding of feeding difficulty among older adults with dementia has emerged. Feeding difficulty not only impacts physical health but also mental health of these adults. In addition, this problem is related to the burden of caregivers who provide feeding assistance to these adults with dementia. An understanding of the antecedents and consequences of feeding difficulties as separate from feeding difficulties themselves will provide a clearer direction for assessment of each of these and assist the nurse to select the appropriate interventions targeted to the specific problem. The consequences of feeding difficulty can be used to assess the effectiveness of the interventions and the seriousness of the feeding difficulty.

Future research is needed to refine measurement instruments of feeding difficulty and its antecedents and

consequences. The current instruments do not adequately assess all the defining characteristics of feeding difficulty. Hence, some adults with feeding difficulty may not be identified as having this difficulty and the extent of feeding difficulty within an individual may be underestimated. Moreover, most instruments of feeding difficulty also include antecedents and consequences and confuse these with feeding difficulty.

As noted by Watson and Green (2006), there is little research of interventions to address feeding problems and most studies have small sample sizes and inadequate research designs that limit the generalisability and validity of the study findings. Most investigators also have not assessed treatment fidelity.

Of the 13 intervention studies identified by Watson and Green (2006), only two assessed food and fluid intake that is a consequence of improved feeding difficulty (Ragneskog *et al.* 1996, McDaniel *et al.* 2001). Others only assessed feeding behaviours of residents and caregivers and not the effects on food and fluid intake (Coyne & Hoskins 1997). Both of these outcomes are important and should be assessed for future studies of interventions targeted to feeding difficulties.

Mechanisms by which interventions affect feeding difficulties should also be assessed but both are not assessed in most studies. For example, Denney (1997) expected music to reduce feeding difficulty by reducing agitation. She assessed agitation but not feeding difficulty or food and fluid intake. Ragneskog *et al.* (1996) also hypothesised that music would reduce agitated behaviours that then would decrease feeding problems. However, they only measured feeding behaviours and not the effects of music on agitation that was the hypothesised mechanism. Future studies of interventions should include the effects on feeding difficulty and the hypothesised mechanisms of these interventions. Greater information about mechanisms of these interventions would be essential to refining future interventions. The comprehensive model of feeding difficulty developed from this concept analysis can be used to develop interventions and to refine and select measurements of the appropriate outcomes of these.

Limitation

This concept analysis is limited to the articles selected for review. Although every effort was made to include all relevant articles, there may have been some that have been overlooked that might have provided useful information. Moreover, the literature was limited to publications in English and hence, some relevant articles written in other languages may be omitted from this concept analysis.

Conclusions

The assessment and selection of interventions are hampered by viewing these difficulties as uni-dimensional. Currently, antecedents to feeding difficulty often are not appreciated as conceptually different from feeding difficulty and may be confused during assessment and interventions for feeding difficulties. The theoretical definitions and defining characteristics of feeding difficulty can be used to develop new assessment instruments and refine existing measures. Moreover, assessment instruments that delineate antecedents and consequences of feeding difficulty will provide direction for targeted interventions for this difficulty and its antecedents and provide outcomes to assess the effectiveness of the interventions in improving nutritional and fluid intake. Clearly, more research is needed to refine assessment measures and to develop interventions and delineate their mechanisms by which they affect feeding difficulties and food and fluid intake. Improved measurement strategies and a greater understanding of the effects of interventions are essential to the development of effective evidence-based practice guidelines for feeding difficulty.

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Contributions

Study design: CCC, BLR; data collection and analysis: CCC, BLR and manuscript preparation: CCC, BLR

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