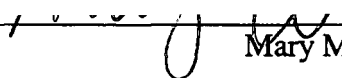


AN ABSTRACT OF THE THESIS OF

YongKyang Kim for the degree of Masters of Science in Nutrition and Food Management presented on March 31, 1999. Title: Strategies for Enhancing Food Intake of the Elderly in Long-Term Care Facilities.

Abstract approved: _____


Mary M. Cluskey

With increasing numbers of people entering the geriatric years, long-term care facilities need to maximize nutrition services with decreasing malnutrition problem due to poor food intake. This research determines extent of use and perceived effectiveness of food intake enhancement strategies in long-term care. Obstacles to implementing strategies and training to teach staff about the use of strategies are also explored.

A total of 311 self-administered questionnaires listing seventeen strategies for enhancing food intake among the elderly were mailed out to two target populations of interest in this study: (1) Directors of Nursing Service (DONs) and (2) Consultant Dietitians (CDs) in the pacific region including Oregon, Washington, and California.

The most frequently cited strategies used for enhancing food intake were: providing a neat and comfortable dining room from DONs ($\mu=3.880$); offering snacks and adding nutrients to food from RDs ($\mu=3.614$). The most effective strategies for enhancing food intake according to respondents include providing assistance for positioning from DONs ($\mu=3.185$) and providing tube feeding from RDs ($\mu=3.339$)

indicating “usually effective”. Comparing the results of the frequency of use and the perceived effectiveness, they often use most strategies, but they do not think that those strategies are very effective.

The obstacles were dietary labor cost and/or product cost to implementing strategies of: adding additional nutrients to foods; providing small, frequent meals; offering snacks between meals; and providing liquid supplements (51- 61 %). Additional nursing labor cost was an obstacle to tube feeding (52 %).

CNA training, in-house inservice, verbal or written instruction (50 – 73 %) were provided to teach staff about feeding strategies including: providing liquid supplements, providing assistance for optimal positioning; and providing praise or positive reinforcement for eating.

DONs and RDs in this study have a significant difference in the use of strategies including: providing liquid supplements ($p=0.0003$); providing specialized utensils ($p=0.0004$), and using simple verbal prompts to eat ($p<0.0001$). DONs more frequently use those strategies than RDs do with the exception of tube feeding.

The results also revealed statistically significant associations between: 1) providing several meals rather than three large meals and the obstacle of product or supply cost ($p=0.0310$); 2) providing praise or positive reinforcement for eating and the obstacle of additional nursing labor cost ($p=0.0035$); 3) providing praise or positive reinforcement for eating and the obstacle of difficulty of implementation or maintenance ($p=0.0280$).

The majority of DONs and RDs had Skilled Nursing Facility licenses (93%). In addition, volunteers’ participation in feeding activities was inactive. RDs acquired skills

in feeding enhancement techniques mainly from RD-HCF manuals or newsletters. The majority of RDs (96.2%) believed that resident behavior problems interfering with eating was an obstacle to adequate food intake among the elderly.

Further research should be performed to explore the reasons of the difference in the frequency of the use and its perceived effectiveness between DONs and RDs. Also, the cost effectiveness on the input of strategies and its outcome should be performed to surpass the expenses for practicing those strategies.

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Strategies for Enhancing Food Intake of the Elderly in Long-Term Care Facilities

By

YongKyang Kim

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APPROVED:

Major Professor, Representing Nutrition and Food Management

Chair of Department of Nutrition and Food Management

Dean of Graduate School

I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

YongKyang Kim, Author

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Strategies for Enhancing Food Intake of the Elderly in Long-Term Care Facilities

1. INTRODUCTION

With increasing numbers of people entering the geriatric years, there is an increase in expenditures for health care (1). Providing adequate nutritional care may be a major contributor to preventing or perhaps delaying some disease processes and reducing health care expenditures (2).

The important factors contributing to the development of malnutrition among the elderly include inadequate food intake and increased need for nutrient dense diets (2, 3, 4). The profound decline in ability to perform the basic activities of daily living may cause the institutionalized elderly to have eating difficulties resulting in insufficient food intakes. In addition, poor appetite may result from disease processes, medications and in some cases, depression (5). It is reported that a gross indicator of food intake, total amount of energy and nutrients, yields a strong and stable association with survival (6).

In spite of seemingly appropriate menu standards and dietary supervision, problems of malnutrition face the residents in long-term care facilities (7). Several studies have reported a high degree of weight loss among in the institutionalized elderly population (7, 8). The prevalence of malnutrition has been reported to range from 30% to 60% of institutionalized elderly people (7, 9, 10). These populations suffer from reduced protein status (11, 12) and/or inadequate fluid intake (13). Though there is no evidence that institutionalization itself leads to impairment of nutritional status, there is greater prevalence of chronic disease and medication use in the long-term care population (11).

When elderly persons have poor nutritional status, they are thought to be more susceptible to illnesses such as pneumonia, pressure ulcers, urinary tract infections, confusion, and disorientation (14). These, in turn, can result in considerable dysfunction and disability, reduced quality of life, and increased morbidity and mortality (2, 9, 13).

Furthermore, when the residents begin to show the symptoms of loss of appetite, determining the cause is important (9). Physiological limitations due to loss of sensory functions with aging and illnesses, psychological limitations including depression, and inadequate staff care resulting in inappropriate feeding assistance can be factors that cause the institutionalized elderly to have malnutrition problems (15, 16).

It is well known that there are also many feeding care problems in long-term care facilities. According to Kolodny and Malek's study (17), more than one quarter (28%) of the nursing staff surveyed did not recognize age-related changes that affect resident eating ability and had little concern about proper seating and positioning for either staff or residents during mealtime. A high staff turnover and the lack of knowledge and inadequate use of specialized feeding techniques for facilitating swallowing and reducing choking are also problems in institutions of long-term health care (17). It is also reported that the staff in health care facilities do not have sufficient time to properly monitor and to adequately provide quality nutritional care to their residents. Lack of staffing may aggravate the eating problems of nursing home patients, especially among those who need to be hand-fed or require assistance (2, 14).

Several feeding strategies have been developed and/ or are in use to enhance food intake among "poor eaters" in long-term care facilities. Providing supplementation,

manipulating menus to enhance food enjoyment, promoting self-feeding skills, and facilitating a proper dining environment are included (46-67).

There is an abundance of literature exploring the nutritional consequence of poor intake but little regarding methods to enhance food intake of institutionalized elderly. This research will attempt to determine the extent of use and perceived effectiveness toward strategies for enhancing food intake among institutionalized elderly in long-term care facilities.

1.1 Objectives

Research objectives included:

1. To determine how often strategies suggested in literature for enhancing food intake among institutionalized elderly are being used.
2. To explore the Directors' of Nursing Service (DONs) and the Consultant Registered Dietitians' (RDs) perception of the effectiveness of strategies for enhancing food intake.
3. To determine what interferes with the use feeding strategies to enhance food intake in long-term care facilities.
4. To determine what kind of training is used or provided to teach staff and/ or volunteers techniques or strategies to enhance food intake among the elderly.

1.2 Null Hypotheses

- H₀1: There is no difference in frequency of using or recommending feeding strategies between Directors of Nursing Service (DONs) and Consultant Registered Dietitians (RDs).
- H₀2: There is no difference in the perception of effectiveness of feeding strategies between DONs and RDs.
- H₀3: There is no association between the frequency of use of feeding strategies and cost or obstacles to use of strategies.
- H₀4: There is no association between use of feeding strategies and use / provision of each type of training in feeding techniques or strategies.
- H₀5: There is no association between perceived effectiveness of feeding strategies and use/ provision of each type of training in feeding techniques or strategies.

2. LITERATURE REVIEW

Malnutrition related to eating disabilities in the institutionalized elderly is a common problem in long-term care facilities (5-12, 21-23). Physiological and psychological limitations, inadequate staff care, and improper eating environment cause the institutionalized elderly to have malnutrition problems (12-15, 20-23, 27-30). In an attempt to ameliorate this problem, the literature provides several feeding strategies that have been developed and/ or are in use. Approaches toward strategy included providing supplementation, manipulating menus to enhance food enjoyment, promoting self-feeding skills, facilitating a proper dining environment, and using caregivers' appropriate mealtime assistance (30-35, 41-50, 61-65).

While long-term care facilities face many problems causing insufficient quality care, they have been implemented to cope with the Health Care Financing Association (HCFA) regulations. Furthermore, long-term care facilities have differentiated themselves from other care facilities in terms of not only preventing malnutrition, but also achieving cost effective outcomes through strategic nutritional services (2, 18, 19).

2.1 Prevalent Malnutrition Problems in Long-Term Care Facilities

Long-term care includes a continuum of health services ranging from rehabilitation to supportive care. As defined by the American Health Care Association, long-term care services target adults aged 65 years and older, who have lost the ability to perform on their own as a consequence of chronic disease or conditions that demand intervention

(20). Approximately, 1.6 million older Americans and people with disabilities receive care in about 16,700 nursing homes nationwide (18).

The elderly in long-term-care facilities are more chronically ill and require more care than most community-dwelling older adults (20). Given this condition, malnutrition is characterized as a lethal disease causing and effecting a failure to thrive among the elderly. Also, low body weight and weight losses that are typical symptoms of malnutrition are known as a highly predictive indication for morbidity and mortality in the elderly in long-term care facilities (21). Therefore, malnutrition is one of the most serious problems that health professionals in long-term care facilities should work toward improving.

As a cause of malnutrition, inadequate food intake is identified with accompanying factors including: eating dependence, poor appetite, feeding impairments, dysphasia, activity and communication levels, presence of a feeding tube, and mental status (5, 6, 11,12, 21). Kerstetter (22) also suggested that common reasons for malnutrition due to inadequate intake are probably quite simple. Some common reasons included: lack of personnel to help feed patients, inappropriate or unnecessary dietary restrictions, and unpalatable food. Institutionalized elderly that suffer from basic level of consumption of food may find it difficult to *voluntarily* increase their food intake enough to improve nutritional status.

In addition, adequate nutrition intake depends on the level of assistance with the eating process that residents received (2, 14, 23-26). Although institutionalized persons do not purchase foods or prepare meals, feeding generally requires their active

participation. Lack of active participation due to physical problems has posed a great impediment to self-feeding among patients with different kinds of disease (23).

Specifically, Alzheimer's patients in long-term care facilities have difficulties with appetite and dysphasia (21, 27). Further, patients with dysphasia are known to have additional feeding difficulties: not opening the mouth, eating slowly, refusal of foods, and finally weight loss (23). However, a Franklin and Karkeck study (27) reported that when appropriate hand-feeding techniques were provided to the patient with dementia, they showed very low rate of weight loss. This result implicated that malnutrition in the institutionalized elderly can be treated successfully, if nutrition services including proper feeding strategies are emphasized.

The failure of many long-term care facilities to identify risk and deal with malnutrition early can result in further deterioration of resident health, longer than average institution stays, and higher costs (14, 20-23). Therefore, the efforts for improving malnutrition are urgently needed to prohibit a negative impact on economic outcomes of an at-risk resident.

2.2 Problems of Eating

Problems with eating are related to physiological and psychological changes. Those changes result in eating disabilities of the elderly and inappropriate care for residents who require proper feeding assistance in long-term care facilities.

2.2.1 Physiological Factors

Physiological factors cause eating disabilities including loss of sensory function, which requires integration of taste and smell sensation. The taste buds and the olfactory bulb atrophy with advancing age (2), or from certain disease states (especially Alzheimer's disease), surgical interventions, and use of medications (28). Deficits in these chemical senses not only decrease the pleasure and comfort from food, but also represent risk factors for malnutrition and immune deficiencies (2, 28).

As another factor, age-related impaired visions are common among the elderly. Visual impairments can interfere with feeding independence. A limited visual field or blurred vision will inhibit them from distinguishing plates and cups from the surface of the dining table (26, 29).

The elderly population taking medications for physiological illness or disease may show evidence of inadequate food intakes often associated with side effects of drugs. Constipation, nausea, vomiting, diarrhea are common side effects of medications and can hamper appetite. Dry mouth and mouth sores related to some of these medications may also limit food choice (5, 13, 30).

Most older people have dental problems (29). Serious periodontal weakening (loosening of teeth), denture-related mucosal lesions, and edentulous conditions can be painful and can cause the elderly to avoid certain foods. Foods that are very cold or very hot can cause oral pain. Very fibrous or crisp foods that require adequate biting force may also cause pain. In addition, denture wearing was significantly associated with decreased intakes of protein per kilogram body weight in the elderly populations (11, 29, 30).

Pulmonary disease, uncontrolled diabetes, strokes and cachexia may cause a deteriorating physical condition, resulting in weakness (29, 31). The weakness of the hand and arm muscles makes it difficult to lift utensils such as a bowl, cup, or spoon. Partial paralysis may also limit range of motion or ability to flex the fingers or hand to grasp a plate or utensil. The elderly who are ill from disease may also have limited food intake. Elderly suffering from strokes or chronic neurologic disorders such as Parkinson's disease may experience some degree of paralysis or loss of coordination that prohibit the usual motions involved in self-feeding (29).

2.2.2 Psychological Factors

A psychological obstacle to adequate food intake, depression, has been demonstrated to be the most common cause of weight loss in nursing home residents (32). Reasons for depression among residents are numerous including death of spouse/ friends, impaired physical functioning, loss of independence, illness, and medications (30, 32). Frequently, symptoms of depression include a decreased interest in food intake. Thus, depressed patients are at notable risk of malnutrition. Thirty to eighty percent of nursing home patients exhibit symptoms of depression (2).

Franklin and Karneck (27) reported that institutionalized patients with Alzheimer's disease (AD) and Senile Dementia of the Alzheimer Type (SDAT) have higher incidences of weight loss and/ or underweight in comparison to a non-demented control group living in the same institutional setting. Norberg and Athlin (24) revealed some features of the dementing illness that make it easy to understand why the patient develop eating and feeding problems. The social withdrawal, memory disturbance and

emotional incapacity in the earlier stages of dementia have an impact on normal eating and feeding behavior. In the later stages, the patient has difficulties in recognizing the meal situation and the food, handling the utensils, and may develop difficulties in chewing, swallowing, and transporting food to the mouth (25). The patient becomes more dependent on caregivers in order to maintain an adequate food intake.

However, Franzoni and others (33) failed to show a difference between nutritional status and mortality in the very old, institutionalized, demented patients and those of non-demented patients with similar characteristics. It was concluded that dementia in very old age does not necessarily decrease survival and does not necessarily lead to malnutrition (33). Therefore, it can be concluded that malnutrition is not an unavoidable correlate of dementia. When proper feeding strategies are provided to the demented, malnutrition might not develop.

2.2.3 Inappropriate Feeding Assistance

It is not surprising to find that most residents required some help in feeding because a major reason for the institutionalization of the elderly is an inability to achieve self-care activities. Over half of nursing home residents need some help in eating; almost a quarter requires total feeding assistance (34). Keller (23) also reported that the level of aid for feeding was related to overall malnutrition and furthermore, feeding was a very expensive care area expending 25% of the health care costs of total-care patients.

The problem of inappropriate care toward residents who require feeding assistance has often occurred in long-term care facilities. It is reported that nursing home staff and residents may not have adequate communication in relation to feeding.

Whereas the staff intends to provide collective dining and independent eating care, residents do not want to influence the menus or complain to the nurses about food. Therefore, some feeding problems occur due to poor communication between the nursing staff and residents (35).

Another major problem of inappropriate care is that the staff may ignore a rehabilitative plan to restore self-feeding skills of residents (36). Feeding is particularly time consuming, if demented elders are allowed to handle the food. So, either intentionally or unintentionally, the staff may try to decrease the amount of time required for feeding by decreasing the elders' involvement in feeding activities (37). Rogers et al (38) reported that the least dependence and the greatest feeding abilities were considered as influential in promoting food intake among poor eaters. Posner et al (39) also found that when feeding disabilities decreased, body weight increased and when they impaired, the body weight fell. This relationship between feeding disabilities and body weight was seen in both demented and non-demented nursing-home residents. The efforts for residents to be motivated to perform as much of the self-feeding process should not be ignored when they show a possibility of handling the feeding process. By allowing residents with self-feeding problems to eat at their own speed, caregivers can see that the resident have a willingness and alertness to eat and in turn, to effectively continue to have self-respect (17, 36).

Furthermore, an improper dining environment due to the absence of the caregivers' recognition of its importance can prevent the adequate nutrient consumption of the elderly in institutionalized setting (35-37). It is not unusual for the environment of the dining room to be noisy, crowded, and distracting because of other residents and/ or

activities of staff members (35-37). Sometimes, because of interruptions of the other staff, the feeding caregivers fail to feed the residents (40).

In addition, inadequate care can happen when there is not enough time for feeding activities (4, 36, 41-43). The time span of the meal has a significant impact on the patient's meal intake. A sufficient amount of time for the meal will allow good coordination between chewing and swallowing and further, it will permit the patients to clear their throat before taking in another bite. Sanders (4) recommends that many patients need to be encouraged to swallow twice to make sure foods clear their throats. It has been also assessed that at least 30 to 45 minutes of nursing time were needed to feed eating-dependent patients one-on-one. In Hu et al pilot study (44), only 18 minutes per day was spent feeding the institutionalized patient with severe cognitive impairment, whereas 99 minutes was spent feeding this type of patient who lived at home. This result also supports that supplementary time and care provided at home may play an important role in lowering incidence of malnutrition in the cognitively impaired living at home. In other words, any less time spent on feeding a dependent patient may unintentionally impose on food intake constraint.

It is important that caregivers recognize their influence on mealtime difficulties. Provision of feeding assistance and time are critical. Immediate actions to improve these kinds of problems are crucial in long-term care facilities when they are identified. However, mealtime is often viewed by caregivers as only a tedious and tiring task that must be finished within a limited time frame (45).

2.3 Strategies for Enhancing Food Intake

Managing the eating disabilities of patients and their concomitant need for eating assistance are major concerns in health care facilities (26). As efforts to decrease this problem and satisfy the resident's need, several strategies for enhancing food intake are suggested. These strategies include: providing supplemental foods and snacks, offering tube feeding, altering food/ menus, positioning strategy, facilitating independent eating skills with specialized utensils, using different prompt techniques for motivating eating desire and improving the dining environment (30-50, 61-67).

2.3.1 Providing Liquid Supplements

When protein-energy malnutrition is recognized, oral liquid supplements are the most commonly provided by health care facilities (14). Approximately half the population of 260 elderly men and women in 15 long-term care facilities in the Boston area receive some nutrient supplementation orally as a single or combination product (10, 11). However, the use of a supplementary product is controversial. Recently, a large portion of literature discusses advantages and disadvantages of using this strategy.

Mostly the advantages of offering supplements deal with the achievement of needed nutrition requirement. Gloth's comparative study (46) was undertaken to estimate the nutrient intakes between the homebound community and the nursing home-based frail elderly population. The result indicated that the institutionalized elderly showed better dietary intakes than an urban homebound population. As a likely explanation, the author mentioned that the use of fluid supplements was totally absent in the non-institutionalized group, whereas a variety of such products were used in the nursing home.

Suski (42) also reported that the supplemental fortified drinks and/or puddings were very important sources, accounting for 41.5% of the protein, along with significant amounts of calcium, vitamin A, vitamin E, vitamins B-6 and B-12 for residents in a nursing home.

Nevertheless, the strategy of offering supplements in long-term care facilities has been reported to have several disadvantages. Kayser-Jones (47) conducted a 5-year prospective study with 40 subjects in two proprietary nursing homes. The study found that supplements were not used properly as an intervention for weight loss in nursing home residents. There was no concern regarding the diagnosis and management of secondary problems when the supplement was consumed. It was also remarked that supplements, when served between or during the meal, destroyed the residents' appetites. Residents showed the denial of the enjoyment of eating regular food due to loss of appetites. A resident who drank a supplement at 10:00 a.m. did not feel hungry at lunchtime and in turn, did not finish a regular meal. In addition, it was also reported that patients easily tired of the given supplement (30).

From the point of view of caregivers, when they are in the status of inadequate staffing, it can be much easier to give residents a pack of supplements rather than give them foods to eat (47). It was also reported that nurse responded to a resident's weight loss by asking the physician to prescribe supplements (47). Without monitoring of adequate intervention by physicians and nurses, providing supplements can be disadvantageous resulting in destroying the resident's appetite at mealtime (30, 47). Furthermore, concerning the tight budget in most long term-care facilities, the use of supplements should be considered carefully with ensuring that the practice of providing

supplements rather than a regular diet is more cost effective, because there is no actual reimbursement for oral supplements (48).

2.3.2 Offering Snacks

Musson et al (49) reported that the provision of afternoon snacks through specialized program “Happy Hour” helped residents have increased food intake and decreased occurrence of dehydration in a social milieu. The use of supplemental snacks between meals is another common strategy used to increase total energy intake for institutionalized elderly in long-term care facilities (10, 50). Snack choices such as fruit, a dairy food or a whole-grain product or others can improve the nutrient intake of the elderly.

2.3.3 Altering Food/ Menus

In an attempt to cope with chemosensory losses, manipulating the food/ menu strategy as a feeding enhancement has been suggested (28). Amplification of the flavor levels in foods to optimal concentrations for the elderly can improve food enjoyment, have a positive effect on food intake and foster appropriate nutritional intake. Sometimes, to alleviate a bitter taste among the elderly, coffee and chocolate extract are added to food or medications (29). Varying texture quality, as well as taste and smell, can also improve intake. Cassens and others (51) reported that adding food thickeners of both commercially prepared (Puree Appeal, Thick N’Easy) and everyday products (rice

cereal, cornstarch, gelatin) to pureed foods increased the food intake of the elderly in the skilled nursing facility.

Another nutritional strategy utilized is revising the menu to include the use of finger foods. If the resident can grasp any type of food in the hand, finger foods would be a best choice (27). Revised finger food menus (e.g., hard cooked egg rather than poached egg, and a pita sandwich) can help the demented patients eat when they fail to use utensils correctly. This strategy facilitates their independent physical involvement and requires less skill in eating, and thus increases food consumption. Rogers' study (38) reported that many residents showed more likely attitudes to choose foods that could be picked up in the fingers than other items. This observation also supports the fact that finger foods allow the residents some independence and choice of self-feeding. In addition, the use of finger foods can be a benefit through saving staff's time spent for unnecessary feeding assistance (52).

Furthermore, several small meals rather than the traditional three meals a day has been recommended to prevent the resident from an early satiety or shortness of breath due to a large meal in chronic obstructive pulmonary disease (10, 52). This strategy would be very effective to enhance food intake of the elderly, especially if the older person has had a stroke or abdominal problem (52). However, this strategy may be unrealistic in long-term care facilities, if there is inadequate feeding staff.

2.3.4 Tube Feeding

Many elderly nursing home residents who are unable to take adequate nutrients orally depend on tube feeding for their nutritional needs. Satisfactory enteral or parental tube feeding is important for those residents' physical strength and is essential especially when cancer therapy is pursued (19, 22).

The use of enteral formulas as a feeding strategy for food intake is not popular among health care residents and/ or staff. Eating is perceived as a factor of emotional satisfaction and not simply as a means of survival. Thus, when a resident is unable to eat, it is often frustrating to the resident, the family, and staff members. The way of providing a tube feeding to overcome a malnutrition problem may elicit an equally strong ethical issue due to its invasive nature (19). In addition, Sullivan et al (14) study also reported that tube feedings sometimes were withheld because the tube sometimes becomes blocked or misplaced. Also, the provision of invasive nutrition, tube feeding, is a costly and restrictive feeding strategy. Furthermore, there is limited research to support the long-term benefits of enteral nutrition. No data is available concerning the composition, safety or efficacy of enteral formulas for older patients or for the patient with advanced dementia (53).

Cass (54) reported that over two thirds of staffs from a Department of Mental Health's long-term care facility agreed that a Percutaneous Endoscopic Gastrostomy (PEG) tube feeding did not have to be continuous and 70% agreed that it was easier to spoon feed. Spoon-feeding requires more staff time for the eating process. In Groher's study (55), there were a large number of tube-fed residents who were capable of receiving a soft mechanical diet. The author strongly recommended that for those

residents who have been tube fed for a long period of time, advancement from the tube feeding to oral feeding such as a soft mechanical diet must be considered with care. Lastly, it was reported that improvement with PEG treatment was not a significant predictor of overall survival (56). Kerstetter (22) also pointed out that parental tube feeding requires very careful technology that carries both strains and benefits. Overall, the loss of eating is not typically managed with the use of enteral feeding in long-term care facilities.

2.3.5 Facilitating Eating Skills with Specialized Utensils

The use of specialized utensils may enhance feeding independence among long-term care residents (10, 29). Specialized utensils are invented to assist residents with reducing problems in difficulty of grip due to weakness and limited range of motion. Therefore, the resident will be more likely to have a positive attitude toward food and mealtime if self-feeding is possible by using specialized eating utensils (38, 52).

Several types of special eating devices are available in most long-term care facilities where the residents have self-feeding opportunities. Specialized utensils such as non-skid bottomed plates, spoons with extra long handles, and textured glasses are commonly used for promoting and assisting the residents with eating (29).

2.3.6 Positioning Strategy

Residents generally need to sit up at a 90-degree angle while eating (29). Posture less than a 90-degree angle can cause the patient to cough or choke while eating. Positioning residents before the meal delivery helps them to prepare the meal. Sometimes, this provokes their appetite (41). Also, careful positioning of the meal tray is significant. The tray should be close to the body at elbow height. This insures the shortest moving distance and time for the food. It maximizes the visibility of the food for the patient (4).

However, residents who ate in bed were frequently not positioned properly (47). More than half the residents in the Rogers' study (38) were usually fed while leaning back in bed. Also, the majority of residents demonstrated upper extremity handicaps. Residents fed in bed experienced dysphasia more often than those fed at a 90-degree angle in a chair. Steele (41) also reported that poor seating position might negatively impact on the amount of oral intake. The author pointed out that the identification of early symptoms of declining capability for appropriate position during eating was not well recognized and interventions were not ordinary at long-term care facilities.

Overall, there seemed to be little understanding of the importance of the relationship between the position of residents and their feeding behaviors, and in turn their food intake. It is practically impossible for caregivers that have no specific training in the identification of proper position to correct and provide assistance regarding desirable position for eating. Indeed, correction of positioning problems might in itself result in enhancing oral food intake.

2.3.7 Modifying the Dining Environment

The dining room in the long-term care facility is a unique milieu. A nutritious meal might be worth little to the resident who is unhappy in the dining room. A quality dining environment can preserve resident dignity, improve intake of meals and make meal time an enjoyable experience (41). Omnibus Budget Reconciliation Act of 1987 (OBRA) has emphasized with great impact on implementing the dining experience to promote these efforts (57). Long term care accreditation agencies also demand facilities offer a pleasant atmosphere in the dining room (58).

Strategies for successful and favorable dining room environments include such items as: providing good lighting; using height adjustable tables and facilitating home-like decor including soft, warm colors; and accommodating individual preferences associated with the social aspect of dining (59, 60). In addition, removal of physical barriers should be considered (59).

Osborn (61), however, reported that strategies to promote pleasurable dining room environments to maximize resident's comfort are often not practiced, and thus the resulting dining experience is unfavorable for both residents and caregivers. Residents in long-term care facilities often see eating in the dining room as a chore, with many frustrations and few rewards (45). Sometimes, dining environments were too crowded, too noisy, and too warm or too drafty. One participant in Bonnel's qualitative study (59) described their dining room as "agitated, upheaval, and confusion". In this unpleasant dining setting, it can be a challenge to feed residents efficiently, pleasantly, and effectively. As an obstacle to achieving quality dining room environment, Bower (45)

also suggested space and budget constraint perceived by administrators in long-term care facilities.

Gilmore and Russell (62) investigate food-service employees' perceptions of significance of special meal service components in providing quality meal service to residents in nursing facilities. Interestingly, the results showed that all food-service employees scored the lowest point on the category of creating a pleasant dining room atmosphere. As a possible reason, authors suggested that administrator rather than food-service personnel might be more likely responsible for the quality of dining room with the authority of selecting dining room furniture and table appointment.

In other aspect for prohibiting quality dining room environment, high noise levels will hinder verbal communication between caregivers and residents, especially for those with diminished optical and listening ability that may be poor at interpreting facial expressions. Kayser-Jones and Ellen (63) reported that chaotic ambience usually prevailed as the television blared and staff members rushed trying to feed impaired residents. Some patients become very agitated and frustrated in the midst of any noise while eating. Sanders (4) also suggested that it is necessary to provide quiet surroundings while providing feeding assistance. When noises were minimized, residents could be able to listen to directions and engage in conversation. She even mentioned that it is better for caregivers to avoid talking resulting in distractions toward residents. Davies's intervention study (64) attempted to minimize noise in a continuing-care geriatric hospital by reducing noise level with removing trolleys to the corridor, and by providing simple prompts to encourage patients to exercise more control over the way the meal was

served in the quiet atmosphere. The result showed a considerable increase in social behavior for all patients and staff-patient interaction.

Interestingly, Van Ort and Phillips (40) mentioned that sometimes, residents are distracted not only by themselves but also by other staff's interruption while caregivers feed residents. This phenomenon will possibly happen when there is the lack of recognition of the importance of feeding and when there is lack of consideration of verbal or tactile prompt that might require proactive caregiver's efforts, though it is not on the job performance.

2.3.8 Strategies of Prompting, Pantomiming, and Praising

Nursing interventions such as the use of touch and verbal prompt, pantomiming desired eating behavior, and praising for eating could increase nutritional intake for the elderly in long-term care facilities (52, 65-67). Van Ort and Phillips (65) suggest that specific nursing intervention such as behavioral intervention (e.g., using simple verbal or tactile prompts) can improve food intake among demented elders. Hogstel (52) proved that when the patient had some difficulty swallowing, verbal cueing by saying the word "swallow" was helpful for the patient to place the food or liquid into his mouth. A Coyne and Hoskins study (66) investigated the effect of behavioral strategies such as verbal prompts and positive reinforcement on eating independence of the demented elderly in nursing homes. The results showed a significant success in the use of behavioral strategies in completion of the eating cycle, which they define as a sequence process from beginning to completing food intake (66). They suggest that the practice of these

strategies by trained nonprofessionals may be less expensive than the human and health care costs associated with poor food intake.

Eaton (16) found that tactile intervention had a significant positive effect on nutritional intake in Chronic Organic Brain Syndrome patients in a skilled care facility. Tactile prompts such as a touch on the back of the hand or holding hands, or touching the lower lip slowly with a spoon were provided to residents who were resistive or combative to mealtime. The outcome was successful, showing that this prompt worked very effectively to overcome patients' behavioral problems. Lange-Alberts (67) also reported that touch, verbal cueing, or the combination of touch and verbal cueing were all effective methods for increasing the nutritional intake of the non-demented elderly residents. It was also reported that the effort of caregivers by pantomiming needed eating behaviors resulted in the increased amount of food intake in the institutionalized elderly (65). Providing praise or positive reinforcement is another form of a proactive quality care strategy performed by caregivers when they feed institutionalized elderly (42).

In addition, provision of proactive nutrition intervention for elders focused on regaining eating function through repeated practice of eating related activities. Those proactive interventions were found to be significantly effective in improving the eating ability of the nursing home residents with dementia (36).

2.4 The Utilization of Volunteers in Feeding Activities

Feeding dependent residents can be very time-consuming in nursing homes especially where many residents need to be fed. Recruiting volunteers in mealtime will be a best policy as long as they are properly instructed in safe feeding procedures (49,

52). However, it is controversial issue that creative utilization of volunteers during mealtimes can be valuable in the quality nutritional care in long-term care facilities.

The Dysphasia Team in the Miami Veterans Affairs Medical Center coordinated a six nutritionally supportive programs. As a volunteer feeding program, “Silver Spoons” allow volunteers assist nursing staff by participating supervised feeding activities. Volunteers in the feeding program attend an orientation held every month in conjunction with the regular hospital volunteer orientation. During around one hour orientation, volunteers obtained an appropriate dining environment, and appropriate verbal and physical cueing techniques for proper feeding performance. Participation of volunteers in feeding activity was very successful with opportunity of more time for residents’ eating while providing psychosocial support and self esteem (49).

In other aspects, utilization for volunteer workers for nutritional services are prohibited in Washington State, under chapter 43.190 RCW (Revised Code of Washington) applied to the long-term care ombudsman program (68). Washington State law does not permit the use of non-certified staff to assist resident in mealtime.

2.5. Weakness in the Quality Care in Long-Term Care Facilities

The implementation of Omnibus Budget Reconciliation Act of 1987 (OBRA) has brought some developments in nursing home care. However, Rousseau (69) indicated that still there are not enough staff members to feed and assistant residents at mealtime, even though OBRA staffing requirements are met. Considering that the menu is regulated to nutritional requirements of elderly, Franklin (27) suggests that a well-

managed long-term care setting with adequate staffing should be able to adequately nourish residents.

The primary reason for prohibiting quality care was an inadequate number of poorly supervised staff lacking in necessary information about feeding strategies (47, 52). The decrease in government spending and attempts to keep nursing home costs low have caused inadequate nutritional support and monitoring (19). The consequence of lack of staffing can be seen in which using rehabilitation feeding strategies to improve residents' dignity through self feeding might not always be apparent in long-term care facilities (4, 17, 26).

Nurses and aides play an essential role in monitoring the weight, dietary intake, and general health status of residents. But their ability to perform these role is often limited by a high resident-to-staff ratio, a high percentage of nonprofessional staff with a minimum number of qualified supervisory personnel, inadequate training, low morale, and rapid turnover (70). This occurrence was especially prevalent at dinnertime and on weekends when there are fewer staff members on duty (63). Davies and Snaith (64) point out that feeding comfort might be a possible reason for caregiver to place residents on pureed diets without proper intervention. This situation may result in fewer attempts to modify diets because a busy staff who can not find enough time to feed those who require assistance will seek just easy way to feed residents such as sticking with pureed diet.

It was also disclosed that licensed staff did not assist or supervise the Certified Nursing Assistance (CNA) during mealtime (63). Being busily working for other performance, such as passing medications, the licensed staff had little time to supervise mealtime care. Therefore, the unsupervised CNAs were totally accountable for the

nutritional care of residents with complicated needs (63, 64). There is no doubt that complex aging processes of the elderly require specific safety factors when they are fed. The chance of aspiration and choking on food or fluid is high among the frail elderly. Therefore, the registered nurse should ensure that the aides perceive the risk and understand safety factors involved in feeding the frail elderly where they are dependently fed (52).

Similar problems occur in the dietary department in long term care. Although nursing homes are required by law to employ Consultant Registered Dietitians, these professionals often work limited hours and do not have time to perform a complete nutritional assessment on every patient. Only through a cooperative team approach and physician involvement optimal nutritional care can be provided to all long-term care residents (19).

2.6. Improved Nutrition Services As a Marketing Tool

In competitive long-term care business environment of the late 1990's, there should be consistent communication of the organization's marketing message to their seniors, families, and the medical community. One of the best ways for a facility to differentiate itself from its competitors may be throughout its food and nutrition services (71). Furthermore, the transition from a cost basis to the prospective payment and managed care makes health care agencies more eager to include improved nutrition services. They want to ensure better patient compliance with treatment recommendations as well as to improve disease management and rehabilitation even without direct reimbursement for dietitian services. Focus on the nutrition services can enhance the

effectiveness of and ultimately reduce costs of medical treatment in long-term care facilities (69, 71, 72).

Tucker (73) suggested that improved nutrition services could actually help cut cost or increase revenues if they are targeted to patients at risk of malnutrition, applied early in the institution course. He actually documented those benefits in his malnutrition cost survey. Musson et al (49) also evaluated the cost of the daily meals tabulated before and after recommendations for modification of diet and feeding implemented by the dysphasia team. The results from the evaluations indicated that an average food cost saving of 85 cents per patient per day, or an average saving of \$ 71.40 per patient per quarter. With the selection of appropriate food consistencies for dysphasia patients and by the provision of bulk foods during special nutrition program time, there was an average food costs savings of \$ 81.28 per day or \$29,667.20 per year in the nursing home care unit.

Most administrators, who play a key role in determining what nutrition services are provided, thought home nutrition services would expand during the next five years in increased hours (84.5%), staff (82.6%), and services (85.9%) according to Schiller et al study (71). This change will encourage long-term care facilities to provide necessary nutrition services because improved nutritional status speeds recovery and reduces incidence of complications, thereby lowering overall costs to the agency.

The importance of improved nutrition services has been continued to be a major factor in resident satisfaction and contributed to high-quality patient care with meeting cost containment of managed care in health care organization (47, 73-76). Complying with this trend, the role of Consultant Registered Dietitian has been emphasized

continually to achieve marketable dietary services and cost effectiveness pertaining to customer satisfaction, quality outcomes, and cost containment with the recognition of administrators who struggle to contain costs associated with critically ill residents (58, 71, 74). In addition, Arensberg and Schiller (75) imply that there will be increased dietitian hours and nutrition services even though insufficiency of reimbursement by third-party payers is often cited as the greatest obstacle against dietitians obtaining positions in health care organization.

However, improved nutrition services as a cost saving tool is generally overlooked. Sometimes, reductions in nutrition services are often targeted when administrators look for ways to maximize reimbursement revenues and lower operating costs (19, 71). Furthermore, most nutrition counseling services are not covered by major third party insurers including Medicare because of the lack of reimbursement for nutritional services and dependence on state funds to offset operating expenses (76).

2.7. Rationales for Utilization of Training about Feeding Strategies

Considering that malnutrition problems exist in an estimated frequency of 30-60% of all long-term care facilities (7, 9, 10), Health Care Financing Association (HCFA) issued new federal supervision with the help of American Dietetic Association (ADA) (18). For the new rules codifying a growing emphasis on quality of life issues, ADA recommended “a Long-Term-Care Quality Task Force” to provide special nutrition. The topics of this task force include: ideas for providing quality dining service; guidelines for training nursing home caregivers to feed residents and for requiring care for special needs residents (69).

Frail elderly in long-term care facilities often solely rely on their caregiver for help in receiving food. Therefore, it is very important for caregivers to understand both adequate nutrition and proper feeding strategies in provision of feeding activities among the elderly. Only caregivers with accurate information about quality nutritional service can save needless expenses and prevention of potentially harmful treatment (77). In turn, training programs can provide caregivers with essential knowledge to cope with feeding difficulties and teach feeding skills and strategies to enhance food intake of the elderly (22, 41, 78). One survey study reported that forty seven percent of health care workers declared that they need more training to deal with provision of nutrition to the weak elderly (54).

It was also reported that many caregivers had misunderstanding about patient's food intake behavior (4, 77, 79). When geriatric patients do not participate in self-feeding, some caregivers considered them idle for not feeding by themselves. Patients with poor recognition and handling of food are often thought to "not want to eat". Misunderstanding by caregivers may result in refusal to help these patients in mealtime. Steele (41) also brought up that inaccurate feeding techniques were employed by caregivers when they provided feeding assistance for the elderly in mealtime. The author reasoned that they lacked of specific knowledge to apply secure and pertinent feeding strategies. Symer et al (80) suggest that the nurse aide's job performance include evaluation of how well they facilitate feeding strategies to promote frail residents' eating abilities.

Therefore, caregivers' advocate specific knowledge is needed to meet the needs of feeding frail elderly at mealtimes. One of the most effective ways to satisfy this demand

will be to utilize various training programs designed to enhance caregivers' abilities regarding facilitating food intake among geriatric patients and residents.

2.8. Inter-Departmental Efforts to Provide Quality Care

Recently, professional teamwork efforts focusing on improving quality of care in the dining room have been seen in many of long-term care facilities (45). While nursing and dietary staff work cooperatively on issues addressing resident dietary needs with the ultimate goal of improving malnutrition problems, they share important perspectives about the residents' mealtime environment (41, 45, 76).

In 1992, the Joint Commission required accredited health service organizations to have Continuous Quality Improvement (CQI) (45). Long-term care organizations that obtain Joint Commission accreditation now have to demonstrate utilization of CQI practices just as hospitals do (69).

The CQI focuses on inter-departmental collaborative efforts to achieve quality and cost effective care services within health service organization (76). The challenge of this new management approach to improve nutritional services includes the question of how the CQI principles apply to the dietary and nursing departments in a nursing home and how to facilitate all employees to participate in CQI program. In addition, when CQI is performed, training is considered as one of top priorities not just for managers but for all staff (45, 72). Furthermore, Carolyn (58) addressed that developing multi-disciplinary feeding program is critical, and instructing the nursing staff on feeding techniques becomes the Consultant Registered Dietitian's responsibility.

It is important to determine what level of perspective and understanding exists among two different health care professional groups regarding feeding strategies in order to develop coordinated efforts. This research recruited Directors of Nursing Service and Consultant Registered Dietitians to determine opinions from both professionals in long-term care about this issue.

No study in the literature has investigated the use and the perceived effectiveness of strategies to enhance food intake among the elderly. Through this study, researchers attempt to investigate whether they have same attitude toward feeding strategies by testing differences in the use of frequency and the perceived effectiveness among subjects. This study also looks at what obstacles interfere with implementation of feeding enhancement strategies and what training methods are used to deliver or utilize those strategies.

3. METHODOLOGY

This study focuses on examining the extent of use and perceived effectiveness of seventeen food intake enhancement strategies among institutionalized elderly. It was also designed to measure the differences in use and perceived effectiveness of those strategies between Directors of Nursing Service (DONs) and Consultant Registered Dietitians (RDs). A survey instrument was developed and utilized to gather the data that were analyzed for frequencies of use, perceived effectiveness, obstacles, and training methods used to teach strategies for enhancing food intake among the elderly in long-term care facilities.

3.1 Sampling Design

The two target populations of interest in this study were: (1) Directors of Nursing Service (DONs) and (2) Consultant Registered Dietitians (RDs) in the Pacific region including Oregon, Washington, and California. A stratified random sampling design was used in which the strata were the six combinations of states (Oregon, Washington, and California) and population of DONs and RDs. Given the population size in each stratum, the expected response rates for each population obtained from the pilot study (See page 34): 0.33 for DONs and 0.55 for RDs, and the budget constraints were consideration for choosing the final total number of study subjects for this research. A summary of the sample design is presented in Table 3.1.

Table 3.1 Sampling Design

	α^1	δ^2	DON			RD			Total
			OR	WA	CA	OR	WA	CA	
N- strata population size			172	325	1194	55	113	392	
n- sample sent after adjusting for expected response rate from pilot test	0.1	0.17	64	67	70	31	37	42	311
			Sub total: 201			Sub total: 111			
n' -sample needed to obtain stated precision within each stratum	0.1	0.17	21	22	23	17	20	23	126

1. α : The amount of confidence in the estimate.
2. δ : The maximum allowable margin error.

The sampling allocation scheme was based on an overall objective of obtaining equally precise estimates for each of the stratum (81). A worse case value of $p=0.5$ (p : the variability of population) and various combinations of delta (margin of error) and alpha (the amount of confidence) were applied to be sufficient to meet the criteria no matter what the actual population proportion p is (82). The selected allocation scheme is summarized in Table 3.1.

The sampled populations for DONs were randomly selected from a list produced by their respective government regulatory agencies. Those agencies included Senior and Disabled Services Division in OR, Residential Care Services Aging and Adult Services Administration in WA, and Department of Health Service in Licensing and Certification Program in CA. Consultant Registered Dietitians in Health Care Facilities were also randomly selected from a practice group list purchased from the American Dietetic Association.

3.2 Survey Instrument Development

The study was carried out by mailing two slightly different self-administered questionnaires: one to Director of Nursing Service and one to Consultant Registered Dietitian (Appendix C and D). The variations in instruments reflected the need to pose questions differently for DONs that work in a facility, and for RDs that have less familiarity with facilities for whom they consult. The DONs instrument asked more about employee and facility specific information.

Each questionnaire was designed to identify: the extent of use and perceived effectiveness of strategies for enhancing food intake viewed from both DONs and RDs; if there were obstacles to implementing strategies; and what types of training methods are used to teach food intake enhancement strategies among staff in long-term care facilities. Seventeen strategies for enhancing food intake were selected using strategies suggested in the literature. The questionnaires were developed with the help of the Oregon State University Survey Research Center. Also, three Registered Dietitians and two Directors of Nursing Service in Oregon evaluated the instrument for face validity. However, the reliability of the questionnaire was not assessed. The Oregon State University Institutional Review Board for the Protection of Human Subjects approved this study and research protocol.

3.2.1 The Pilot Test

After following revision by the survey consultant, the questionnaire was pilot tested on a small number of DONs and RDs in each state. During August of 1998, total

20 questionnaires were mailed to DONs and RDs in Oregon, Washington, and California. It was followed up with postcard reminders and then a full questionnaire packet. The response rate was average 33% from DONs and 55% from RDs.

Several minor changes from pilot testing were completed to make the questionnaire a more refined and easy to answer for the subject. Most of respondent from pilot tests complained about the tedious circling of binary yes/ no answers to 153 questions. Therefore, answer “No” category was removed even though there was a risk of interpreting uncircled responses.

3.2.2 Main Survey

The main survey was mailed during September of 1998. A total of 311 original questionnaires were mailed with a cover letter and a stamped return envelope. Salant and Dillman survey procedures (83) were used with the exception of the advanced notice and the third follow-up, telephone call due to the limitation of time and budget. The first follow-up reminder postcards were sent a week after the initial mailing to those who had not responded. Approximately two weeks later after the first follow-up postcard, the second follow-up instrument was mailed with a replacement questionnaire, reminder letter, and stamped envelope.

3.2.3. Structure of Questionnaire

The two questionnaires sent to DONs and RDs were very similar. Each has four main questions concerning the seventeen strategies. Strategies “a” through “g” were

related to improving the quality of meal. Strategies “h” through “q” were focused on the efforts of caregivers to provide appropriate mealtime assistance. All seventeen strategies are shown in the Figure on page 37.

The same first page in both DONs’ and RDs’ questionnaires was used to determine how often they use each strategy to increase food intake of the institutionalized elderly. The same format was used for the next question on page two, which attempted to reveal their perceived effectiveness of each of the feeding strategies. The obstacles to implementation of those strategies were asked of both DONs and RDs on page three and differed slightly in how it was asked. The last set of question dealt with the training for the use of feeding strategies. In the DON’s questionnaire, respondents were asked to identify which of training methods were used in training their staff in the use of strategies. In the RD’s questionnaire, they were asked whether or not they provided four different types of training. Responses to theses questionnaires were based on a 4-point Likert scale (4: often, 3: sometimes, 2: seldom, and 1: never, in question 1, and 4: always effective, 3: usually effective, 2: sometimes effective, and 1: not effective, in question 2) for both the DONs and RDs questionnaires. Binary, checking a response of a “Yes” answer, was required to answer questions 3 and 4.

The four main questions were followed by a variety of demographic questions including the type of facility license and the number of residents and staff member in both DONs’ and RDs’ questionnaires. How volunteers are utilized for feeding activities was also asked of DONs (See Appendix C - Survey Questionnaire). How respondents acquired feeding enhancement skills and their beliefs about obstacles to adequate food intake were also items on the RDs’ instrument (See Appendix D - Survey Questionnaire).

Figure. Seventeen strategies for enhancing food intake of the elderly in long-term care facilities

Strategies	
a.	Provide liquid supplements with or between meals (Ensure, milkshake, etc.)
b.	Add supplemental products or additional nutrients to foods
c.	Provide tube feeding
d.	Offer snacks between meals
e.	Provide several meals rather than three large meals
f.	Offer meals as finger foods
g.	Provide specialized utensils (Scoop plate, nose cup, etc.)
h.	Minimize noise and distractions occurring in the dining room
i.	Provide neat and comfortable dining environment
j.	Place food on placemat directly in front of resident
k.	Avoid staff interruptions during feeding of the residents
l.	Provide assistance for optimal positioning at meal time
m.	Position functionally impaired residents next to self-feeding residents
n.	Use simple verbal prompts to eat
o.	Use tactile prompt (hand over hand)
p.	Pantomime desired eating behaviors
q.	Provide praise or positive reinforcement for eating

3.3 Statistical Analysis

SAS JMPIN software, provided by SAS Institute Inc (84), was used to conduct the statistical analysis of this study. Before launching into testing hypotheses, the descriptive data analysis about percentage, frequencies, and mean was performed.

To test hypotheses 1 and 2, the Wilcoxon rank-sum statistic was used for a non-parametric test for a shift in the mean response between DONs and RDs for each question and strategy combination (85). The Wilcoxon rank-sum statistic provided appropriate ways to analyze data no matter what the distribution of the data was. One example of a shift in response could be that RDs responded “seldom” or “never” to recommended strategy “h,” but DONs responded “often” to that strategy. To test hypotheses 3, 4, and 5, Fisher’s exact test was used. The researchers used this for testing of independence no matter what the sample sizes were. Fisher’s exact test detected that there was an association between the row and column categories (e.g., used/not used variable as a row category and one training method variable as a column category). In using Fisher’s exact test, the multinomial responses were combined into binomials (e.g., “often”, “Sometimes”, and “seldom” were placed in the “used” category and “never” in the “not used” category). Lastly, in order to analyze result data properly, researchers received a statistic consulting from the Department of Statistics at Oregon State University.

4. RESULTS

Malnutrition due to inadequate food intake in the institutionalized elderly is a common problem in long-term care facilities. Illness, inadequate staff care, and improper eating are some of the contributing factors that may affect the ability and desire of the institutionalized elderly to eat sufficient amounts of food. Little is known, however, about the awareness and use of such strategies by long-term care facilities or by Consultant Registered Dietitians to such facilities.

The intent of this research was: (1) estimate the extent of use and perceived effectiveness of intake enhancement strategies, and (2) test specific hypothesis about what factors are associated with their use and effectiveness.

4.1 Survey Instrument Results

The study results included 94 directors of nursing services and 69 Consultant Registered Dietitians. This number represents respectively 46.8 % and 62.7 % response rate. Similar to the result from the pilot test, a higher response rate from Consultant Registered Dietitians was shown. Table 4.1 provides a summary of designed sample size and response results after constructing survey instrument.

Table 4.1 Response Results

	DONs			RDs			Total
	OR	WA	CA	OR	WA	CA	
N- sample sent after adjusting for expected response rate	64	67	70	31	37	42	311
	Sub total: 201			Sub total: 111			
Number of responses	41	35	18	21	23	25	163
	Sub total: 94			Sub total: 69			
Response rate (%)	64.1	52.2	25.7	67.7	62.2	59.5	52.4%
	DON: 46.8%			RD: 62.7%			
Missing data		1 ¹	1 ¹	7 ²	2 ²	3 ²	14 ³
Number of final available data	41	34	17	14	21	22	149
	DON: 92			RD: 57			

^{1.} Non-delivered mail

^{2.} The number was composed of Consultant Registered Dietitians who had not been working for the elderly.

^{3.} Missing data included both delivered questionnaires returned unanswered and non-delivered ones.

4.2 Frequency of Each Strategy

The most frequently used strategies according to the DONs were: improving dining room atmosphere (3.880), providing assistance for optimal positioning at meal time (3.859), offering liquid supplements (3.848). The RDs in this study used the most frequently following strategies: Offering snacks between meals (3.614), adding nutrients to foods (3.614), and providing liquid supplements (3.579). The strategy of positioning functionally impaired residents next to self-feeding residents was scored at the lowest

value in both DONs and RDs' responses. Descriptive statistics for frequency of the use/ recommendation responded by both DONs and RDs is shown in Table 4.2.

Table 4.2 The mean of **frequency** to the use/ recommendation to use each strategy

Strategy	Frequency	
	DONs (n=92)	RDs (n=57)
a. Provide liquid supplement with or between meals (Ensure, milkshake, etc.)	3.848±0.39	3.579±0.53
b. Add supplemental products or additional nutrients to foods	3.516±0.67	3.614±0.65
c. Provide tube feeding	2.593±0.84	2.684±0.81
d. Offer snacks between meals	3.815±0.42	3.614±0.59
e. Provide several meals rather than three large meals	2.989±0.75	3.175±0.83
f. Offer meals as finger foods	3.185±0.77	2.842±0.80
g. Provide specialized utensils (Scoop plate, nosey cup, etc.)	3.685±0.47	3.246±0.79
h. Minimize noise and distractions occurring in the dining room	3.609±0.57	2.877±0.91
i. Provide neat and comfortable dining environment	3.880±0.33	3.439±0.82
j. Place food on placemat directly in front of resident	3.110±1.14	3.035±1.09
k. Avoid staff interruptions during feeding of the residents	3.478±0.77	2.929±0.95
l. Provide assistance for optimal positioning at meal time	3.859±0.46	3.464±0.74
m. Position functionally impaired residents next to self-feeding residents	2.457±0.92	2.018±0.96
n. Use simple verbal prompts to eat	3.837±0.40	3.321±0.72
o. Use tactile prompt (hand over hand)	3.319±0.81	2.893±0.85
p. Pantomime desired eating behaviors	2.674±0.90	2.250±0.88
q. Provide praise or positive reinforcement for eating	3.815±0.42	3.464±0.79

¹ Descriptive statistics for the variables based on 4-point scale where:

4=often 3=sometimes 2=seldom 1=never

² Bold numbers stand for top 3 of the highest value.

4.1 Perceived Effectiveness of Each Strategy

Directors of Nursing Service(DONs) scored the highest effectiveness value on the strategy of providing assistance for optimal positioning at mealtime (3.185), while RDs scored the highest value on the use of tube feeding (3.339). Positioning functionally impaired residents next to self-feeding residents and pantomiming desired eating behaviors were considered less effective by both DONs and RDs. Table 4.3 provides the mean value of perceived effectiveness of each strategy as revealed by the respondents.

Table 4.3 The mean of **effectiveness** of each strategy

Strategy	Effectiveness	
	DONs (n=92)	RDs (n=57)
a. Provide liquid supplement with or between meals	2.891±0.56	2.625±0.59
b. Add nutrients to foods	2.783±0.64	2.893±0.59
c. Provide tube feeding	2.714±1.14	3.339±0.67
d. Offer snacks between meals	2.739±0.61	2.411±0.63
e. Provide several meals rather than three large meals	2.304±0.82	2.339±0.72
f. Offer meals as finger foods	2.467±0.75	2.273±0.89
g. Provide specialized utensils	2.913±0.60	2.661±0.72
h. Minimize noise and distractions occurring in the dining room	2.793±0.85	2.571±0.97
i. Provide neat and comfortable dining environment	2.989±0.67	2.821±0.92
j. Place food on placemat directly in front of resident	2.253±1.25	2.321±1.22
k. Avoid staff interruptions during dining	2.674±1.00	2.345±1.19
l. Optimal positioning at meal time	3.185±0.61	2.945±0.76
m. Position functionally impaired residents next to self-feeding residents	1.772±1.03	1.400±1.27
n. Use simple verbal prompts to eat	2.793±0.72	2.673±0.84
o. Use tactile prompt (hand over hand)	2.582±0.83	2.200±1.00
p. Pantomime desired eating behaviors	1.946±1.02	1.509±1.18
q. Provide praise or positive reinforcement for eating	2.652±0.70	2.582±0.83

¹ The number of responses from both DONs and RDs

² Descriptive statistics for the variables based on 4-point scale where: 4=always effective
3=usually effective 2=sometimes effective 1= never effective

³ Bold numbers stand for top 3 of the highest value.

4.4 Obstacles to Implementing Each Strategy

Both DONs and RDs were asked about five different obstacles including: 1) requires additional nursing labor cost; 2) requires additional food-service/ dietary labor cost; 3) requires product or supply cost; 4) difficulty to implement or maintain; 5) lack of support from administration. Table 4.4 shows what are considered to be obstacles to using each strategy according to respondents (See page 45).

Approximately fifty two percent of respondents considered requiring additional nursing labor cost as an obstacle to providing tube feeding. Also, almost fifty percent of residents thought that the additional nursing labor cost was an obstacle when they used strategies of offering snacks between meals (47 %) and providing several small meals rather than three large meals (45 %).

DONs and RDs were asked whether an additional food-service/ dietary labor cost was considered an obstacle to practicing each strategy. More than fifty percent of respondents reported that the four strategies: adding supplemental products or additional nutrients to foods (61.2%); providing several meals rather than three large meals (56.5%); offering snacks between meals (55.1%); and providing liquid supplements with or between meals (51.0%) had additional food service/ dietary cost. In addition, approximately forty five percent of the respondents answered that offering finger food also required additional food-service/ dietary cost.

About fifty seven percent of respondents considered additional product or supply cost as an obstacle to provision of liquid supplement with or between meals. A somewhat higher percentage of the respondents also showed that strategies of: providing

specialized utensils (45.6%), adding nutrients to foods (43.5%), providing tube feeding (40.1%) required product or supply cost. As expected, no respondent thought additional product or supply cost was an obstacle to using: minimizing noise and distractions occurring in the dining room; avoiding staff interruptions during feeding of the residents; positioning functionally impaired residents next to self-feeding residents; pantomiming desired eating behaviors; and providing praise or positive reinforcement for eating.

Fewer than 50% of the respondents considered the reason, “difficulty to implement or maintain” as an obstacle for most strategies. However, a somewhat higher percentage (42.9%) indicated that minimizing noise and distractions occurring in the dining room was difficult to implement or maintain.

Overall, a very low percentage of respondents (0.7% to 6.1%) reported that they considered lack of support from an administrator as an obstacle for any strategy.

Table 4.4 Obstacles to implementing each strategy

Strategies	N ²	The percentage of responses ¹ in which each strategy is considered as an obstacle				
		Requires additional nursing labor cost	Requires additional food-service / dietary labor cost	Requires product or supply cost	It is difficult to implement or maintain	Lack of support from administration
a. Provide liquid supplements	147	37.0	51.0³	57.1	7.5	3.4
b. Add additional nutrients to foods	147	13.6	61.2	43.5	11.6	0.7
c. Provide tube feeding	147	51.7	6.1	40.1	8.8	1.4
d. Offer snacks between meals	147	46.9	55.1	28.6	17.0	4.7
e. Provide small frequent meals	147	44.9	56.5	16.3	34.0	1.4
f. Offer meals as finger foods	147	6.8	44.9	11.6	15.0	0.7
g. Provide specialized utensils	147	7.5	12.2	45.6	9.5	2.7
h. Minimize noise and distractions occurring in the dining room	147	15.6	0.7	0	42.9	5.4
i. Provide comfortable dining environment	147	7.5	3.4	4.1	16.3	4.7
j. Place food on placemat directly in front of the residents	147	22.4	3.4	2.7	19.0	6.1
k. Avoid staff interruptions during feeding of the residents	147	13.6	0.0	0	32.7	2.7
l. Provide assistance for optimal positioning at mealtime	147	24.5	1.4	2.7	14.3	2.0
m. Position functionally impaired residents next to self-feeding residents	147	13.6	0.7	0	21.8	3.4
n. Use simple verbal prompts to eat	147	21.8	2.0	0.7 ⁴	12.2	0.7
o. Use tactile prompts (hand over hand)	147	25.2	1.4	0.7	15.6	2.0
p. Pantomime desired eating behaviors	147	21.1	1.4	0	15.6	1.4
q. Provide positive reinforcement for eating	147	15.6	1.4	0	10.2	0.7

¹ Responses are from both DONs and RDs.² The difference with the final available data is due to missing data³ Bold number stands for higher than 50%.⁴ One person answered "Yes"

4. 5. Training for Feeding Strategies

Directors of Nursing Service (DONs) were asked about whether feeding strategies were delivered with four different training methods during the past year. The training methods include: 1) CNA training; 2) part of in-house inservice; 3) staff member's participation in workshop; and 4) verbal instructions from licensed staff or dietitian (Table 4.5, page 49).

When asked if CNA license training covered each feeding strategy, many DONs respondents indicated that this was so for some strategies. Fifty eight percent of DONs agreed that CNAs received training in providing liquid supplements. Approximately fifty percent of DONs also said that there was CNA training regarding provision of assistance for optimal positioning at mealtime (51.1%), and providing praise or positive reinforcement for eating (50.0%).

When asked about whether feeding strategies were delivered in a part of in-house inservice, DONs agreed that training to deliver feeding strategies was offered as a part of in-house inservice during the past year (Table 4.5). Slightly over fifty percent of DONs reported that during in-house inservice training in providing liquid supplements was performed.

When asked if the DON or their staff had attended a workshop on each feeding strategy, DONs indicated that it was infrequent that one or more staff went to workshops to obtain feeding techniques training during the past year. A very low percentage of DONs (3.3 – 10.9 %) answered “yes” to the question of whether one or more staff members went to workshops to learn feeding techniques.

When asked if DONs had given verbal instructions to staff about feeding techniques, a few strategies had been instructed during the past year. Seventy three percent of DONs said that the staff had received verbal instructions from licensed staff or dietitians about providing liquid supplements with or between meals (such as Ensure or a milkshake). Close to fifty percent of the total respondents indicated that the staff had received verbal instructions from a licensed staff member or dietitians about delivering strategies: adding supplemental products or additional nutrients to foods (48.9%), providing specialized utensils (44.6%), and offering finger foods (43.5%).

Consultant Registered Dietitians (RDs) were also asked about whether they provided training or guidance for feeding strategies during the past year. The ways of training included: 1) an inservice training to nursing staff; 2) an inservice training to dietary staff; 3) one on one guidance to at least one direct care staff; 4) written instruction to nursing staff or dietary staff.

When asked about whether or not RDs had provided an inservice for nursing staff on feeding strategies, the results showed that feeding strategies were not common topics. Fewer than fifty percent of total RDs respondents agreed that they had done this for any strategy. However, approximately forty four percent of RDs agreed that they provided an inservice training to nursing staff about providing liquid supplements.

When asked if RDs had provided an inservice on feeding strategies to dietary staff, almost sixty two percent of RDs had taught about using supplemental products or additional nutrients to foods. Slightly over fifty percent of RDs also agreed in providing inservice training in the use of liquid supplements. Not surprisingly, none of RDs had conducted inservice training for dietary staff about the strategy of positioning

functionally impaired residents next to self-feeding residents. Also, overall all strategies in which caregivers provide appropriate mealtime services (improving dining atmosphere or giving assistance) were taught by less than half of the RDs.

When asked about whether RDs provided one on one guidance for feeding strategies, sixty two percent of RD respondents agreed that it was used to teach strategies of providing liquid supplements to at least one direct care staff member. Also, slightly over fifty percent of them agreed that they taught the dietary staff about using providing liquid supplements with an inservice training.

When asked if RDs provided written instructions about feeding strategies to nursing staff or dietary staff, RDs' provision of written instructions was applied mostly to strategy "a": providing liquid supplements with or between meals. This response was similar to other training methods.

Overall, DONs and RDs in this study indicated that several training methods were delivered mostly for the strategy of providing supplements.

Table 4.5 Training for feeding strategy

Strategies	The percentage of DONs (N ¹ =92)				The percentage of RDs (N=57)			
	Provided in CNA License Training	In house inservice for staff	At least one staff member attended outside workshop	Nursing staff received verbal instruction	Inservice delivered to nursing staff	Inservice delivered to dietary staff	One to one instruction provided	Written instruction provided
Provide liquid supplements	57.6²	53.3	5.4	72.8	43.6	52.7	60.0	63.6
Add nutrients to food	28.3	31.5	8.7	48.9	32.7	61.8	43.6	41.8
Provide tube feeding	12.0	27.2	10.9	25.0	21.8	7.3	36.4	40.0
Offer snacks	48.9	38.0	5.4	48.9	30.9	41.8	32.7	34.5
Provide several small meals	21.7	23.9	7.6	35.9	14.5	23.6	25.5	27.3
Offer finger foods	27.2	26.1	8.7	43.5	12.7	27.3	27.3	27.3
Specialized utensils	38.0	35.9	6.5	44.6	10.9	12.7	23.6	20.0
Minimize dining room noise and distractions	44.6	37.0	7.6	26.1	29.1	9.1	18.2	16.4
Provide comfortable dining environment	44.6	37.0	6.5	22.8	30.9	12.7	16.4	16.4
Place food directly in front of the residents	29.3	28.3	6.5	18.5	21.8	14.5	14.5	14.5
Minimize interruptions during dining	41.3	34.8	5.4	25.0	25.5	9.1	10.9	14.5
Optimal positioning	51.1	43.5	8.7	27.2	18.2	7.3	23.6	12.7
Position impaired residents with self-feeding residents	19.6	20.7	4.3	10.9	3.6	0	7.3	7.3
Verbal prompts	46.7	43.5	5.4	21.7	20.0	7.3	21.8	16.4
Tactile prompts	40.2	34.8	3.3	16.3	14.5	5.5	12.7	9.1
Pantomime eating behaviors	28.3	25.0	6.5	12.0	9.1	1.8	7.3	7.3
Positive reinforcement	50.0	40.2	5.4	19.6	22.2	5.5	20.0	12.7

¹ The total number of responses² Bold numbers stand for same or higher than 50%.

4. 6 Null Hypotheses Testing Results

In this study, Wilcoxon's Rank Sum Test was employed to test null hypotheses 1 and 2. For null hypotheses 3, 4, and 5, Fisher's exact test with binomial values was used.

H₀1: There is no difference in the frequency of use of each strategy between DONs and RDs

Researchers were especially interested in the comparison of seven strategies in the null hypothesis testing to look at the difference of use of strategies between DONs and RDs. Those strategies include: 1) providing liquid supplements; 2) adding supplemental products or additional nutrients to foods; 3) providing tube feeding; 4) offering snacks between meals; 5) providing specialized utensils; 6) using simple verbal prompts to eat; and 7) providing praise or positive reinforcement for eating.

Table 4.6 shows the results that there are statistically significant differences in the use of strategies between DONs and RDs including strategies of: providing liquid supplement ($p=0.0003$), providing specialized utensils ($p=0.0004$), and using simple verbal prompts to eat ($p < 0.0001$). Interestingly, the rank sum score mean value revealed that DONs scored higher points on frequency of strategies than RDs with the exception of the provision of tube feeding. This indicated that DONs in this study showed more frequent use of feeding strategies than the RDs. However, DONs are less likely than RDs to use tube feedings to enhance food intake.

Table 4.6 The frequency of use of strategies between DONs and RDs ¹

Strategy	Frequency of use of strategies ²		P value
	DONs	RDs	
a. Provide liquid supplement with or between meals	82.42 ³ +3.59	63.03-3.59 ⁴	0.0003 *** ⁵
b. Add supplemental products or additional nutrients to foods	72.16-1.00	78.24+1.00	NS
c. Provide tube feeding	73.46-0.40	76.17+0.40	NS
d. Offer snacks between meals	79.70+2.29	67.41-2.29	NS
g. Provide specialized utensils (Scoop plate, nosey cup, etc.)	83.59+3.55	61.64-3.55	0.0004***
n. Use simple verbal prompts to eat	86.03+5.22	55.55-5.22	<.0001***
q. Provide praise or positive reinforcement for eating	81.37+3.26	63.21-3.26	NS

¹ Rank Sum Test was used to test this hypothesis

² Summary statistics based on 4-point Likert-scale
where: 4=often, 3=sometimes, 2=seldom, 1=never

³ Rank Sum Score of Mean

⁴ (mean- mean0) / Std0

⁵ ***Significant at p <0.001

H₀2: There is no difference in the perceived effectiveness of each strategy between DONs and RDs

Researchers were also interested to see the differences of perceived effectiveness of six strategies out of seventeen strategies including: 1) providing liquid supplements; 2) adding supplemental products or additional nutrients to foods; 3) providing tube feeding; 4) offering snacks between meals; 5) avoiding staff interruptions during feeding of the residents; 6) providing assistance for optimal positioning at mealtime.

The rank sum score mean value indicates that RDs have statistically significant a more positive perception of effectiveness in the use of tube feeding than DONs (rank sum

mean of 65.57 for DONs and 89.17 for RDs, respectively). However, there are no statistical differences in any of the other strategies (Table 4.7).

Table 4.7 The effectiveness of each strategy between DONs and RDs¹

Strategy	Effectiveness of strategies ²		P value
	DONs	RDs	
a. Provide liquid supplement	80.59 ³ +2.60	64.50-2.60 ⁴	NS
b. Add supplemental products or additional nutrients to foods	72.60-0.82	77.62+0.82	NS
c. Provide tube feeding	65.57-3.44	89.17+3.44	0.0006*** ⁵
d. Offer snacks between meals	81.96+3.03	62.25-3.03	NS
k. Avoid staff interruptions during feeding of the residents	78.05+1.58	67.23-1.58	NS
l. Provide assistance for optimal positioning at meal time	78.47+1.87	66.52-1.87	NS

¹ Rank Sum Test was used to test this hypothesis

² Summary statistics based on 4-point Likert-scale where: 4=very effective ~ 1=never effective

³ Rank Sum Score of Mean

⁴ (mean- mean0) / Std0

⁵ *** Significant at p <0.001

H₀ 3: There is no association between the use of each strategy and the obstacle to their implementation.

The null hypothesis testing employing Fisher's exact test indicated that providing several meals rather than three large meals was associated with the obstacle of product or supply cost (p=0.0310). Also, the strategy of provision of praise or positive reinforcement for eating was associated significantly with the obstacles of additional nursing labor cost (p=0.0035) and difficulty to implement or maintain (p=0.0280) (Table 4.8).

Table 4.8 The use of each strategy and the obstacle to their implementation.

The use of each strategy ¹	Obstacles responded by DONs and RDs				
	Additional nursing labor cost	Additional food-service labor cost	Product or supply cost	Difficulty to implement or maintain	Lack of support from administrator
Provide liquid supplements	— ²	— ²	— ²	— ²	— ²
Add additional nutrients to foods	— ²	— ²	— ²	— ²	— ²
Provide tube feeding	NS	NS	NS	NS	NS
Offer snacks	— ²	— ²	— ²	— ²	— ²
Provide small frequent meals	NS	NS	P=0.0310 * ⁴	NS	NS
Offer finger foods	NS	NS	NS	NS	NS
Provide specialized utensils	NS	NS	NS	NS	NS
Minimize noise and distractions occurring in the dining room	NS	NS	— ³	NS	NS
Provide neat dining environment	NS	NS	NS	NS	NS
Place food on placemat directly in front of resident	NS	NS	NS	NS	NS
Avoid staff interruptions	NS	— ³	— ³	NS	NS
Optimal positioning	NS	NS	NS	NS	NS
Position functionally impaired residents next to self feeding residents	NS	NS	— ³	NS	NS
Use verbal prompts	NS	NS	NS	NS	NS
Use tactile prompt	NS	NS	NS	NS	NS
Pantomime eating behaviors	NS	NS	— ³	NS	NS
Provide reinforcement for eating	P=0.0035 ** ⁵	NS	— ³	P=0.0280 * ⁴	NS

¹ Categories in multinomial responses for the use of each strategy were combined to make it binomial responses to use the Fisher's Exact Test (i.e. "often", "sometimes", and "seldom" = "used" and "never" = "not used").

² Since all respondents used each strategy, Fisher's Exact Test Result requiring binomial value didn't show up.

³ Since no respondents considered this strategy as an obstacle of requiring product cost to implementation, Fisher's Exact Test Result requiring binomial value didn't show up.

⁴ *Significant at p <0.05 ⁵ **Significant at p <0.01

H₀ 4: There is no association between the use/ recommendation of strategies and the utilization/ provision of each type of training in feeding strategies.

The null hypotheses testing for associations between: 1) the use of strategies and the utilization of training from the DONs' data, and 2) the recommendation of strategies and the provision of training from RDs' data were all rejected. No significant p value was shown in any of the strategies.

Ho5: There is no association between the perceived effectiveness of strategies and the utilization/ provision of each type of training in feeding strategies.

The last null hypothesis testing also employed Fisher's exact test to see an association between the perceived effectiveness of strategies and the utilization / provision of each type training in feeding strategies. The results did not show any association across all strategies responded by DONs and RDs.

Table 4.9 The Summary of Null Hypotheses Testing Results

Null Hypotheses	H ₀ Rejected or H ₀ Not Rejected	P value
H₀₁ : There is no difference in the frequency of use of the following strategies between DONs and RDs. (1) Providing liquid supplements (2) Adding nutrients to food (3) Providing tube feeding (4) Offering snacks between meals (5) Providing specialized feeding utensils (6) Using simple verbal prompts to eat (7) Providing praise or positive reinforcement for eating	Wilcoxon Rank-Sum Test H₀₁(1) rejected H ₀₁ (2) not rejected H ₀₁ (3) not rejected H ₀₁ (4) not rejected H₀₁(5) rejected H₀₁(6) rejected H ₀₁ (7) not rejected	P=0.0003*** NS NS NS P=0.0004*** P<0.0001*** NS
H₀₂ : There is no difference in the perceived effectiveness of the following strategies between DONs and RDs. (1) Providing liquid supplements (2) Adding nutrients to food (3) Providing tube feeding (4) Offering snacks between meals (5) Avoiding staff interruptions during dining (6) Optimal positioning	Wilcoxon Rank-Sum Test H ₀₂ (1) not rejected H ₀₂ (2) not rejected H₀₂(3) rejected H ₀₂ (4) not rejected H ₀₂ (5) not rejected H ₀₂ (6) not rejected	NS NS P=0.0006*** NS NS NS
H₀₃ : There is no association: (1) Between the use of providing several frequent meals and the obstacle of product or supply cost (2) Between the use of providing praise or positive reinforcement for eating and the obstacle of additional nursing labor cost (3) Between the use of providing praise or positive reinforcement for eating and the obstacle of difficulty to implement or maintain	Fisher's Exact Test H₀₃(1) rejected H₀₃(2) rejected H₀₃(3) rejected	P=0.0310* P=0.0035** P=0.0280*
H₀₄ : There is no association between the use/recommendation of strategies and the utilization of each type of training in feeding strategies.	Fisher's Exact Test H ₀₄ not rejected	NS
H₀₅ : There is no association between the perceived effectiveness of strategies and the utilization of each type of training in feeding strategies.	Fisher's Exact Test H ₀₅ not rejected	NS

* Significant at P<0.05

** Significant at P<0.01

*** Significant at P<0.001

4. 7 Descriptive Statistics for Demographic Information

Demographic questions included the types of facility in both DONs' and RDs' questionnaires. Questions about the types of facility licenses, the utilization of volunteers for feeding activity, and the numbers of residents with poor appetite were in DONs' questionnaire. Also, questions about the percentage of residents with poor appetite or unwillingness to eat, how these professionals acquired their feeding enhancement skills, and their beliefs about obstacles to adequate food intake were included for RDs.

4.7.1 Types of Facility Licenses

Skilled Nursing Facility (SNF), Intermediate Care Facility (ICF), and Subacute Care provide health services to the chronically ill, disabled or retarded elderly differently than in-patient or acute-care hospitals. Assisted living is a general term for living arrangements in which some services are available to residents (meals, laundry, medication reminders, 24-hour security, housekeeping, planned activities, and transportation) (1).

Most respondents were from a Skilled Nursing Facility (93%). The remainder were: Intermediate Care Facility (ICF) (49 %), Assisted Living facility (Personal Care) (28 %), and Subacute (27 %) respectively (Table 4.10). This high prevalence of skilled nursing licenses from the Pacific region including three states was similar to the report of the Annual Survey of Nursing Homes in the Northeast Central region of Wisconsin (86).

Table 4.10 The types of facility licenses

	N ¹	SNF ²		ICF ³		ALF ⁴		Subacute Care	
		n	% ⁵	n	%	n	%	n	%
DONs									
in OR	41	37	90.2	41	100	7	17.1	11	26.8
in WA	34	33	97.1	4	11.8	6	17.6	5	14.7
in CA	17	17	100	1	5.9	4	23.5	5	29.4
RDs									
in OR	14	10	71.4	9	64.3	5	35.7	4	28.6
in WA	21	18	85.7	9	42.9	9	42.9	6	28.6
in CA	22	18	81.8	6	27.3	9	40.9	7	31.8
Total	143	133	93.0	70	49.0	40	28.0	38	27.0

¹ Number of responses according to each state

² Skilled Nursing Facility (SNF)

³ Intermediate Care Facility (ICF)

⁴ Assisted Living facility (Personal Care)

⁵ Respondents could choose all that applied so total is greater than 100%.

4.7.2 Use of Volunteers

The subjects in this study reported that volunteers were not utilized much in a feeding activity. In particular, DONs from the Washington area mentioned that their state regulation did not allow non-licensed workers' participation in nutritional services including feeding activities.

Only 13 out of 92 DONs (14.1%) reported that they have volunteers participate in feeding activity. In comparison of number of volunteers to staff members, most of the respondents (92.3%) said that the number of volunteers is fewer than that of staff members (Table 4.11). Also, training program for volunteers or staff about feeding techniques was not usually provided showing that 85.0% of DONs from three states answered in "None" category.

Table 4.11 Volunteer's participation in feeding activity responded by DONs

	N ¹	DONs' Responses	
		Volunteers participate in feeding (n)	%
OR	41	8	19.5
WA	34	3	8.8
CA	17	2	11.8
Total	92	13	14.1

¹ Number of DONs' responses according to each state

4.7.3 Unwillingness to Eat

Approximately fifty five percent of DONs who worked at the size of less than 100 beds facilities responded that they had a range of 1 to 15 residents who had poor appetites or unwillingness to eat for at least one meal per day (Table 4.12). Many of DONs in the size of 100 to 200 beds (42.1 %) also responded in the category of 1 to 15 residents.

Consultant Registered Dietitians in long-term care facilities in this study gave the highest score on the range of 21 to 41% for percentage of residents who have poor appetites or unwillingness to eat for at least one meal per day (Table 4.13).

Table 4.12 Residents who have poor appetite or unwillingness to eat for at least one meal/day responded by DONs

Number of residents who have poor appetite	DONs' Responses (N ¹ =92)					
	Less than 100 Beds		100 to 200 Beds		More than 200 Beds	
	n ² = 51	%	n=38	%	n=3	%
1 To15 Persons	28	54.9	16	42.1	1	33.3
16 To 30 Persons	14	27.5	8	21.1	0	0
31 To 45 Persons	7	13.7	9	23.7	1	33.3
46 To 60 Persons	2	3.9	4	10.5	0	0
More than 60 persons	0	0	1	2.6	1	33.3

¹ Number of final available DONs' data

² Number of responses according to bed size.

Table 4.13 Percentage of residents who have unwillingness to eat responded by RDs

Variable	RDs' Responses (N ¹ =57)	
	n	%
1 To 20%	13	25.5
21 To 40%	23	45.1
41 To 60%	11	21.6
61 To 80%	3	5.9
81 To 100%	1	2.0
Total	51	100.1 ²

¹ Number of final available RDs' data

² Percentage does not always add up to 100% due to rounding.

4.7.4 Ways of Acquiring Skills in Feeding Enhancement Strategies

When asked about acquisition of feeding enhancement techniques, 48 out of 53 RDs (90.6%) reported that they learned from the CD-HCF (Consultant Dietetic Practice Group-Health Care Facilities) manual or newsletters (Table 4.14). Also, Consultant Registered Dietitians commented that they learned from their co-workers, or training manuals provided by food service company such as Sodexo or Marriott. Furthermore, many of RDs said that they worked with occupational therapists or speech therapists to evaluate the status of residents' food intake and facilitated appropriate feeding intervention according to those evaluations.

Table 4.14 The ways of acquiring skills in feeding techniques responded by RDs

The ways of acquiring skills	RDs (N ¹ =53)	
	n	%
a. Training in school supervised practices (DI, AP4, etc.)	24	45.3
b. Attend workshops when available	47	88.7
c. Learn from RD - HCF manual or newsletters	48	90.6
d. Personal reading or research	38	71.7

¹ Number of final available RDs' data.

² More than one answers can be possibly answered as a way of acquiring skills.

4.7.5 RDs' Belief about An Obstacle to Adequate Food Intake

RDs were asked about their beliefs regarding obstacles to adequate food intake among the elderly (Table 4.15). Residents' behavior was reported to interfere with eating, including being distractible, unresponsive, and spitting food by the majority of RDs (96.2%). Lack of mealtime assistance was also rated as a problem interfering with food intake (84.9%). However, only 34.6% of RDs believed that poor quality food in their facility was an obstacle to adequate food intake for their residents.

Other obstacles to adequate food intake reported by some Consultant Registered Dietitians were: the affect of medication, medical diagnosis, lack of staff concern, resident's lack of independence in feeding, and interference such as junk food provided by well meaning resident's family.

Table 4.15 RDs' belief about an obstacle to adequate food intake among the elderly

Obstacles	RDs' belief (N ¹ =53)	
	n	%
a. Resident behavior problems interfere with eating (Distractible, unresponsive, spitting, etc.)	51	96.2
b. Resistance to enteral nutrition	35	66.0
c. Lack or mealtime assistance	45	84.9
d. Inadequate time allowed for feeding	35	66.0
e. Lack of knowledge for proper feeding method	40	75.5
f. Constraint of budget	34	64.2
g. Poor quality food	18	34.6

¹ Number of final available RDs' data.

² More than one answers can be possibly answered as a way of acquiring skills.

5. DISCUSSION

Long-term care facilities face a high incidence of malnutrition and have need for improved nutrition services with the trend of managed care (1). While quality medical care is certainly the most important consideration for prospective residents, quality of life issues like nutritional service are crucial to the facility selection process (87). Therefore, long-term care facilities should take full advantage of the appropriate nutritional services (88, 89).

This study attempts to identify the extent of use and perceived effectiveness in feeding strategies for enhancing food intake recruiting two integral professionals, Director of Nursing Service and Consultant Registered Dietitians who have significant roles in facilitating feeding strategies.

5.1 The Frequency of Use, Its Perceived Effectiveness, The Obstacles, and The Utilization of Training Toward Strategies for Enhancing Food Intake

5.1.1 Providing Liquid Supplements

The researchers attempted to look at how frequently and what the level of perceived effectiveness is for the use of the feeding strategy of providing liquid supplements between or with meals. The descriptive data results showed that DONs and RDs both frequently use the strategy. Their responses showed the mean of 3.848 (DONs) and 3.579 (RDs) based on a 4-point scale; ranking this strategy as the third most frequently used. Furthermore, the null hypothesis testing result showed a statistically significant difference in the use of this strategy between DONs and RDs ($p=0.0003$),

indicating that DONs used it more frequently than RDs did (82.42 vs. 63.03 of rank sum score of mean).

The frequent use of this strategy does not necessarily mean that it is perceived to be effective. DONs and RDs in this study frequently use or recommend this strategy, but they do not think that this strategy was necessarily effective. Its effectiveness ranked fourth ($\mu=2.891$) for DONs and seventh ($\mu=2.625$) for RDs. These results indicate that the use of the strategy of providing supplemental products is frequently used or recommended despite its lack of effectiveness. Some literature discusses disadvantages of using liquid supplements (25, 47, 48, 90) due to its impact upon decreasing residents' mealtime appetite. However, this result supports the fact that the use of fluid nutrient supplements is common among the nursing home residents.

Over half of respondents considered both strategies: use of liquid supplements between or with meals and addition of additional nutrients to foods to have cost obstacles, either supply or labor (Table 4.4). This result supports Matthews' study (48) that the use of liquid supplements is costly. Furthermore, the subjects in this study consider it a greater food-service/ dietary labor cost than nursing labor cost when providing supplemental product is used as a strategy.

A relatively high percent of DONs (53 – 73 %) agreed that CNA received training either in-house inservice, verbally or during their education to learn about supplemental products. In addition, about fifty percent of RDs (44 – 64 %) agreed that they teach dietary and nursing staff about providing liquid supplements. Overall, the subjects in this

study indicated that the instruction for providing liquid supplements is well delivered to staff members.

These results imply that DONs and RDs in this study recognize the benefits of using liquid supplements. The benefits include that high nutrient value in liquid supplement can help the residents increase their nutrient intake easily compared to offering snack or several frequent meals. However, as mentioned before, though they frequently provide liquid supplements and facilitate several training methods to teach staff about this strategy, they do not think that this strategy is effective. This study did not investigate the specific reasons for that. Further study should be performed to reveal the specific reason for high frequency of use of supplemental products in spite of a lack of perceived effectiveness. Efforts to determine if it is effective should be taken to ensure that the practice of providing supplements is worth investment.

5.1.2 Additional Nutrients to Food

RDs in this study highly recommend the strategies related to adding nutrients to food or offering snacks, with both ranking among the most frequently used strategies. However, DONs in this study do not frequently use this strategy (Table 4.2). Among DONs, its effectiveness was similar to its frequency of use. In addition, RDs considered adding nutrients to food as the third most effective strategy, but DONs did not consider this strategy an effective one ranking it seventh for the effectiveness. The reason might be that implementing this strategy is more closely related to the dietary area and in turn, RDs might be more attended to the use of this strategy.

A relatively high percent of all subjects (61.2 %) considered additional food-service/ dietary labor cost an obstacle to using supplemental products or additional nutrients to foods (Table 4.4). It was noticeable that the subjects in this study were more concerned about labor cost rather than product or supply cost when adding additional nutrients to foods. This trend was also shown when they offered snacks and several meals rather than three large meals. This might reflect the significance of staffing and concerns about adequacy of labor in long-term care facilities. In addition, a fairly high percentage of RDs (61.8 %) agreed that they provided inservice training to dietary staff about adding supplemental products or nutrients to food.

5.1.3 Offering Snacks

The strategy of offering snacks between meals also was most highly recommended by RDs in this study, even though they did not consider this strategy as an effective one. This is a similar result to that of providing liquid supplements.

The obstacles to implementing snack offering strategy was the need for additional nursing labor cost (46.9 %), and additional food-service/ dietary labor cost (55.1 %). Approximately, fifty percent of DONs and forty two percent of RDs agreed that there was CNA training, and/ or inservice training, and verbal instructions provided from licensed staff or dietitian to deliver this strategy (Table 4.5). This suggests that respondents recognize offering snacks to be an important strategy.

5.1.4 Offering Finger Foods

In this study, offering finger food as a strategy was averaged at 3.185 based on 4-point scale by DONs and 2.842 by RDs in the frequency use (Table 4.2), whereas the average of effectiveness was 2.467 for DONs and 2.273 for RDs (Table 4.3). This result suggests that DONs and RDs in this study have a positive attitude about the use of finger food as a strategy, although, again, they did not think that it was usually effective.

Also, slightly less than fifty percent of total responses (44.9%) considered that additional food-service/ dietary labor cost was an obstacle to implementing the finger food strategy (Table 4.4). In addition, less than fifty percent of respondents provided any form of training for using this strategy. These results suggest that the appropriate training methods should be facilitated and may be necessary to enhance effectiveness.

5.1.5 Providing Several Meals Rather Than Three Large Meals

RDs sometimes recommended the strategy of providing smaller, more frequent meals ($\mu=3.175$), while DONs do so less often ($\mu=2.989$). RDs thought that this strategy was sometimes effective ($\mu=2.339$), similar with DONs ($\mu=2.304$).

Over half of respondents (56.5 %) considered additional food-service/ dietary labor cost an obstacle to implementing this several meal strategy (Table 4.4). This result implies that the respondents in this study are concerned about labor cost associated with this strategy.

Fewer than fifty percent of respondents (8 – 36 %) provided training to facilitate this strategy. This might imply that the strategy of providing several small meals is not commonly delivered possibly due to the concern about dietary and nursing labor cost.

5.1.6 Tube Feeding

The frequency of use of tube feeding as a strategy was relatively low compared to other strategies for both DONs and RDs. However, the effectiveness of providing tube-feeding strategy was perceived by RDs as the most effective strategy ($\mu=3.339$), but not so by DONs ($\mu=2.714$). The null hypothesis result confirmed that RDs considered tube feeding more effective than DONs did ($p=0.0006$).

In addition, fifty two percent of the subjects considered additional nursing labor cost as an obstacle to implementing this strategy (Table 4.4). Fewer than fifty percent of DONs and RDs taught tube feeding strategies to staff members using the training methods suggested in this study. However, a somewhat higher percent of RDs (40%) provided written instruction to deliver guidance for this strategy (Table 4.5).

The reason why RDs considered tube feeding the most effective strategy was not investigated. Further study should explore the reason why RDs consider tube feeding as most effective one, whereas DONs do not consider it to be so.

5.1.7 Providing Specialized Utensils

DONs and RDs in this study indicated that they sometimes used the strategy of providing specialized utensils ($\mu=3.685$ for DONs and $\mu=3.246$ for RDs). Interestingly, DONs in this study considered this strategy as the third most effective strategy ($\mu=2.913$), while RDs did not think it as that effective ($\mu=2.661$). Also, null hypothesis testing revealed a significant difference in the use of providing specialized utensils between DONs and RDs ($p=0.0004$). DONs more frequently use this strategy than RDs do. This study did not explore the reason why DONs use the strategy more than RDs do. However, perhaps, DONs have more awareness about the use of specialized utensils, because they are more likely directly involved in the feeding activities as part of nursing services.

In addition, fewer than fifty percent of respondents considered additional product or supply cost (45.6%) an obstacle to providing specialized utensils (Table 4.4). Furthermore, around half of DONs agreed that they provide verbal instructions to licensed staff and have received it from dietitians in the use of specialized utensils (Table 4.5). This result implies that DONs and RDs in this study have a positive attitude about using the specialized utensils to promote self-feeding ability in spite of barriers, such as additional product cost concern.

5.1.8 Positioning Strategy

Within the category of positioning, three strategies were suggested in this study including: 1) providing assistance for optimal positioning at mealtime; 2) placing food on

placemat directly in front of residents; and 3) positioning functionally impaired subjects next to self-feeding residents.

Both DONs and RDs frequently used the strategy of providing assistance for optimal positioning at mealtime. DONs especially rated this as the second most frequently used strategy ($\mu=3.859$) among seventeen strategies. The strategy of placing food on placemat directly in front of resident was also sometimes used by both DONs and RDs ($\mu=3.110$ for DONs and $\mu=3.035$ for RDs). Looking at the mean value for perceived effectiveness of the optimal positioning strategies, the strategy of providing assistance for optimal positioning was perceived by DONs as the most effective strategy ($\mu=3.185$), while RDs also considered this strategy effective ranking it the second most effective strategy ($\mu=2.945$). In addition, the strategy of placing food on placemat directly in front of the residents was scored relatively low by DONs ($\mu=2.253$) and also by RDs ($\mu=2.321$) for effectiveness.

The subjects in this study frequently used and considered the strategy of providing assistance for optimal positioning a very effective strategy. These results contradicted Steele's concern (41) that the identification of residents with needs for appropriate positioning for eating was not well recognized and that such interventions were not commonly used in long-term care facilities.

No considerable obstacle was associated with the three different positioning strategies. Slightly over half of DONs' responses (51.1%) agreed that CNA training for the strategy of providing assistance for proper positioning was delivered within the past year (Table 4.5).

This research also listed positioning functionally impaired residents next to self-feeding residents as a strategy to enhance food intake of residents based on the success of intervention in Van and Phillips study (65). In their study, one of contextual interventions, the most functionally impaired resident was positioned between residents who were capable of feeding themselves and were functional role models during meals. However, this strategy was seldom used by both DONs and RDs in this study showing the lowest mean value ($\mu=2.457$ for DONs and $\mu=2.018$ for RDs). The effectiveness of this strategy was also rated the lowest ($\mu=1.772$ for DONs and $\mu=1.400$ for RDs). This may be due to their lack of awareness of the strategy or the problems associated with trying to create compatible seating arrangements among residents.

5.1.9 Improving Dining Room Atmosphere

Two strategies were suggested in this study. The first one is the strategy of providing neat and comfortable dining room and the second one is the minimization of noise and distractions during dining. Both attempt to facilitate a quality dining atmosphere.

DONs indicate that providing neat and comfortable dining environment strategy is frequently used ($\mu=3.880$) and also perceived as a very effective strategy, ranking it as the second most effective strategy ($\mu=2.989$). RDs also frequently use this strategy and consider it effective. In addition, minimizing noise was sometimes used by both DONs and RDs ($\mu=3.609$ for DONs and $\mu=2.877$ for RDs), while the effectiveness of this strategy was considered partially effective ($\mu=2.793$ for DONs and $\mu=2.571$ for RDs).

(Table 4.2, 4.3). These results show that enhancement of the dining room was used often and sometimes effective.

Minimizing noise strategy is a challenge to implement when feeding residents. This difficulty in implementation is the obstacle, which interferes with its use. But if it is helpful for enhancing intake, it is an inexpensive strategy worth investigating.

The subjects in this study did not consider a lack of support from administration an obstacle to implementing a quality dining room strategy. This result shows a somewhat different one than Bower's study (45) in which administrators considered space and budget constraint an obstacle to achieving quality dining environment.

Over sixty percent of DONs provided CNA training about improving dining room quality during the past year. However, less than fifty percent of RDs agreed that they taught staff about this strategy. This result suggests that further efforts from RDs should be performed regarding the use of improving the dining room environment, considering the current trend of inter-departmental approaches with both the nursing and dietetic fields (19, 45, 58, 76).

5.1.10 Quality Caring Strategies

Within the category of providing quality feeding care strategies, four strategies were suggested in this study including: 1) avoiding staff interruptions during dining; 2) using simple verbal and tactile prompts; 3) pantomiming desired eating behaviors; and 4) providing praise or positive reinforcement for food intake.

5.1.10.1 Avoiding Staff Interruptions

In this study, DONs and RDs sometimes use the strategy of avoiding staff interruptions during resident feeding ($\mu=3.478$ for DONs and $\mu=2.929$ for RDs) but considered it to be somewhat in effectiveness ($\mu=2.674$ for DONs and $\mu=2.345$ for RDs). There were no obstacles to using this strategy chosen by most respondents. In addition, about forty one percent of DONs agreed that they do train CNAs to avoid unnecessary interruptions during feeding. This result suggests that DONs somewhat recognize the importance of avoiding unnecessary interruptions during feeding activities.

5.1.10.2 Using Simple Verbal and Tactile Prompt

DONs and RDs sometimes used the strategies of simple verbal and tactile prompts. Interestingly, the null hypothesis testing result revealed that DONs use verbal prompts more than RDs do ($p < 0.0001$). The subjects perceived that both verbal and tactile prompts are sometimes effective (Table 4.3). In addition, a somewhat higher percent of DONs (40 – 47 %) agreed that they provide CNAs training or in-house inservices to teach verbal and tactile prompt strategies, while a very low percentage of RDs (14 – 20%) teach staff about them. These results imply that DONs in this study are more alert than RDs to the use of verbal and tactile prompts.

Interestingly, obstacles interfering with the use of these verbal and tactile prompt strategies were given a very low score (0.7 – 25%). Both DONs and RDs do not consider additional nursing labor cost an obstacle. This result implies also that it is an inexpensive

strategy with few barriers to implementation of it. Therefore, this study suggests that more efforts should be performed to facilitate these strategies considering both infrequency of the use and inexpensive cost to implement them.

5.1.10.3 Pantomiming Desired Eating Behaviors

DONs and RDs in this study do not frequently use this strategy and also do not think that this strategy is effective, but not due to any specific obstacles (Table 4.2, 4.3, 4.4). In addition, no training methods were delivered to facilitate this strategy (Table 4.5). From these results, it can be concluded that DONs and RDs are unfamiliar with the practice of pantomiming desired eating behaviors as a feeding enhancement strategy.

5.1.10.4 Providing Praise or Positive Reinforcement.

The strategy of providing praise or positive reinforcement for eating is a preventive strategy indicative of quality care when caregivers are feeding the institutionalized elderly (91). In this research, both DONs and RDs also use this strategy ($\mu=2.652$ for DONs and $\mu=2.582$ for RDs) (Table 4.2). They also considered it somewhat effective (Table 4.3). In addition, fifty percent of DONs agreed that CNAs receive training for using this strategy (Table 4.5).

Overall, the results indicate that DONs acknowledge the strategy of providing praise or positive reinforcement for eating in this study. However, one DON in this study

commented that the strategy of providing praise or positive reinforcement for eating could violate residents' dignity.

This study revealed that a very low percent of respondents consider lack of support from administration an obstacle from any strategies (Table 4.4). This result supports Schiller et al. mailed survey (71) that administrators perceived the importance of nutritional service efforts. The positive perception of administrators toward nutritional service might reflect why DONs and RDs do not seem to think that a lack of support from administration is an obstacle to implementing feeding strategies.

In addition, this study revealed the discrepancy between the frequency of the use and the perceived effectiveness in using feeding strategies among DONs and RDs. Most of strategies are frequently used, yet they are not considered that effective. This result might reflect that it is very difficult to improve food intake among the elderly, although there are efforts to use feeding strategies.

Furthermore, it is not known why DONs and RDs differ in the use of strategies and have different opinions about their effectiveness. This concern is also shown by the inconsistency among DONs and RDs in the provision of training for some of the feeding strategies (such as providing optimal positioning assistance and adding nutrients to food). This inconsistency might be reduced if better active inter-departmental communication and efforts were shared for implementing feeding strategies by Nursing and Dietetic Department. As long as feeding strategies are considered valuable efforts in improving food intake among the elderly, professionals should concentrate more efforts on increasing the use of feeding strategies. With improved training and more frequent use,

perhaps they will be improved. Particularly, strategies that require little cost to use (such as verbal and tactile prompts and pantomiming eating behaviors) should be targeted.

5.2 The Ways of Acquiring Skills in Feeding Strategies

In this study, most RDs agreed that they attend workshops when available (90.9 %) and learn from CD-HCF manuals or newsletters (81.8%) to acquire their own skills in feeding strategies (Table 4.14, page 59). This result supports Soneff et al study (92) in which a combination of workshop training and the manual resulted in high audit scores for improving foodservice management compared to manual training alone.

5.3 Utilization of Volunteers in Feeding Activity

The utilization of volunteers during mealtimes is a controversial issue in long-term care facilities. Recruiting volunteers in mealtime is a good policy when inadequate nursing staffing is a problem. However, they must be properly instructed in safe and appropriate feeding procedures (49, 93). The participation of non-professional staff in nutritional service is also considered unsafe when volunteers are not properly trained.

In this study, researchers asked 92 of DONs employed in long-term care facilities in Oregon, Washington, and California about volunteer's participation in feeding activities. Only fourteen percent of DONs have volunteers participate in feeding activity (Table 4.11, page 58). This study revealed that the utilization of volunteers in feeding activities was not performed actively. However, DONs from Oregon (20 %) show a

somewhat higher utilization of volunteers compared to DONs from Washington and California.

5.4 Null Hypotheses Testing Results

The null hypothesis testing revealed differences in the frequency of use of strategies and its perceived effectiveness between DONs and RDs (Table 4.9, page 55). DONs and RDs differed in the use of feeding strategies including: providing liquid supplements ($p=0.0003$), providing specialized utensils ($p=0.0004$), and using simple verbal prompts to eat ($p<0.0001$). DONs more frequently use more strategies than RDs with the exception of tube feeding. RDs have strongly significant positive perception of effectiveness of tube feeding than DONs do ($p<0.0006$).

It is not known why DONs and RDs have different attitude towards feeding strategy. However, it is believed that there is a difference in opinions about using feeding strategies between DONs and RDs in long-term care facilities. It will be difficult to achieve a consistent goal of providing cooperative quality nutrition care among the elderly in long-term care facilities, without better agreement.

The null hypothesis testing also indicated that providing several meals rather than three large meals was associated with the obstacle of having a product or supply cost ($p=0.0310$). Also, the strategy of providing praise or positive reinforcement for eating was associated significantly with the obstacle of additional nursing labor cost ($p=0.0035$) and its difficulty in implementation or maintenance ($p=0.0280$).

These associations between feeding strategies and obstacles should be taken into considered and addressed. If obstacles become deterrents to the use of strategies, this is a concern in optimizing food intake.

6. LIMITATIONS

This study was limited by its geographic restriction to the Pacific region. Therefore, the results from other regions could vary somewhat. Also, this survey study solely relied on accurate reporting of information in what might be a sensitive topic for health care facilities, particularly in for-profit organizations. It is possible that Registered Dietitians (RDs) may not have first hand experience with observation of feeding strategies used in nursing home facilities where they consult. Directors of Nursing Service (DONs) also may not have the responsibility for feeding residents and therefore report information differently than what would be reported by direct caregivers.

In addition, there was no follow-up survey of non-respondents due to time and expenses limitations. It is possible that there is the unknown magnitude of non-response bias if the non-respondents and respondents differ significantly.

Furthermore, there is a concern about the stratified sample for the California DONs. The study results were based on a stratified sample (equal precision allocation), but the DONs in California (only 18 respondents) did not meet the minimum sample size needed to obtain stated precision. Therefore, it is impossible to make inferential conclusions and descriptions about California DONs due to very low response compared to the whole population.

7. CONCLUSION

7.1 Summary

This research explored the extent of use and perceived effectiveness of food intake enhancement strategies. Operational obstacles to the use of strategies and training used to prepare staff in using feeding strategies were also studied.

A total of 311 questionnaires listing seventeen strategies for enhancing food intake of the elderly were mailed to two target populations. These populations are Directors of Nursing Service (DONs) and Consultant Registered Dietitians (RDs) in the Pacific region, including Oregon, Washington, and California.

Demographic information showed that the majority of DONs and RDs worked for facilities with Skilled Nursing Facility licenses (93%). In addition, the use of volunteers in feeding activities was minimal in these respondents' facilities. Learning from CD-HCF manuals or newsletters was the most common way for RDs to acquire skills in feeding enhancement techniques. The majority of RDs (96.2%) believed that resident behavior problems interfering with eating was an obstacle to adequate food intake among the elderly.

DONs and RDs in this study frequently use or recommend most of these strategies, but they do not think that these are necessarily effective. Comparing the results of the frequency of use and the perceived effectiveness of feeding strategies, respondents gave a lower score on the perceived effectiveness in most strategies. DONs frequently use: providing comfortable dining room ($\mu=3.880$); providing assistance for optimal positioning ($\mu=3.859$); and providing liquid supplements ($\mu=3.848$). RDs

frequently recommend: offering snacks ($\mu=3.614$); adding nutrients to food ($\mu=3.614$); and providing liquid supplements ($\mu=3.579$). In addition, DONs consider the effective strategies for enhancing food intake to be: providing assistance for positioning ($\mu=3.185$); providing a neat and comfortable dining room ($\mu=2.989$); and providing specialized utensils ($\mu=2.913$). RDs consider the effectiveness of strategies for enhancing food intake to be: providing tube feeding ($\mu=3.339$); providing assistance for positioning ($\mu=2.945$); and adding nutrients to foods ($\mu=2.893$).

Significant differences in the use and perceived effectiveness of strategies between DONs and RDs were also found. DONs more frequently use liquid supplements ($P=0.0003$), specialized feeding utensils ($P=0.0004$), and simple verbal prompts to enhance food intake among the elderly ($p<0.0001$). RDs had a more positive perception of the effectiveness of tube feeding for enhancing intake among elders than did DONs ($p=0.0006$).

The needs for additional food-service/dietary labor cost and/or product costs are considered obstacles to implementing the strategies such as: providing several daily meals rather than three large meals; offering snacks between meals; providing liquid supplements; and adding nutrients to food. Additional nursing labor cost was an obstacle to tube feeding.

Most staff training was related to offering liquid supplements; less often was staff trained in actual table-side feeding strategies. Most CNA training, in-house inservice, verbal or written instruction provided to staff about the use of strategies included providing liquid supplements and adding nutrients to foods, rather than verbal or tactile prompts.

The results revealed that there is a statistically significant association between providing small frequent meals and the obstacle of product or supply cost associated with the strategy ($p=0.0310$). This was also true for the strategy of providing praise or positive reinforcement for eating and the obstacle of the need for additional nursing labor cost ($p=0.0035$) and for the strategy of providing praise or positive reinforcement for eating and the obstacle of it being difficult to implement or maintain ($p=0.0280$).

There are some concerns that were revealed by the results of this study. While there are some feeding strategies that are considered effective (tube feeding by RDs and enhancements to the dining room by DONs), they are not the most often used ones. In addition, some of strategies that are considered effective are not expensive (enhancement to the dining room). Finally, it is disconcerting that time, effort, and money is being invested into the use of supplements and snacks despite an acknowledgement among these respondents that they are not considered effective. It may require a sincere effort among nursing home caregivers to investigate how the use of less expensive and perhaps more effective strategies can be encouraged. Reliance on more expensive, yet ineffective strategies is defeating the efforts of facilitating care among this high risk group. In order to improve the food and nutrient intake of seniors with poor food intake, caregivers may need to give greater attention to alternative strategies rather relying on old methods which are not necessarily producing results.

7.2 Recommendations For Future Research

Further research is needed to measure the outcomes and actual costs associated with using the strategies. Both DONs and RDs need to be familiar with strategies that can successfully enhance food intake among the elderly.

An association between the use of each feeding strategy and obstacles to its implementation was detected in this study. Therefore, further research is needed to investigate. When this effort is pursued, methods to control or minimize the impact of the obstacles upon the use of feeding strategies can be developed.

Further research is needed to specify what type of training program is needed can facilitate the use and effectiveness of feeding activities. The understanding of feeding should be included for both nurses and dietitians to ensure adequate nutritional intake for the elderly in long-term care facilities.

BIBLIOGRAPHY

1. Position of the American Dietetic Association: Nutrition, aging, and the continuum of care. <http://www.eatright.org/adaposag.html> (Accessed June 17, 1998)
2. Rudman D, Feller AG. Protein-Calorie Undernutrition in the nursing home. *Journal of the American Geriatric Society* 1989;37:173-183
3. Gray GE. Nutrition and dementia. *Journal of the American Dietetic Association* 1989;89:1795-1802
4. Sanders HN. Feeding dependent eaters among geriatric patients. *Journal of Nutrition For the Elderly* 1990;9(3):69-74
5. Morley JE. Anorexia of Aging: Physiologic and Pathologic. *The American Journal of Clinical Nutrition* 1997;66:760-73
6. Franzoni S, Frisoni GB, Bonfelli S, Rozzini R, Trabucchi M, Ferruci L. Food intake and mortality in the frail elderly. *The Journal of Gerontology: Medical Science* 1995;50A(4):M203-M210
7. Silver AJ, Morley JE, Strome LS, Jones D, Vickers L. Nutritional status in academic nursing home. *Journal of the American Geriatric Society* 1988;36:487-491
8. Sandman DO, Adolfsson R, Nygren C, Hallmans G, Winblad B. Nutritional status and dietary intake in institutionalized patients with Alzheimer's disease and Multi-infarct Dementia. *Journal of The American Geriatric Society* 1987;35:31-38
9. Franzoni S, Frisoni GB, Ferruci L, Bonfelli S, Rozzini R, Trabucchi M. A nutritional index predicting mortality in the nursing home. *Journal of the American Geriatric Society* 1994;42:1167-1172
10. Nutritional tips for hospital and nursing home. *Patient Care* 1995;29(18):62-66
11. Sahyoun NR, Otradovec CL, Hartz SC, Jacob R.A, Peters H, Russell RM, McGandy RB. Dietary intakes and biochemical indicators of nutritional status in an elderly, institutionalized population. *The American Journal of Clinical Nutrition* 1988;47:524-533
12. Rudman D, Feller AG. Protein-Calorie Undernutrition in the nursing home. *Journal of the American Geriatric Society* 1989;37:173-183
13. Chidester JC, Spangler AA. Fluid intake in the institutionalized elderly. *Journal of the American Dietetic Association* 1997;97:23-28

14. Sullivan DH, Moriarty MS, Chernoff R, Lipschitz DA. Patterns of care: An analysis of the quality of nutritional care routinely provided to elderly hospitalized veterans. *Journal of Parenteral and Enteral Nutrition* 1989;13:249-254
15. Baltes MM, Zerbe MB. Reestablishing self-feeding in a nursing home resident. *Nursing Research* 1976;25(1):24-26
16. Eaton M, Mitchell-Bonair IL, Friedmann E. The effect of touch on nutritional intake of Chronic Organic Brain Syndrome patients. *The Journal of Gerontology* 1986;41(5):611-616
17. Kolodny V, Malek A. Improving feeding skills. *Journal of Gerontological Nursing* 1991;17:20-24
18. American Dietetic Association: Health Care Financing Administration. ADA responds to nursing home initiative: task force is developing nutrition care recommendations for HCFA. *Journal of the American Dietetic Association* Oct 1998;98:10:1106-1107
19. Gallagher-Allred CR, Bockus S. Specialized nutritional supporting long-term care. *The Journal of Long-term Care Administration* Winter 1989:8-11
20. Position of the American Dietetic Association: Liberalized diets for older adults in long-term care. <http://www.eatright.org/adap0298a.html> (Accessed July 17, 1998)
21. White H, Schmader K. The Association of Weight Change in Alzheimer's Disease with Severity of Disease and Mortality: A Longitudinal Analysis. *Journal of the American Geriatric Society* 1998;46:1223-27
22. Kerstetter JE, Holthausen BA, Fitz P. Malnutrition in the institutionalized older adult. *Journal of the American Dietetic Association* 1992;92:1109-1118
23. Keller H. Malnutrition in institutionalized elderly: How and why? *The American Geriatrics Society* 1993;41:1212-1218
24. Norberg A, Athlin E. Eating problems in severely demented patients: issues and ethical dilemmas. *Nursing Clinical North American* 1989;24:781
25. Michaelsson E, Norberg A, Norberg B. Feeding methods for demented patients in end stage of life. *Geriatric Nursing* March/April 1987:69-73
26. Osborn C, Marshall M. Promoting mealtime independence. *Geriatric Nursing* September/October 1992:254-256
27. Franklin CA, Karkeck J. Weight loss and senile dementia in an institutionalized elderly population. *Journal of the American Dietetic Association* 1989;89:790-792

28. Shiffman SS. Taste and smell losses in normal aging and disease. *The Journal of the American Medical Association* 1997;278(16):1357-1352
29. Schlenker ED. Nutrition in Aging. New York: Mosby, 1993.
30. Chapman KM. Loss of appetite: Managing unwanted weight loss in the older patients. *Geriatrics* 1994;49(3):54-59
31. Freeman LM, Roubenoff R. The nutrition implications of cardiac cachexia. *Nutrition Review* 1994;52:340-347
32. Ryan C, Shea ME. Recognizing depression in older adults: The role of the dietitian. *Journal of the American Dietetic Association* 1996;96(10):1042-1043
33. Franzoni S, Frisoni GB, Bonffelli S, Rozzini R, Trabucchi M. Good nutritional oral intake is associated with equal survival in demented and non-demented very old patients. *Journal of the American Geriatric Society* 1996;44:1366-1370
34. Siebens H, Trupe E, Sibens A, Cooke F, Anshen S, Hanauer R, Oster G. Correlates and consequences of eating dependency in institutionalized elderly. *Journal of the American Geriatric Society* 1986;34:192-198
35. Sidenvall B, Fjellstrom C, Ek AC. The meal situation in geriatric care: Intentions and experiences. *Journal of Advanced Nursing* 1994;20:613-621
36. Quattrochi-Tubin SJ, Jason LA. The Effects of Cognitive and Behavioral Strategies in Enhancing Behavioral Functioning among Residents of a Nursing Home. *Gerontology and Geriatrics Education* 1988;8:133-148
37. Phillips L, Van Ort S. Measurement of mealtime interactions among persons with dementing disorders. *Journal of Nursing Measurement* 1993;1:41-55
38. Rogers JC, Snow T. An Assessment of the feeding behaviors of the institutionalized elderly. *The American Journal of Occupational Therapy* 1982;36:375-380
39. Posner BM, Jette AM, Smith KW, Miller DR. Nutrition and health risks in the elderly: the nutrition screening initiative. *American Journal of Public Health* 1993;83:972-978
40. Van Ort S. Feeding nursing home residents with Alzheimer's disease. *Geriatric Nursing* September/October 1992:249-253
41. Steele CM, Greenwood C, Ens I, Robertson C, Seidman-Carlson R. Mealtime difficulties in a home for the aged: Not just dysphasia. *Dysphasia* 1997;12:43-50

42. Suski NS, Nielsen C. Factors affecting food intake of women with Alzheimer's type dementia in long-term care. *Journal of the American Dietetic Association* 1989;89:1770-1773
43. Berkhout AMM, Cools HJ, Van Houwelingen HC. The relationship between difficulties in feeding oneself and loss of weight in nursing-home patients with dementia. *Age and Ageing* 1998;27:637-641
44. Hu TW, Hung LF, Cartwright WS. Evaluation of the costs of caring for the senile demented elderly: A pilot study. *The Gerontological Society of America* 1986;26:158-163
45. Bower ME. The resident dining room- A CQI project. *Journal of Nutrition for the Elderly*. 1995;15(2):47-54
46. Gloth FM, Tobin JD, Smith CE, Meyer JN. Nutrient intakes in a frail homebound elderly population in the community vs. a nursing home population. *Journal of the American Dietetic Association* 1996;96(6):605-608
47. Kayser-Jones J. A prospective study of the use of liquid oral dietary supplements in nursing homes. *The American Geriatrics Society* 1998;46:1378-1386
48. Matthews LE. Use of supplemental feedings for nursing home residents. *Journal of Nutrition For the Elderly* 1998;7(4):35-41
49. Musson ND, Kincaid J, Ryan P, Glussman B, Varone L, Gmarra N, Wilson R, Reete W, Silverman M. Nature, nurture, nutrition: Interdisciplinary programs to address the prevention of malnutrition and dehydration. *Dysphasia* 1990;5:96-101
50. Spindler AA, Renvall MJ, Nicholas JF, Ramsdell JW. Nutritional status of patient with Alzheimer's disease: a 1-year study. *Journal of the American Dietetic Association* 1996;96(10):1013-1016
51. Cassens D, Johnson E, Keelan S. Enhancing Taste, Texture, Appearance, and Presentation of Pureed Food Improved Resident Quality of Life and Weight Status. *Nutrition Reviews* 1996;54(1):S51-S54
52. Hogstel MO, Robinson NB. Feeding the Frail elderly. *Journal of Gerontological Nursing* 1989;15:16-20
53. Sheiman SL. Tube feeding the demented nursing home resident. *Journal of the American Geriatric Society* 1996;44:1-2
54. Cass R. Long term employees' attitudes regarding feeding the older adult: A pilot study. *Journal of Nutrition for the Elderly* 1997;16(4):17-27

55. Groher ME. Dysphasia and dietary levels in skilled nursing facilities. *Journal of the American Geriatric Society* 1995;43:528-532
56. The Brown University long-term Care Quality Advisor. Good long-term outcomes for PEG placement. August 1998;10(8):3-5
57. Joint Commission on Accreditation of Health Care Organizations (1994). Accreditation Manual for Long Term Care 24-26.
58. Carolyn B, Marianne SE. Consultant Dietitians: The Opportunity is Now. *The journal of long-term care administration* Fall 1992:25-27
59. Bonnel WB. Staff perceptions of the nursing home group dining activity: Interdisciplinary issues. *Journal of Nutrition For the Elderly* 1995;14(2/3):15-25
60. de Castro JM, Brewer EM, Elmer DK, Orazco S. Social facilitation of the spontaneous meal size of humans occurs regardless of time, place, alcohol or snacks. *Appetite* 1990;15: 89-101
61. Osborn CL, Simmons BP. Self-Feeding Performance in Nursing Home Residents. *Journal of Gerontological Nursing* 1993;19(3):7-14
62. Gimore S, Russell CM. Factors affecting meal service in nursing facilities: Employees' Perceptions. *Journal of Nutrition For the Elderly* 1992;11(1/2):3-14
63. Kayser-Jones J, Shell E. The effect of staffing on the quality of care at mealtime. *Nursing Outlook* 1997;45:64-72
64. Davies ADM., Snaith PA. The social behavior of geriatric patients at mealtimes: An observational and an intervention study. *Age and Ageing* 1980;9:93-99
65. Van Ort S, Phillips LR. Nursing interventions to promote functional feeding. *The Journal of Gerontological Nursing* 1995;21(10):6-14
66. Coyne ML, Hoskins L. Improving eating behaviors in dementia using behavioral strategies. *Clinical Nursing Research* 1997;6(3):276-291
67. Lange-Alberts ML, Shott S. Nutritional intake: Use of touch and verbal cueing. *Journal of Gerontological Nursing* 1994;20(2):36-40
68. The long-term care ombudsman program under chapter 43.190 RCW (Revised Code of Washington) [WA-http://web.lexis-nexis.com/universe](http://web.lexis-nexis.com/universe) (Accessed December 15, 1998)
69. Rousseau R. Living to eat, eating to live. (nursing home food service) *Restaurants & Institutions* 1996;106(5): 44-45

70. Waxman H, Carver E, Berkenstock G. Job Turnover and Job Satisfaction among Nursing Home Aides. *Gerontologist* 1984;24:503-9
71. Schiller MR, Arensberg MB, Kantor B. Administrators' perceptions of nutrition service in home health care agencies. *Journal of the American Dietetic Association* 1998;98:56-61
72. Robidoux LW, Sankaran G. Managing nutrition services in nursing homes: Is continuous quality improvement a key to survival? *Journal of Nutrition for the Elderly* 1998;17(3):41-57
73. Tucker HN, Miguel S. Cost containment through nutrition intervention. *Nutrition Reviews* 1996;54:111-121
74. Naglak M, Mitchell DC, Kris-Etherton P, Harkness W, Pearson TA. What to consider when conducting a cost-effectiveness analysis in a clinical setting. *Journal of the American Dietetic Association* 1998;98:1149-1154
75. Arensberg MBF, Schiller MR. Dietitians in home care: a survey of current practice. *Journal of the American Dietetic Association* 1996;96:347-353
76. Stiles NJ, Boosalis MG, Bowen J. A geriatric nutrition clinic: addressing the nutritional needs of the elderly through an interdisciplinary team. *Journal of Nutrition For the Elderly* 1996;15(3):33-41
77. Athlin E, Norberg A. Caregivers' attitudes to and interpretations of the behavior of severely demented patients during feeding in a patient assignment care system. *International Journal of the Nursing study* 1987;24:145-153
78. Consultant Dietitians in Health Care Facilities. Dining Skills – Practical Interventions for the Caregivers of the Eating Disabled Older Adult. A practical group of the American Dietetic Association: 1991
79. The Brown University long-term Care Quality Advisor. Feeding brings ethical problems to front-line staff.
http://web7.searchbank.com/infotrac/session/311/210/371251w5/105!xrn_4
(Accessed November 15, 1998)
80. Symer M, Brannon D, Cohn M. Improving nursing home care through training and job redesign. *Gerontologist* 1992;32(3): 327-333
81. Cochran WG. Sampling Techniques New York: John Wiley & Sons, Inc.:1977
82. Thompson SK. Sampling. New York: John Wiley & Sons, Inc.: 1992
83. Salant P, Dillman DA. How to conduct your own survey. New York: Wiley: 1994

84. Sall, J. *JMP Start Statistics: a guide to statistical and data analysis using JMP and JMP IN software*. Belmont, CA: Duxbury Press: 1996
85. Ramsey and Schafer. *The statistical Sleuth: A Course in Methods Data Analysis*. Belmont, CA: Duxbury:1997
86. Health Counts in Wisconsin: Wisconsin Annual Survey of Nursing Homes
[http:// www.dhfs.state.wi.us/health_chs/healthcounts/96nurse.htm](http://www.dhfs.state.wi.us/health_chs/healthcounts/96nurse.htm). (Accessed February 1, 1999)
87. O'Hara PA, Harper DW, Kangas M, Dubeau J, Borsutzky C, Lemire N. Taste, temperature, and presentation predict satisfaction with foodservices in a Canadian continuing-care hospital. *Journal of the American Dietetic Association* April 1997;97:401-405
88. Position of the American Dietetic Association: Management of health care food and nutrition services. <http://www.eatright.org/adap1297.html> (Accessed June 17, 1998)
89. Singer AJ, Werther K, Nestle M. Improvements are needed in hospital diets to dietary guidelines for health promotion and disease prevention. *Journal of The American Dietetic Association* 1998;98:639-641
90. Stanek K, Sempek D. Food supplement use as related to nutrition knowledge and dietary quality of the elderly. *Journal of Nutrition For the Elderly* 1991;10(1):33-44
91. Tappen RH. The effect of skill training on functional abilities of nursing home residents with dementia. *Research in Nursing and Health* 1994;17:159-165
92. Soneff R, McGeachy F, Davison K, McCargar L, Therien G. Effectiveness of two training methods to improve the quality of food service in small facilities for adult care. *Journal of the American Dietetic Association* August 1994;94(8): 869-874
93. Nursing Staffing and Quality of Care in Health Care Organizations Research Agenda
<http://www.ahcpr.gov/news/nursagnd.htm> (Accessed October 7, 1998)

APPENDICES

APPENDIX A Cover Letter for DONs

DEPARTMENT OF NUTRITION AND FOOD MANAGEMENT



OREGON STATE UNIVERSITY

108 Milam Hall · Corvallis, Oregon 97331-5103

Telephone 541-737-3561 Fax 541-737-6914

September 9, 1998

Dear Director of Nursing Service / Charge Nurse:

You may be concerned about the problem of inadequate food intake among your resident. As you probably know, malnutrition related to lack of appetite and/or eating disabilities among the institutionalized elderly is a common problem in long-term care facilities. In an attempt to improve feeding related problems, several feeding techniques or strategies have been developed and/or are in use.

As a Director of Nursing / Charge Nurse in a long-term care facility, you are asked to give your opinion about these techniques or strategies for enhancing food intake. We are interested in your ideas about the use of some of these.

Your facility was randomly selected. In order to get accurate results, it is very important that each questionnaire be completed and returned in the envelope provided. We appreciate your time in doing so, since we know how busy you are.

Your response will be completely confidential. The questionnaire has an identification number for mailing purpose only. This is so that we may check your name off the mailing list when your questionnaire is returned. Your name will never be placed on the questionnaire itself.

I would be most happy to answer any questions you may have about this study. Please write, call or send e-mail to me. The telephone number is (541) 737-0960 and e-mail address is kluskeym@ccmail.orst.edu or kimyon@ucs.orst.edu.

Thank you very much for your assistance.

Sincerely,

YongKyang Kim
Graduate Student

Mary Cluskey
Project Director
PhD., R.D., L.D.

APPENDIX B Cover Letter for RDs

DEPARTMENT OF NUTRITION AND FOOD MANAGEMENT



OREGON STATE UNIVERSITY
108 Milam Hall - Corvallis, Oregon 97331-5103
Telephone 541-737-3561 Fax 541-737-6914

September 9, 1998

Dear Consultant Dietitian:

You may be concerned about the problem of inadequate food intake among your residents. As you probably know, malnutrition related to the lack of appetite and/or eating disabilities among the institutionalized elderly is a common problem in long-term care facilities. In an attempt to improve feeding related problems, several feeding techniques or strategies have been developed and/or are in use.

As a Consultant Dietitian in a long-term care facility, you are asked to give your opinion about these techniques or strategies for enhancing food intake. We are interested in your ideas about the use of some of these. We hope to be able to determine which techniques or strategies are most effective. Your input will enhance our project immensely.

Your name was randomly selected. In order to get accurate results, it is very important that each questionnaire be completed and returned in the envelope provided. We appreciate your time in doing so, since we know how busy you are.

Your response will be completely confidential. The questionnaire has an identification number for mailing purpose only. This is so that we may check your name off the mailing list when your questionnaire is returned. Your name will never be placed on the questionnaire itself.

I would be most happy to answer any questions you may have about this study. Please write, call or send e-mail to me. The telephone number is (541) 737-0960 and e-mail address is cluskeym@ccmail.orst.edu or kimyong@ucs.orst.edu.

Thank you very much for your assistance.

Sincerely,

YongKyang Kim
Graduate Student

Mary Cluskey
Project Director
PhD., R.D., L.D.

For Director of Nursing Service / Charge Nurse

Strategies for Enhancing Food Intake of the Elderly in Nursing Home Facilities



**Conducted by the
Department of Nutrition and Food Management
Oregon State University
Milam Hall, Room 108
Corvallis, Oregon 97331-5103**

1. Circle the response which best reflects how often you recommend or use the following strategies for enhancing caloric or food intake of your residents? (Circle one number for each strategy "a" through "q")

<u>Strategies</u>	<div> <div>Often</div> <div>Some - times</div> <div>Seldom</div> <div>Never</div> </div>			
	Often	Some - times	Seldom	Never
a. Provide liquid supplement with or between meals (Ensure, milkshake, etc.)	1	2	3	4
b. Add supplemental products or additional nutrients to foods	1	2	3	4
c. Provide tube feeding	1	2	3	4
d. Offer snacks between meals	1	2	3	4
e. Provide several small meals rather than three large meals	1	2	3	4
f. Offer meals as finger foods	1	2	3	4
g. Provide specialized utensils (Scoop plate, nosey cup, etc.)	1	2	3	4
h. Minimize noise and distractions occurring in the dining room	1	2	3	4
i. Provide neat and comfortable dining environment	1	2	3	4
j. Place food on placemat directly in front of resident	1	2	3	4
k. Avoid staff interruptions during feeding of the residents	1	2	3	4
l. Provide assistance for optimal positioning at meal time	1	2	3	4
m. Position functionally impaired subjects next to self-feeding residents	1	2	3	4
n. Use simple verbal prompts to eat	1	2	3	4
o. Use tactile prompts (hand over hand)	1	2	3	4
p. Pantomime desired eating behaviors	1	2	3	4
q. Provide praise or positive reinforcement for eating	1	2	3	4

GO ON TO THE NEXT PAGE

2. How effective do you believe this strategy is? **Effective** means that the strategy will usually result in improved food or caloric intake of the residents. (Circle one number for each strategy "a" through "q")

	Always Effective	Usually Effective	Sometimes Effective	Not Effective	Never Tried
<u>Strategies</u>					
a. Provide liquid supplement with or between meals (Ensure, milkshake, etc.)	1	2	3	4	5
b. Add supplemental products or additional nutrients to foods	1	2	3	4	5
c. Provide tube feeding	1	2	3	4	5
d. Offer snacks between meals	1	2	3	4	5
e. Provide several small meals rather than three large meals ..	1	2	3	4	5
f. Offer meals as finger foods	1	2	3	4	5
g. Provide specialized utensils (Scoop plate, nosey cup, etc.)	1	2	3	4	5
h. Minimize noise and distractions occurring in the dining room	1	2	3	4	5
i. Provide neat and comfortable dining environment	1	2	3	4	5
j. Place food on placemat directly in front of resident	1	2	3	4	5
k. Avoid staff interruptions during feeding of the residents	1	2	3	4	5
l. Provide assistance for optimal positioning at meal time	1	2	3	4	5
m. Position functionally impaired subjects next to self-feeding residents	1	2	3	4	5
n. Use simple verbal prompts to eat	1	2	3	4	5
o. Use tactile prompts (hand over hand)	1	2	3	4	5
p. Pantomime desired eating behaviors	1	2	3	4	5
q. Provide praise or positive reinforcement for eating	1	2	3	4	5

PLEASE TURN THE PAGE

3. For each of the following food enhancement strategies, please indicate whether or not each is an obstacle (listed across the top) to using the strategy. (Circle yes if you agree item can be an obstacle)

<u>Strategies</u>	Requires additional nursing labor cost	Requires additional food-service / dietary labor cost	Requires product or supply cost	It is difficult to implement or maintain	There is lack of support from administration
a. Provide liquid supplement with or between meals (Ensure, milksheke, etc.)	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
b. Add supplemental products or additional nutrients to foods	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
c. Provide tube feeding	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
d. Offer snacks between meals	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
e. Provide several small meals rather than three large meals	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
f. Offer meals as finger foods	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
g. Provide specialized utensils (Scoop plate, nose cup, etc.)	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
h. Minimize noise and distractions occurring in the dining room	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
i. Provide neat and comfortable dining environment	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
j. Place food on placemat directly in front of resident	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
k. Avoid staff interruptions during feeding of the residents.	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
l. Provide assistance for optimal positioning at meal time	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
m. Position functionally impaired subjects next to self-feeding residents	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
n. Use simple verbal prompts to eat	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
o. Use tactile prompts (hand over hand)	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
p. Pantomime desired eating behaviors	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
q. Provide praise or positive reinforcement for eating	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>

GO ON TO THE NEXT PAGE

4. Indicate whether or not your direct care staff was trained to deliver or utilize the following feeding techniques or strategies with methods listed at the top of the table. (Circle yes if there is the following training or guidance)

<u>Strategies</u>	Received in CNA training this past year	Part of in-house inservice this past year	One or more staff went to work shop this past year	Received verbal instructions from licensed staff or dietitian this past year	Other
a. Provide liquid supplement with or between meals (Ensure, milkshake, etc.)	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	_____
b. Add supplemental products or additional nutrients to foods	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	_____
c. Provide tube feeding	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	_____
d. Offer snacks between meals	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	_____
e. Provide several small meals rather than three large meals	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	_____
f. Offer meals as finger foods	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	_____
g. Provide specialized utensils (Scoop plate, nose cup, etc.)	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	_____
h. Minimize noise and distractions occurring in the dining room	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	_____
i. Provide neat and comfortable dining environment ...	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	_____
j. Place food on placemat directly in front of resident ...	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	_____
k. Avoid staff interruptions during feeding of the residents.	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	_____
l. Provide assistance for optimal positioning at meal time	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	_____
m. Position functionally impaired subjects next to self-feeding residents	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	_____
n. Use simple verbal prompts to eat	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	_____
o. Use tactile prompts (hand over hand)	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	_____
p. Pantomime desired eating behaviors	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	_____
q. Provide praise or positive reinforcement for eating ...	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	_____

PLEASE TURN THE PAGE

Demographic Information

5. Indicate whether or not your facility holds each of the following types of licenses. (Circle one number for each category)

	YES	NO
a. Skilled nursing facility (SNF)	1	2
b. Intermediate care facility (ICF)	1	2
c. Assisted living facility (PERSONAL CARE)	1	2
d. Subacute care	1	2
e. If you have other types of licenses, please specify _____		

6. How many residents currently are housed in your facility? _____ PERSONS

7. How many total staff members (full-time) does your facility employ? (Circle one number)

- 1 1 TO 15 PERSONS
- 2 16 TO 30 PERSONS
- 3 31 TO 45 PERSONS
- 4 46 TO 60 PERSONS
- 5 OTHER, PLEASE SPECIFY _____ PERSONS

8. What number of residents currently have poor appetite or demonstrate unwillingness to eat for at least one meal/day?
(Circle one number)

- 1 1 TO 15 PERSONS
- 2 16 TO 30 PERSONS
- 3 31 TO 45 PERSONS
- 4 46 TO 60 PERSONS
- 5 OTHER, PLEASE SPECIFY _____ PERSONS

9. What number of residents need feeding assistance every day? (Circle one number)

- 1 1 TO 15 PERSONS
- 2 16 TO 30 PERSONS
- 3 31 TO 45 PERSONS
- 4 46 TO 60 PERSONS
- 5 OTHER, PLEASE SPECIFY _____ PERSONS

10. What number of staff members are directly responsible for the daily feeding assistance of all residents that need feeding for one meal? (Circle one number)

- 1 1 TO 5 PERSONS
- 2 6 TO 10 PERSONS
- 3 11 TO 15 PERSONS
- 4 16 TO 20 PERSONS
- 5 OTHER, PLEASE SPECIFY _____ PERSONS

11. Is this number of feeding staff less, about same, or greater than the number on weekends? (Circle one number)

- 1 LESS
- 2 SAME
- 3 GREATER

12. Do volunteers participate in feeding activity? (Circle one number)

- 1 NO
- 2 YES



12 a. On average how many of volunteers compared to staff members participate in feeding activity?
(Circle one number)

- 1 THERE ARE MORE VOLUNTEERS THAN STAFF
- 2 THERE ARE EQUAL NUMBERS OF VOLUNTEERS AND STAFF
- 3 THERE ARE FEWER VOLUNTEERS THAN STAFF
- 4 UNCERTAIN

13. How often did your facility provide training program for volunteers about feeding techniques methods to the feeding staff during the last year? (Circle one number)

- 1 NONE
- 2 ONCE OR TWICE PER YEAR
- 3 SEVERAL TIMES BUT LESS THAN ONCE A MONTH
- 4 ONCE A MONTH OR MORE

14. Would you like to comment about feeding strategies among elderly?

PLEASE TURN THE PAGE

Your comment on this page will be greatly appreciated, either here or on a separate page.

Thank you for your assistance with this research project.

Please return your completed questionnaire to:
YongKyang Kim
Department of Nutrition and Food Management
Oregon State University
Milam Hall, Room 108
Corvallis, Oregon 97331-5103

For the Consultant Dietitian

Strategies for Enhancing Food Intake of the Elderly in Nursing Home Facilities



**Conducted by the
Department of Nutrition and Food Management
Oregon State University
Milam Hall, Room 108
Corvallis, Oregon 97331-5103**

1. Circle the response which best reflects how often you recommend or use the following strategies for enhancing caloric or food intake of your residents? (Circle one number for each strategy "a" through "q")

<u>Strategies</u>	Often	Some - times	Seldom	Never
a. Provide liquid supplement with or between meals (Ensure, milksheke, etc.)	1	2	3	4
b. Add supplantal products or additional nutrients to foods	1	2	3	4
c. Provide tube feeding	1	2	3	4
d. Offer snacks between meals	1	2	3	4
e. Provide several small meals rather than three large meals	1	2	3	4
f. Offer meals as finger foods	1	2	3	4
g. Provide specialized utensils (Scoop plate, nosey cup, etc.)	1	2	3	4
h. Minimize noise and distractions occurring in the dining room	1	2	3	4
i. Provide neat and comfortable dining environment	1	2	3	4
j. Place food on placemat directly in front of resident	1	2	3	4
k. Avoid staff interruptions during feeding of the residents	1	2	3	4
l. Provide assistance for optimal positioning at meal time	1	2	3	4
m. Position functionally impaired subjects next to self-feeding residents	1	2	3	4
n. Use simple verbal prompts to eat	1	2	3	4
o. Use tactile prompts (hand over hand)	1	2	3	4
p. Pantomime desired eating behaviors	1	2	3	4
q. Provide praise or positive reinforcement for eating	1	2	3	4

GO ON TO THE NEXT PAGE

2. How effective do you believe this strategy is? Effective means that the strategy will usually result in improved food or caloric intake of the residents. (Circle one number for each strategy "a" through "q")

		Always Effective	Usually Effective	Sometimes Effective	Not Effective	Never Tried
<u>Strategies</u>						
e.	Provide liquid supplement with or between meals (Ensure, milkshake, etc.)	1	2	3	4	5
b.	Add supplemental products or additional nutrients to foods	1	2	3	4	5
c.	Provide tube feeding	1	2	3	4	5
d.	Offer snacks between meals	1	2	3	4	5
e.	Provide several small meals rather than three large meals ..	1	2	3	4	5
f.	Offer meals as finger foods	1	2	3	4	5
g.	Provide specialized utensils (Scoop plate, nose cup, etc.)	1	2	3	4	5
h.	Minimize noise and distractions occurring in the dining room	1	2	3	4	5
i.	Provide neat and comfortable dining environment	1	2	3	4	5
j.	Place food on placemat directly in front of resident	1	2	3	4	5
k.	Avoid staff interruptions during feeding of the residents	1	2	3	4	5
l.	Provide assistance for optimal positioning at meal time	1	2	3	4	5
m.	Position functionally impaired subjects next to self-feeding residents	1	2	3	4	5
n.	Use simple verbal prompts to eat	1	2	3	4	5
o.	Use tactile prompts (hand over hand)	1	2	3	4	5
p.	Pantomime desired eating behaviors	1	2	3	4	5
q.	Provide praise or positive reinforcement for eating	1	2	3	4	5

PLEASE TURN THE PAGE

3. For each of the following food enhancement strategies, please indicate whether or not each is an obstacle (listed across the top) to using the strategy. (Circle yes if you agree item can be an obstacle)

<u>Strategies</u>	Requires additional nursing labor cost	Requires additional food-service / dietary labor cost	Requires product or supply cost	It is difficult to implement or maintain	There is lack of support from administration
a. Provide liquid supplement with or between meals (Ensure, milkshake, etc.)	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
b. Add supplemental products or additional nutrients to foods	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
c. Provide tube feeding	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
d. Offer snacks between meals	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
e. Provide several small meals rather than three large meals	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
f. Offer meals as finger foods	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
g. Provide specialized utensils (Scoop plate, no-say cup, etc.)	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
h. Minimize noise and distractions occurring in the dining room	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
i. Provide neat and comfortable dining environment	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
j. Place food on placemat directly in front of resident	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
k. Avoid staff interruptions during feeding of the residents .	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
l. Provide assistance for optimal positioning at meal time	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
m. Position functionally impaired subjects next to self-feeding residents	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
n. Use simple verbal prompts to eat	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
o. Use tactile prompts (hand over hand)	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
p. Pantomime desired eating behaviors	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
q. Provide praise or positive reinforcement for eating	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>

GO ON TO THE NEXT PAGE

4. Please circle the response which best indicates your level of training or guidance (in any facility in which you are involved) on the following feeding enhancement strategies. (Circle yes if you provide the following training or guidance)

<u>Strategies</u>	I provided an inservice training to nursing staff within the past year	I provided an inservice training to dietary staff within the past year	I provided one on one guidance to at least one direct care staff within the past year	I provided written instruction to nursing staff or dietary staff within the past year
a. Provide liquid supplement with or between meals (Ensure, milkshake, etc.)	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
b. Add supplemental products or additional nutrients to foods	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
c. Provide tube feeding	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
d. Offer snacks between meals	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
e. Provide several small meals rather than three large meals	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
f. Offer meals as finger foods	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
g. Provide specialized utensils (Scoop plate, nose cup, etc.)	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
h. Minimize noise and distractions occurring in the dining room	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
i. Provide neat and comfortable dining environment ...	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
j. Place food on placemat directly in front of resident ...	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
k. Avoid staff interruptions during feeding of the residents	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
l. Provide assistance for optimal positioning at meal time	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
m. Position functionally impaired subjects next to self-feeding residents	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
n. Use simple verbal prompts to eat	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
o. Use tactile prompts (hand over hand)	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
p. Pantomime desired eating behaviors	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>
q. Provide praise or positive reinforcement for eating ...	<u>YES</u>	<u>YES</u>	<u>YES</u>	<u>YES</u>

PLEASE TURN THE PAGE

Demographic Information

5. Have you been or are you employed (contracted) in a long-term health care facility, which provides residential and/or nursing care for the elderly? (Circle one number)

- 1 NO - IF NO, PLEASE SKIP THE REST OF QUESTIONS (Q 6 - 12) AND THANK YOU FOR YOUR INPUT
2 YES - IF YES, PLEASE GO TO THE QUESTION 6

6. Please mark your employment status. (Circle one number)

- 1 I AM A FULL TIME RD IN A LONG-TERM FACILITY FOR THE ELDERLY
→ Please continue to answer all the following questions.
- 2 I AM A PART TIME RD IN A LONG-TERM FACILITY FOR THE ELDERLY
→ Please continue to answer all the following questions.
- 3 I AM A CONSULTANT RD IN _____ (number) OF LONG-TERM FACILITIES FOR THE ELDERLY
→ Please skip to question 9 through 12.

7. How many meals are served in the facility where you work? Please specify each category.

- a. Breakfast MEALS
b. Lunch MEALS
c. Dinner MEALS
d. Uncertain

8. How many total staff members (full-time) does your facility employ? (Circle one number)

- 1 1 TO 15 PERSONS
2 16 TO 30 PERSONS
3 31 TO 45 PERSONS
4 46 TO 60 PERSONS
5 UNCERTAIN
6 OTHER, PLEASE SPECIFY _____ PERSONS

9. Indicate whether or not you work or consult in each type of the following L.T.C. licensed facilities.
(Circle one number for each category)

	YES	NO
a. Skilled nursing facility (SNF)	1	2
b. Intermediate care facility (ICF)	1	2
c. Assisted living facility (PERSONAL CARE)	1	2
d. Subacute care	1	2
e. If you have other types of licenses, please specify _____		

10. What percentage of residents currently have poor appetite or unwillingness to eat for at least one meal/day?

(Circle one number and respond on an average if you consult in more than one facility)

- 1 1 TO 20 %
- 2 21 TO 40 %
- 3 41 TO 60 %
- 4 61 TO 80 %
- 5 81 TO 100 %

11. Please circle the response that best describes how you have acquired skills in feeding enhancement techniques or strategies. (Circle one number for each category)

	YES	NO
a. Training in school or supervised practice (DI, AP4, etc.)	1	2
b. Attend workshops when available	1	2
c. Learn from CD-HCF manual or newsletters	1	2
d. Personal reading or research	1	2
e. If there is other, please specify		

12. Please indicate whether or not you believe each of the following is an obstacle to adequate food intake among the elderly.

(Circle one number for each category "a" through "g")

	YES	NO
a. Resident behavior problems interfere with eating (Distractible, unresponsive, spitting, etc.)	1	2
b. Resistance to antenatal nutrition	1	2
c. Lack of meal time assistance	1	2
d. Inadequate time allowed for feeding	1	2
e. Lack of knowledge for proper feeding method	1	2
f. Constraint of budget	1	2
g. Poor quality food	1	2
h. If there is other, please specify		

PLEASE TURN THE PAGE

Your comment on this page will be greatly appreciated, either here or on a separate page.

Thank you for your assistance with this research project.

Please return your completed questionnaire to:
YongKyang Kim
Department of Nutrition and Food Management
Oregon State University
Milam Hall, Room 108
Corvallis, Oregon 97331-5103

Appendix E General Comments from DONs Regarding Strategies for Enhancing Food Intake Among the Elderly in Long-Term Care Facilities

DONs from Oregon
<p>“We have a therapeutic dining room to assist with individualized needs and to facilitate varying skill levels to self-feeding”</p> <p>“We find that the best strategy for success is to find what the residents is used to eating and when and to duplicate previous pattern and preferences. For example, a big breakfast eaten often does best with 2 breakfasts than with lunch”</p> <p>“Progressive weight loss is the elderly is a major problem we deal with. I feel our community dwelling elders and their families need much greater education and training on need for nutritional enhancements and on strategies to prevent weight loss. Commercial nutritional enhances are expensive, so families must be taught on how best to increase calorie intake, given the patient has medical conditions. I feel the doctors providing care to our elderly are nor prepared to deal with management of weight loss.”</p> <p>“Mealtime can be very challenging for both staff and residents. The meals must be nourishing and presented in an appetizing manner, alternates and substitutes need to be available (This is most important). Use of supplements needs continuous monitoring. It is expensive, but if use correctly, can really be beneficial.”</p> <p>“Tube feedings are rarely on option in our geriatric population. Most elderly residents refuse it verbally or with physical gestures.”</p> <p>“Each individual is different. It takes a team approach to feed/assist.”</p>
DONs from Washington
<p>“We have changed for many therapeutic diets to generalized schedule 5 times of eating for each resident and minimize supplements and nourishment using social setting for intake instead. Weight studies both before and after this change indicate an improvement in wt. Gain and a slowing of loss as we normalize eating and quit being so medically therapeutic. We are just now beginning to develop a volunteer program and have a goal of tremendous staff augmentation in this area.”</p> <p>“We would love to utilize assistance of family members and volunteers for feeding. Unfortunately our state regulations require that licensed/ certified staff only can feed.”</p> <p>“Most nursing home residents are given far too much food and use of milkshake very effective to replace non-eaten amounts. Most residents will eat a good breakfast and then less through the day.”</p> <p>“The residents need attractive meal service. We provided puree food that looks like real food.”</p> <p>“One intervention you didn’t mention is texture change. We have noted on some occasions a change from regular to mech soft or mech soft to puree, puree to full liquid have resulted in improved intakes and better nutrition as evidenced by weight and skin integrity. Our efforts are concentrated on maintaining resident independence and self- confidence/ respect without sacrificing nutrition status. Tube feeding is often rejected by family members as an alternative.”</p>

Appendix E General Comments from DONs Regarding Strategies for Enhancing Food Intake Among the Elderly in Long-Term Care Facilities
(Continued)

DONs from California

“Thank you for allowing me to participate. I am enlightened to see research in this area. We have attempted most of these strategies plus others. The problem is consistency and reliability of people to be available to assist with meal intake. Residents often have other medical reasons that prohibit adequate nutrition.”

“Adequate nutrition among the elderly is difficult to maintain for a variety of reasons. The frail elderly are most dependent on others. Our facility has implemented facility-wide CQI team to improve nutrition and include all disciplines. Cost of supplies with/ or labor is not the major obstacles. The individual resident who lacks the desire or willingness to eat presents the major challenge. Caregivers became fatigued and frustrated, for some of the elderly requires one to one for extended meal times and still only consume minimal amounts.”

“Our facility has begun using colored napkins on the trays of residents with weight loss problems. This napkin alerts the staff to the resident’s problem so they provide added encouragement/ praise to promote food intake. This intervention is very effective.”

“It is very tough. There is not enough space for dining and more people need to be fed than the staff allowed for.”

“Very difficult. Feeding elderly resident is very individualized (i.e. a resident might eat for me but not for you.”

Appendix F General Comments from RDs Regarding Strategies for Enhancing Food Intake Among the Elderly in Long-Term Care Facilities

RDs from Oregon
<p>“Automated proactive nutrition intervention by disease state is the only way a consultant can effectively impact the number and variety of caregivers in long-term care facilities. Learn to use support resource (i.e., videos, outside speakers). Develop an annual plan of action so that you can demonstrate progress towards facility goals thereby ensuring future contracts.”</p> <p>“I think the most difficult thing is getting enough assistance for each resident. Many residents sit at a table with one CNA responsible for feeding all of them. But budgets don’t seem to allow for extra staff. Another strategy that wasn’t mentioned is getting residents out of their homes and eating in the dining room. The socialization seems to have a positive effect.”</p> <p>“Nursing has a negative concept in tube feeding. Most decline tube feeding. This frequently gets extended to the possibility of short-term use to get a compromised resident over an acute illness which oral intake is inadequate to meet needs. It is easier to get PPN ordered.”</p>
RDs from Washington
<p>“Budget cuts are a huge problem for labor especially.”</p> <p>“Usually, the occupational therapist and I work together, as to any problem with eating. Also, the speech pathologist and I confer and work together. The O.T. person and myself give feeding in-services together.”</p> <p>“I think that one of the major concern in long-term care facilities are all of the cutbacks. There is no enough staff to provide adequate assistance with meals and therefore weight loss occurs. I think budget is an overall concern in regards to resident’s weight loss.”</p> <p>“We’ve implemented an <i>Every Bite Counts Program</i> where the cereal and mashed potatoes and juices are fortified and additional calories and has been very successful for eliminating in between meal snacks house wide for the most part. However some in between meal snacks are beginning to creep back in. Our next strategy will be to try out a <i>5 meal a day program</i>. Our last administration wasn’t too keen on the idea but our new administration is interested in pursuing it.”</p> <p>“Over the years, I’ve learned to cut down the use of supplements to increase weight. It seems to work better to use to tray monitor for checking what and how much of certain items the resident eats and to visit them often (especially see if texture is appropriate, is tray card up-to-date, obtain dislike?). Also, less food is better for a lot of elderly-too much is overwhelming and can inhibit one from even beginning to eat because it looks like an impossible task. At dinner, I often ask the cooks to use a small salad-size plate-it is effective for small eaters because it’s just the right and also I prefer to fortify the foods on the menu vs. adding more supplements to the trays.”</p>

Appendix F General Comments from RDs Regarding Strategies for Enhancing Food Intake Among the Elderly in Long-Term Care Facilities
(Continued)

"I feel the nursing and staff I work with do an excellent job of minimizing weight loss. Recently, I've been doing more in depth texture assessments with residents to better meet their needs."

"Elderly residents often turn give up the will to live when their body fails. All the therapies in the world won't make them eat-very difficult to get if to get them back to desire to eat and live. We do try every avenue to improve nutritional status."

RDs from California

"Fiscal impact and time constraints have a great impact on the health status of the resident. Currently, there is just no time to make significant changes. I can ask for things, but I am not at the facility consistently enough to make sure recommendations are implemented on a daily basis. A good deal of what I ask for depends on nursing staff cooperation and implementation. Many facilities have a good deal of turnover and generally the a.m. nurses are more attentive than the p.m. or h.s. shifts.

Many elderly are usually napping after a meal, so nourishment ordered between meals may never be consumed. Even worse, the nurses are busy or short staffed and the nourishment is just set at the bedside.

I've heard dietitian's state that they would not give nourishment at meals because the food is there, and that is what the resident should eat. The reality has shown me something different. In a perfect world there is enough money for quality food, adequate numbers of cooperative competent nurses, and resident who desires the same goals you do. I haven't found that place yet, and I don't think I am going to. Health care has taken a radical turn these past years, and although the regulations get tighter, the dollars are not there to implement these new standards. It's champagne taste on a beer budget. I'm very good at getting weight on a resident if I have control over the dietary and dining room staff and feeding process. I do not have that any longer. I don't think there is any easy answer here. I guess as a society we need to assess how we wish to care for our aging population."

"All elderly have poor appetites and it's a struggle to get any of them to eat voluntarily."

"There is insufficient funding for CNAs. You cannot properly feed a resident if you have twenty to feed. I believe there should be some type of regulating hours required for feeding."

"I think low staffing on p.m. shift is one factor that affects nurse's ability to feed residents at dinner meal. I am fortune to work in facilities where I have the support of administration to make the decisions needed to have the various supplemental products available. I think work with other clinicians (ex. OT, SLP) is very important in meeting the nutritional needs of our residents."

"A first leading technique for reduction of unplanned weight loss is: small meals, adding extra margarine or NFD milk to hot cereal and vegetable and milk."