

Dementia and the Gap in Nutrition: A Review

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Abstract: Dementia is a disease that is common among elderly all over the world and has shown increase trend based on the WHO estimate. Nutritional status of patients with dementia is greatly affected because dementia patients in the late stage have problem with feeding, swallowing, and there is always increase risk of malnutrition. Malnutrition in dementia patient result in compromised immune system, impaired wound-healing, increased risk of hospitalisation and increase rate of death. Feeding difficulties and malnutrition is one of the complications associated with advanced dementia in elderly and it needs urgent attention so as to prevent other problems such as dehydration and infection. Nurses are responsible for bridging the gap in nutrition both in hospital settings and in home care so, adequate understanding and intervention of the problem is required. Nurses should design a way of helping these patients to feed well and also train other health assistants to do so. The objective of the paper is to review different ways of helping dementia patients to bridge the gap in nutrition and how malnutrition can be detected early in dementia patients.

Keywords: Dementia, Nutrition, Nurses, Intervention

1. Introduction

There are increasing numbers of people living with dementia all over the world and this sickness is common among the elderly group in any nation. According to World Health Organization (WHO) [1], it is estimated that 35.6 million people are living with dementia all over the world and the number will be double in the year 2030 and triple by the year 2050. Alzheimer Society [2] (2012), said over 820000 people are living with dementia in the United Kingdom (UK) which over 17000 are younger people, 11500 people are from black and minority ethnic group, two third of the population of people with dementia are women and it was predicted that there will be over a million of people living with dementia in the year 2021.

According to Cook *et al* [3] (2012), dementia is a type of disease that affect the cognitive function of the brain which is evidenced by memory loss, problem with making decision, confusion, difficulties with speech and ineffective coordination of body parts. Dementia is defined as a disease that affect human intelligent, personality and the way they behave [4]. Roberts and Gaspart [5] (2012), said dementia is a disease that has no cure, limits the life of the individual living with it and as the condition progresses, there is problem with communication, coordination and nutrition.

As recognised by Ervin and Koschel [6] (2012), dementia is associated with neuropsychiatric symptoms which are referred to as the behavioural and psychological symptoms. These signs and symptoms include memory loss especially with short term memory, depression, change in personality and mood, confusion, difficulties in task and activities, difficulty in finding right words to use, problem with language, hallucination, delusion, difficulty in controlling movement, disorientation, weight changes, failure to recognise people or object and loss of ability to learn [7, 8].

As stated by Cook *et al* [3] (2012), there are different types of dementia in which individual living with it experience it uniquely. The types are: Alzheimer disease, multi-infarct or vascular dementia, Frontotemporal dementia, mixed dementia, dementia with Lewy bodies, Korsakoff's syndrome, Creutzfeldt-Jakob disease, Huntington's disease related, Parkinson disease related, alcohol related, HIV- related cognitive impairment, mild cognitive impairment [9, 2].

Nutritional status of patients with dementia is usually greatly affected especially in their late stage because of the difficulty in swallowing (dysphagia) experienced by them [10]. According to McNamara and Kennedy [11] (2001), dementia patients in the late stage have problem with feeding, swallowing, and there is always increase risk of malnutrition. Malnutrition in dementia patient result in compromised

immune system, impaired wound healing, increased risk of hospitalisation and increase rate of death [8, 12]. Palacek *et al* [13] (2010), pointed out that the difficulty in swallowing experienced by people living with advanced dementia is caused by the physiological changes that occur in the swallowing functions. Chang and Robert [14] (2008), said that meeting the nutritional demand of people living with advanced dementia is always complex, time consuming and much difficulties is encounter as the disease progresses.

Nursing intervention in managing the gap in nutrition is very essential. Nurses should be vigilant in order to detect early signs of eating difficulties in any dementia patient, appropriate assessment should be taken to quickly alleviate it and necessary measures should be taken such as nutritional supplement, weight monitoring and measurement, increase intake of fluid and calories diet, staff training and use of tube feeding [10, 12].

This paper was aimed at discussing dementia and nutritional gap, with emphasis on dementia and malnutrition, nutritional assessment and screening of dementia patient and nursing intervention and responsibilities in management of dementia.

2. Overview of Dementia

The number of people with dementia is on its increase all over the World and is common among elderly age group. According to Alzheimer society [2] (2012), 820,000 people are living with dementia in the United Kingdom (UK) in which over 17000 are younger people, 11500 people are from the black and minority ethnic group, two third of this population with dementia are women and it is predicted that there will be over a million of people living with dementia in the year 2021.

Dementia is not a disease on its own but a symptoms that is associated with specific disease and condition that affect the brain cells [15]. National Institute for Health and Clinical Excellence [8] (2011), defined dementia as a disorder that affects the effective working capacity of the brain. A progressive condition that cannot be cured which affect everybody and it is not a single illness but a group of symptoms that is as a result of damage to the brain [16]. Dementia is a syndrome that affects the memory, thinking, behaviour and ability to perform everyday activities.

The signs and symptoms of dementia include: memory loss especially short term memory, depression, changes in personality and mood, confusion, difficulties in finding right words, increases difficulties with tasks and activities that require concentration, problem with language, agitation, hallucination and delusion, difficulty in controlling body movement, disorientation, weight changes, pacing and wandering, mood swings, personal and behavioural changes, night time wakefulness, failure to recognise people or object, loss of ability to learn [7, 8].

The various types of dementia includes: Alzheimer's disease, Multi – Infarct or Vascular dementia, Dementia with Lewy bodies, Frontotemporal dementia, mixed dementia,

Korsakoff's syndrome, Creutz – Feldt Jacob disease, Huntington's disease related, Parkinson disease related, Alcohol related, HIV – related cognitive impairment, mild cognitive impairment and Rarer causes of dementia [2, 9]. Alzheimer's disease is named after the German Neuro-psychiatrist (Alois Alzheimer) who discovered it in the year 1906. It is the most common type of dementia and it affects older population of about 496000 in the United State and the 7th leading cause of death in the USA [16]. According to [17] (2011), Alzheimer's disease is as a result of tangle and plaque that occur in the brain which bring about the release of chemicals that destroy the brain nerve cells and important chemical (neurotransmitters) in the brain that help with the conduction of message. It is an irreversible progressive disease which is characterised by memory loss and eventual declines in language, visuospatial and executive function or decision making capabilities, loss of memory, withdrawal, mood changes [2, 16]. People experiencing Alzheimer's disease have reduced number of some important chemicals (neurotransmitters) which are in the brain and with time more parts of the brain will be damaged and there is no specific cause for the disease but there are some predisposing factors which include age, genetic inheritance, environmental factor, lifestyle and overall general health [2].

Alzheimer's disease is as a result of gradual degeneration of the nerve cells in the brain which affect the memory, intellect, learning reasoning, language, judgement and perception and this disease is common in female [2]. Page [9] (2011), mentioned the 5A's features of Alzheimer's disease and these features are basically found in Alzheimer's diseases: Amnesia (This affects the performance in the memory acquisition, storage and retrieval of events), Agnosia (The inability to recognise something or someone the individual knows before), Aphasia (this is the impairment with the communication/language of the individual), Apraxia (inability of the individual to perform meaningful activities or act, and associated features (this is related to the mood changes of the individual).

According to Price and Keady [18] (2010), there are several reasons why people develop vascular dementia and the common cause is as a result of blockage of arteries in the brain which lead to the death of the brain cell in which the arteries are supplying because there is a cessation of both blood and oxygen to the area of the brain. Stacpole [19] (2011), recognised that vascular dementia is an umbrella term used to describe the damage in the cognitive function of an individual and this is caused by cerebro-vascular disease which results in ineffective or inadequate supply of blood to the brain cell. Some parts of the brain become death due to lack of blood flow, oxygen and nutrition to the area and this is caused by the problem of the blood vessel supplying the brain. It is the second common type of dementia, account for 20% of all dementia and affect over 111000 people in the UK [19].

Vascular dementia can be diagnosed based on the history, clinical examination, positron emission tomography (PET). The disease is characterised by slowness in thought, difficulty with planning, memory loss, trouble with language and mood,

and change in behaviour. It is common among men and a progressive disease that can only be slowed down and cannot be stopped but lifestyle modification is important for the individual and these include: loss of excess weight, quitting smoking and eating healthily [19].

Stacpole [19] (2011), mentioned two types of vascular dementia which are multi-infarct dementia and subcortical dementia. Infarct dementia is as a result of loss of blood supply which result to death of the brain cell while subcortical vascular dementia is due to disease of the blood vessel which result in lesion in the deep white mater of the brain. Vascular dementia symptoms are very sudden unlike Alzheimer's disease and rehabilitation support which include speech therapy, occupational therapy and physiotherapy is essential for the patient [19].

Mixed dementia account for 10% of the population of people living with dementia and it is called mixed because it comprise of both Alzheimer's disease and vascular disease like stroke or small vessel disease [2, 17]. According to Zekry and Gold [20] (2010), mixed dementia is defined as Alzheimer's disease with some vascular pathological disease. Mixed dementia occurs as a result of occurrence of the pathological factor of Alzheimer disease and the vascular legion which bring about cognitive impairment. Hypertension is the major risk factor that contributes to the development of vascular disease and may increase the risk of Alzheimer's disease, smoking, diabetes mellitus, atrial fibrillation and heart disease are also among the predisposing factor [21, 22].

Ballard *et al* [23] (2011), said that dementia with Lewy bodies' account for 10-15% of the late onset of dementia in elderly. This type of dementia causes the progressive loss of the cognitive and impairment of the motor and autonomic function of the brain and the common symptoms is hallucination and delusion which occur in 60-70% of the patient living with this disease [23, 24]. Srenath and Barber [25] (2009), indicated that dementia with Lewy bodies affect one out of five people living with dementia. According to Alzheimer society [2] (2012), dementia with Lewy bodies have the same features as Alzheimer dementia and Parkinson disease, it is not commonly diagnosed, affect men and women equally and common among age group of 65 years and above.

Playfer [26] (2007), defined dementia with Lewy bodies as a progressive neurodegenerative condition that is characterised by the presence of Lewy bodies in the cerebral cortex resulting in slowly progressive and unrelenting dementia. Dementia with Lewy bodies are caused by deposits of tiny spherical protein in the brain nerves which prevent the brain to function normally thereby disrupting the action of some important chemical like acetylcholine and dopamine in the brain and symptoms include stiff muscles, tremor, disorientation, loss of facial expression, changes in strength and tone of the voice, difficulties in planning ahead and coordinating mental activities, confusion, nightmare, faint, fall, funny turns, sleep disturbance, [2, 25, 27, 28].

Fronto-temporal dementia is a neuro degenerative disorder that affects the frontal lobe and part of the temporal lobe of the brain and the areas affected are responsible for personality and

social behaviour, speech and language comprehension and executive function such as reasoning, decision making and planning [29, 30, 31]. It is the 3rd to 4th common type of dementia and common within the age of group of 45-65 years and accounted for increase in both morbidity and mortality rate in people living with dementia [32]. Fronto- temporal dementia is the 4th common type of dementia in USA and characterised by emotional blunting, general loss of insight, early decline in social conduct, impaired regulation of interpersonal conduct and unlike other types of dementia, fronto-temporal dementia occur in early age of 45-64 [30, 33]. The symptoms include obsessive compulsion, eating disorder, irritability, antisocial behaviour such as theft, violence [29, 34].

Fronto-temporal dementia is often label as pick's disease, fronto-temporal lobar degeneration, fronto-temporal degeneration of non-Alzheimer types, dementia of frontal lobe, corticobasal degeneration dementia associated with motor neuron disease, semantic dementia and primary progressive aphasia [2, 31]. Yeaworth and Burke [35] (2000), said that fronto-temporal dementia is caused by cortical atrophy that occur in the frontal or/ and the temporal lobe of the brain. It is an uncommon type of dementia and the symptoms experience depend on the individual, can be genetic because one third of the half cases account from family history and link to the present of two genes called tau and progranulin [15]. Farmer and Grossman [36] (2005), emphasised that fronto-temporal dementia is not easily diagnosed because there is no single diagnostic test, it has many subtype, and their symptoms are similar and also similar characteristics with other type of dementia like Alzheimer disease, vascular dementia and Parkinson disease.

Several author classified dementia into different stages but this article will only group the stages into three: stage one/mild stage, stage two/moderate stage and stage three/severe stage.

The stage one or mild stage is characterised by individual forgetfulness of the normal things or routine that can be done with ease before, however this is not noticed by the family members [7]. It is opined that family members may notice level of forgetfulness but may think it is because the person is not feeling good or attribute the forgetfulness to old age. But the individual can still perform the activities of daily living. The symptoms of this stage include forgetfulness, disorientation to place and time, fear, anxiety, depression [7].

In the stage two or moderate stage, there is an increase in memory lapse and individual become dependent on the family or carer for activities of daily living [7]. The person could not manage money well, could not attend to activities such as medication, cleaning, meal, cooking and dressing, have problem with identifying people, get lost when they go out, misplace object and forget names.

For the stage three or severe stage, there is personality changes, failure to recall recent event or activities but can remember history and experience, disturbance in sleep, can not attend to their toilet needs and mostly incontinence, walk with assistance, have difficulty in swallowing, restless, aggressive and uncontrolled movement. Some require palliative care, help

with communication and decision making [7].

3. Dementia and Malnutrition

According to Gout *et al* [37] (2009), malnutrition is a serious, harmful and disability condition that is common in hospital setting which bring about negative outcome of patients' condition which include development of complications, high risk of infection and mortality. Malnutrition is a serious clinical and public health problem because of its high prevalence among the elderly population and this condition is often diagnosed and remains untreated, cause increase in hospitalisation, increase visit to specialist and practitioners prolong hospitalisation [37, 38]. The prevalence of malnutrition among elderly people admitted into the hospital is 83% and 14% of age 65 and above is malnourished in United Kingdom [39]. Malnutrition can be as a result of age, cognitive impairment, female gender, swallowing difficulty, dental problem, and medical condition like dementia or stroke [2, 39, 40].

Malnutrition is a common problem in elderly of age 65 and above and the causes include inadequate dietary intake, digestion, absorption, metabolism and excretion problem and older adult especially those with advanced dementia are at high risk of malnutrition and 52% of older people living in nursing home have dementia while 30-42% has malnutrition [12, 41, 42, 43]. The evidence of malnutrition is low body weight present in dementia patient [44]. Malnutrition causes delay speed of recovery, dispose patient to infection, impaired wound healing, lead to pneumonia, impaired thermoregulation which may cause increase in fall [45].

Moreover, under nutrition can be also be caused by lack of appetite in dementia patient and this can be as a result of depression, pain due to sore throat or gum of teeth, brain damage, difficulties in eating and swallowing, medication, changes in food preference, constipation and living alone [15, 46]. Inadequate dentition, increase nutritional loss such as exudates fistula or drainage, intestinal disorder impairing ingestion, digestion or absorption also contributes to malnutrition [47].

According to Cleary [48] (2009), dysphagia is the major problem of eating and drinking in a dementia patient and this is due to the alteration in the physiology of swallowing mechanism which involve the mouth, pharynx, larynx and the related structure [13]. Parker and Power [49] (2013), recognised that dysphagia is a characteristic of advanced stage of dementia and it may be a signal that the patient is in the late phase or terminal phase of the illness and as the stage progresses, there is increase rate of food spillage, drooling, nasal regurgitation, food sticking to the throat, risk of aspiration and choking. Also Cleary [50] (2007), believed that difficulty in eating and swallowing in dementia patient can be caused by multiple cognitive deficiency and behavioural problem.

As recognised by Hudson *et al* [51] (2000), 30-60% of elderly living in resident home have swallowing difficulties which predispose them to malnutrition and have great effect

on their wellbeing, 45% of dementia patient have swallowing problem [45, 52] NcNamara and Kennedy [11] (2001), opined that problem associated with eating and swallowing in dementia patient causes malnutrition. It is expected that eating problem will develop as dementia progresses and this may be as a result of stroke and thus, the individual may be at risk of aspiration during eating and aspiration can lead to pneumonia. Other have problem with their cognitive and this make them not to understand how to eat without any form of support and requires help from care givers or family members to support/assist them in eating [53]. Candy *et al* [54] (2009) believed that inadequate food intake is common in dementia patient and it also occur in early stage before the diagnosis is made and this is as a result of difficulty in recognising food, loss of appetite, apraxia and difficulty in eating.

There are different eating habits associated with each stage of patient with dementia: Mild stage- this individual forget to go for shopping, forget to eat or drink water, prefer one food or drink to another, become confused on how to use cutleries, lose weight and spend so much time when eating and drinking; Moderate stage- they tend to hold food in their mouth, forget to chew it, feel distracted while eating, spilt out food from the mouth, does not finish their meals, does not recognise food and may not be able to sit long to eat; Advanced/ severe stage- unable to open their mouth to eat, have difficulties in chewing, impaired swallowing reflex, aspirate food while eating which may lead to chest infection and the individual may show sign of wasting [55]. British Geriatric society [43] (2012), said dysphagia arise from age related changes that affect the anatomy and physiology of the head and neck while Ney *et al* [56] (2009), believed that the changes include: changes in tongue pressure, swallowing become slow, increase in the penetration of the airway, changes in the sensory nerve and changes in the motility of the oesophagus. Dysphagia have great impact on the hospital resource, and the high prevalence of dysphagia among people living with dementia is due to age related changes to sensory and motor function in addition to those produced by neuropathology and dementia patient have reduction in thirst mechanism and are predisposed to dry mouth (xerostomia) which makes swallowing difficult [57, 58]. The sign and symptoms of dysphagia include: chewing food for a long time and keeping it in the mouth, have difficulty in chewing, find it difficult to move food to the back of the mouth, absence of swallowing, reduced pharyngeal clearing, spitting out lump of food, does not want drink or food, dribbling of secretion from the mouth, and regurgitation of indigested food [59].

It is necessary to conduct full dysphagia assessment and evaluation for patient having dementia and dysphagia. This is because it helps to review the patient swallowing physiology and give the appropriate intervention or care to be given but this process is mostly omitted by practitioner because it is costly and practitioners go about diagnosis without assessing [60]. Speech therapist are the main professional that carry out this assessment but the care givers especially the nurse should notice and detect early signs of dysphagia and prompt intervention should be taken by referring the patient to speech

therapist [8, 57].

Management of patient with dysphagia can be very complex and it require collaboration and multidisciplinary team (MDT) approach so as to provide adequate nutrition and hydration for the patient involved [2, 60]. British Geriatric Society [43] (2009), emphasized that staff caring for dementia patient should be observant so as to detect the early sign of dysphagia and be able to give adequate and relevant information to the speech therapist. Cleary [48] (2009), highlighted that the management of dysphagia should focus on the prevention of aspiration by ensuring safe swallowing practise, change in diet texture and consistencies.

In the process of assisting a patient having dysphagia with meal, the environment should be free from distraction and the care giver assisting the patient with meal should not be in hurry [52]. When assisting patient with eating, the patient should sit upright, support the head of the patient if unstable, breathe holding technique should be used, the nurse or care giver should observe patient mouth for any remnants and oral care should be given [57, 61, 62]. As recognised by Ashford *et al* [61] (2009), speech therapist has an important role to play in the evaluation and treatment of dysphagia. Mealtime support is a strategy employed to observed and oversee patient with dysphagia so as to achieve adequate eating and drinking and it include food modification, proper posture when eating, provision of specialist equipment and process of adapting to mealtime environment [63].

4. Nutritional Assessment and Screening of Dementia Patient

Weight loss is very common in patient with dementia and they suffer from malnutrition because of forgetfulness or difficulty in swallowing at advanced stage [64]. Nutritional screening should be done immediately a patient is admitted into a hospital or care home and should precede nutritional assessment. Nutritional assessment is useful for early detection, radical management/ intervention so as to give favourable outcome. According to Pivi *et al* [64] (2012), there are several nutritional assessment tools for severe dementia and these include, the use of anthropometry, mini nutritional assessment, nutritional screening initiative, use of clinical sign of malnutrition and assessing the food intake of the patient.

As recognised by Bauer *et al* [65] (2008), mini nutrition assessment tool help to reveal the prognosis that is associated with the functionality, morbidity and mortality of the elderly while Pivi *et al* [64] (2012), opined that mini nutritional tool was made for detection of malnutrition in elderly and identifies those that will gain from the early intervention. Smith [66] (2012), assumed that four minutes only is required to complete the 6 questions in the mini nutritional assessment form and this questions include: the food intake of the individual, the mode of feeding, the medication he/she is using, the mobility of the individual and the concurrent disease.

Nutritional screening initiative in America according to Callen [67] (2004), is divided into two which include

DETERMINE and level 1 screen. DETERMINE is a checklist used to check the nutritional status of patient so as to detect malnutrition. The checklist includes: Disease, Eating poorly, Tooth loss and mouth pain, Economic hardship, Reduced social contact, Multiple medicine, Involuntary weight loss or gain, Need assistance in self-care, and Older than 80 years and level 1 screen is also used and it has 4 sections which include body mass index, eating habits, living environment and functional status [67].

Nutritional form for elderly is another tool used to assess the nutritional status of the elderly. This include history, diet and general assessment of the person and ability to self-feed and this tool is used in hospital and helps to reduce the risk of infection because effective referral is being made when sign of malnutrition is seen [66].

Resident assessment instrument is a tool used in the nursing home when the patient is admitted and the information used is the weight, height, quality and quantity of food and history of weight loss and this help to give information about the necessary intervention and the need of referral to specialist [66].

Edinburgh feeding evaluation in dementia scale is another tool and it consist of 11 items that can be used to evaluate the feeding and eating problem in a dementia patient. This tool is used to detect a dementia patient behaviour toward food and eating and it helps to know the necessary intervention or assistance to give them. This instrument can be used either by observing the patient or questions can be asked from the care givers. The items on the tool include the following: Needs close supervision, requires physical help, spill food, leaves food on plate, refuses to eat, spits out food, leaves mouth open, and refuses to swallow, The 11th item tells about the level of support required by the individual. Score of 0-2 is being used: 0- never, 1- if happen sometimes, 2-if happen often [68].

Biscarde [69] (2011), indicated that nutritional assessment should include historical, physical and laboratory investigation of the patient involved. Historical assessment is getting information on weight loss either by checking the records or by keeping a diet diary to detect any changes in weight. Physical assessment involves the measurement of body mass index BMI and physical examination of the body (hair, eye, skin). If the BMI is less than 18.5, the person is malnourished (under nutrition), if 24.9 the person is healthy and if over 24.9 the person is obese [69].

5. Nursing Intervention and Responsibilities

Although it is very difficult, time consuming and challenging to help people with dementia maintain adequate nutrition but the nurses have a role to play in maintaining the nutritional status because people attribute weight loss in dementia patient as a sign of neglect and starvation [70]. Nurses have a responsibility in prompting and maintaining a good nutrition for patient with dementia and these intervention/responsibilities include: routine mealtime setting

will help dementia patients in order to familiarise them to their environment, help them to function well and help staff to deliver effective mealtime service and also motivate them to eat when they see other inmate eating [71]. Dementia patient with difficulty in eating can be helped by maintaining a social life i.e. eating with them in restaurant, thereby encouraging them to eat especially if the person likes eating in restaurant before developing the illness [70]. Keller *et al* [72] (2003), highlighted that adequate calories of food provided for dementia patient by nurses will help them to maintain their body weight and increase rate of survival because most time health personnel focuses on the weight loss rather than the intervention to promote and maintaining their weight.

Nurses should help recognise dementia patient who need encouragement to eat and adequate assistance should be given, touch and verbal encouragement can also help patient to eat [73]. To encourage patient feeding and eating well, mouth care and denture placement before eating and after eating, bedpan and urine bottle should be removed and emptied before food [74]. According to Jordan [73] (2006), the energy requirement falls as age of individual increase and increase nutritional quality is to be ensured by nurses so that the adequate requirement energy is met and indoor patients should be given required vitamins.

Nurses should find out individual preferences, culture, religion requirement and this should be documented in the patient care plan. They should perform formal rituals when applicable like praying, provide snack, study patient to know any behaviour changes during meal, provide real food before any snack to patient, provide eye glass and hearing aids, encourage small meal at a time, provide food supplement like yoghurt, use of vitamins supplement recommended by physician and monitor appropriately, avoid serving steaming or extremely hot food, check if food still remain in the mouth [2, 75].

Nurses should also know the sitting position that suits each patient as a result of individual differences because some patient will like eating with other while some may prefer one-on-one with the staff and independent eating for patient that can feed themselves while they monitor and assist where necessary [76].

High nutritional content should be given when patient have small appetite for food, soft diet should be offered to patient that have difficulty in chewing and swallowing, food must be made attractive to encourage them to eat [76]. Most dementia patient like sweet food which may not provide the adequate nutrition required so nurses should make sure that sweet food are mixed with food that can provide balanced nutrition [76]. Nurses should make sure that the patient is well alert, comfortable and sit upright before food is offered to them, maintain eye contact with the patient while eating, avoid unnecessary utensils on patient trays, encourage family members to visit at meal time, encourage oral hygiene and regular dental check-up and physical activities to stimulate appetite [2, 15]. If patient is having difficulty with the use of cutleries, offer food that can be eaten with hand and always remind patient about the taste and flavour of the food they are

eating [15].

According to Best and Summer [77] (2010), nurses should make sure that healthcare assistants record the food and fluid the patient eat on their folder and all difficulties encountered should be reported. Nurses should ensure that the followings are well documented: patient height and weight, nutrition screening tool score, involuntary or intentional weight loss (over the previous 3 months) including visual indicators such as loose clothing, ring or dentures, nursing actions taken on completion of the screening tool, nutrition care plans, patient allergies, patient food preferences, medication that affect patient appetite, dietary and fluid intake, special diet required, patient appetite status e.g. appetite nil or virtually nil, patients ability to take food orally, level of assistance required to eat, presence of severe vomiting and/ or diarrhoea. Nurses serve as informants who give details about the nutritional changes, difficulties in feeding and swallowing that require attention and are involve in decision making regarding the nutritional care plan of the patient [77]. Nurses should play a key role in screening and assessing dementia patient and help to refer them to dietician and speech therapist and should ensure that all staff are informed about the dietary and fluid requirement of a patient that is placed under food restriction.

According to Cleary *et al* [71] (2006), nurses can provide clock reminders for patient with dementia so that it can help them remember their meal time, reduce confusion and agitation. Nurses need to develop a positive attitude and exercise patience which is a pre-requisite to successful feeding of the patient, fights for the dignity of the patient and should have regard for individual needs [47]. The nurse should encourage patient to wash their hands with water and soap or use hand wipes.

As recognised by NICE [8] (2011), oral nutrition support is recommended for patients who does not have difficulty in swallowing but are at risk of malnutrition. Oral nutritional supplement can be taken between meals or used to replace meals. Sipping supplement throughout the day can help to increase food consumption, it is normally prescribe for people who are able to eat but needs increase nutritional intake and nurses should make sure that suitable nutritional supplement is chosen for the patient [77].

The supplement commonly used includes milk, juice, soups, powder-based drinks; milk and fruit based pudding and yoghurt [77]. Nurses should note that food supplement can be contra-indicated in some dementia patient that have kidney problem and dietician should be consulted for clarification. Oral liquid nutritional supplements (OLNS) help to improve the nutritional status of a dementia patient by helping them increase their body weight and therefore, nurses should encourage them to take it [78].

When patient cannot take food orally, artificial feeding is encouraged so as to meet the nutritional demand of patient and this can be in form of nasogastric tube or percutaneous endoscopic gastronomy (PEG) although this is still a controversy procedure in the western world health sector because of patient right and autonomy [79]. This artificial feeding is used by medical practitioners to quench the thirst

and hunger of patient that are at the advanced stage of dementia because it causes increase risk of aspiration which lead to pneumonia and fluid overload for patients [79]. Holmes [74] (2011), believed that enteral feeding is indicated when the food intake is not sufficient to meet the nutritional needs of dementia patients and it is used when the gastrointestinal tract is functioning adequately in order to prevent aspiration.

The responsibility of nurses is to help people living with dementia with their meals but nurses encounter some difficulties or problems when trying to bridge the nutritional gap. These difficulties include patient refusal to eat, patient not opening their mouth or turning their head away from the food [80]. This reaction may be due to their dislike for food or depression which may lead to loss of appetite, they may be paranoid and some have the feeling that if they did not eat, they will die early while some may not be able to know the time to eat and some develop aggressive behaviour towards food [80].

Suominen *et al* [81] (2004), emphasized the importance of nurses and other food service handler (nursing assistants) to participate in training or education on how to help patient with dementia overcome problem associated with nutrition so that they can help discover their basic needs and give appropriate intervention or assistance. Nutritional programme or training help to increase knowledge on nutrition for nurses, healthcare assistants and other food handlers and help to give positive outcome when what is learnt is put in practise [82]. Chang and Lin [83] (2005), emphasised that training health care assistants in order to feed dementia patient with feeding difficulty is very important since it is difficult to train dementia patient because of their cognitive impairment. But there is no such training programme design for nurses on meeting the nutritional demand of dementia patient which ought not to be. Amella [84] (2007), highlighted that nurses and healthcare assistance should be trained so as to provide only the level of assistance required, feed at the rate required, and proper patient positioning when assisting with meals.

It was evidenced in the result of the research carried out by Suimin *et al* [82] (2007), that nutritional education for nurses has positive impact of the dietary intake and mini nutritional assessment (MNA) tests of the resident. Nurses trained on nutrition and dysphagia always has the knowledge and understanding of dementia patient behaviour towards food and they create adequate time to assist these patients thereby resulting in lower rate of aspiration and weight loss.

6. Conclusion

Malnutrition and difficulties in feeding have been one of the complications of dementia and these problems have been overlooked by nurses and healthcare assistant. Nursing intervention in managing the gap in nutrition is very essential. Nurses should be vigilant in order to detect early signs of eating difficulties in any dementia patient, appropriate assessment should be taken to quickly alleviate it and necessary measures should be taken which include nutritional supplement, weight monitoring and measurement, increase

intake of fluid and calories diet, staff training and use of tube feeding, nurses have to play role in leadership, screening, education and documentation. Also there have not been adequate researches on the issue of gap in nutrition. This paper focuses on different types of interventions that nurses and care givers can use in helping dementia patients to feed well so as to prevent serious infection that can occur as a result of malnutrition.

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