

NUTRITIONAL MANAGEMENT OF ELDERLY IN HEALTH CARE

Abstract

From the beginning of 20th century, the average no of years a person can expect to live has significantly grown, rising from 47 years in 1900 to 77 years in 2000. Because of the development of antibiotic therapy, there has also been a change in the primary causes of mortality away from infectious diseases and toward chronic incapacitating illnesses including heart problems, stroke, diabetes, and cancer .Diseases of chronic -related conditions are frequently avoidable. Care for the elderly must necessarily go much beyond coping with mortality since chronic illnesses impact quality of life, health care expenses, medication administration, and caregiving (52). The physiological changes that come with ageing affect all people. Despite whatever the slope of change varies greatly and is likely impacted by elements including lifestyle, genetics, and life events (11). Ageing is often followed by a fall in bone density, a loss of muscle mass, an obesity increases, a redistribution of fat storage toward the visceral regions, and a reduction in total body water. The Nutrition Screening Initiative has created specific screening and evaluation tools for seniors (NSI; 44). It contains anthropometric information, such as height, weight, and weight loss, as well as questions on general geriatric care and self-evaluation. Significant protein calorie malnutrition is present in 5 to 12% of elderly people who live in the community, but it escalates to 23 to 85% of those who are hospitalised or in long-term care facilities (53).

It is important for researchers to pinpoint elements that enhance our quality of life as we age, maximise the nutritional status of the elderly, identify people at risk for undernutrition and obesity early on, specify the ideal protein and micronutrient requirements, and work to fend off the age-related ravages of skeletal muscle loss and debilitation. Future nutritional research has a lot of interesting potential in these areas.

Key word: Elderly, nutrition, immune function, screening.

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I. INTRODUCTION

Our civilization is getting older. One in every five Indians will be dead by 2030 and it will be above the 65 yr of age. Additionally, unlike other age groups the over-85 age group is growing at a faster rate. From the beginning of 20th century, the average no of years a person can expect to live has significantly grown, rising from 47 years in 1900 to 77 years in 2000. Because of the development of antibiotic therapy, there has also been a change in the primary causes of mortality away from infectious diseases and toward chronic incapacitating illnesses including heart problems, stroke, diabetes, and cancer.

Diseases of chronic -related conditions are frequently avoidable. Care for the elderly must necessary go much beyond coping with mortality since chronic illnesses impact quality of life, health care expenses, medication administration, and caregiving (52)putting emphasis on preventing and treating these chronic diseases is necessary to enhance the health of the elderly. This includes encouraging a lifestyle that prioritises a healthy diet, regular exercise, and abstinence from tobacco use. Increased life expectancy and the quality of increasing life are priorities of 2010's health survey of People the agenda for productive and successful ageing, and other related initiatives (33,54). Macro- and micronutrient deficiencies, malnutrition, and frailty, sometimes known as "the sarcopenia of ageing," are nutritional issues in the elderly. Equally concerning, however, are excessive levels of malnutrition and obesity and how they affect chronic illness progression, functional status, and disability.

II. AGE-RELATED PHYSIOLOGICAL CHANGES AND THE INFLUENCE ON NUTRITION

The physiological changes that come with ageing affect all people. Despite whatever the slope of change varies greatly and is likely impacted by elements including lifestyle, genetics, and life events (11). Ageing is often followed by a fall in bone density, a loss of muscle mass, obesity increases, a redistribution of fat storage toward the visceral regions, and a reduction in total body water. However, age is not the only factor that contributes to physiologic changes that occur with ageing. For instance, ageing only rarely affects insulin sensitivity and glucose tolerance; instead, genetics, a sedentary lifestyle, and body composition have a larger role (16).

Energy consumption declines and eating preferences change as we become older. These results in part from a decline in metabolic rate brought on by the loss of muscle mass. Additionally, it entails alterations in thirst, appetite, taste, and smell—changes that may also result in a decreased appreciation of eating. Dentition disorders might make it difficult to consume; financial limitations and social problems, including living alone, can also affect food purchases. Changes in hormone levels, like testosterone hormone decrease followed by an increase in leptin, are another cause of the elderly's decreased nutritional intakes. In spite of this causes a decrease in food consumption. Changes in leptin levels are accompanied by an increase in the satiety hormone cholecystokinin and a decrease in the neuropeptide. (42).

Chronic inflammation brought on by illnesses like diabetes, arthritis, and heart disease also causes an expansion of cytokines that, over time, may lead to anorexia and malnutrition. Along with the dramatic fall in physical activity, stringent therapeutic diets used to treat

numerous chronic conditions are another factor in the elderly's inadequate food consumption (55)

III. CHANGED DIETARY GUIDE FOR THE OLDERLY

As people get older, it is best to consume nutrient-dense foods and to stay away from "empty" calories because their energy requirements decrease. About 40% of those over 70 who were questioned for NHANES III had eaten less than two-thirds of the energy recommended consumption (NHANES III 1988–1994). Older people consume less servings of most food groups, with the exception of fruit, as compared to younger men and women in terms of average food group intake. More older men than older women adhere to the guidelines of the dietary pyramid. Interestingly, elderly women are more likely than older males to be obese.

However, even while older men and women consumed more of the four food categories than their younger counterparts, using a standard of servings per 1000 calories, their intake was still significantly below what is advised. A modified dietary pyramid for persons aged 70 and older was developed by nutrition expert at the Jean Mayer USDA Human Nutrition Research Centre on Aging at Tufts University. This food pyramid was created to spark conversation on the particular requirements of elderly; it is not an approved USDA teaching resource (28).

The modified food pyramid for the elderly continues to promote nutrient-rich foods, fibre, and water but a smaller base to reflect the lower energy demands in the 70+ age range. Water consumption is prioritised at the bottom of the pyramid since dehydration is a typical occurrence and older people frequently have diminished thirst feelings. The pyramid has also been updated to include fibre icons ("f+") to underline the significance of selecting more fibre meals. The revised food pyramid also highlights the potential need for supplemental intake of some minerals, including calcium, vitamin D3, and vitamin B12 (48). Atrophic gastritis is common in the elderly, which prevents the food's vitamin B12 from being released to bond with the intrinsic factor.

As a result, vitamin B12 absorption is reduced in the elderly. It might be challenging to meet the increased calcium and vitamin D requirements. The recommended three servings of calcium-rich dairy items are frequently missed by older people. They could also have trouble digesting lactose, which would prevent them from absorbing adequate calcium. Additionally, especially during the winter, many older people may not receive the recommended amount of exposure to sun for the endogenous production of vitamin D. This necessitates the use of supplements.

A University of Arizona research examined the dietary intakes of free-living people between the ages of 51 and 85 using standardised food frequency questionnaires. The intakes were then compared to the dietary reference intakes and the original food pyramid (DRIs). Even though this population consumed more calories and protein overall than was advised, more than 60% of them did not reach the average requirements for the vitamins D, E, folate, and calcium (20).

Individuals with daily energy intakes of 1200 to 1600 kcal are more likely to consume 100% of the recommended dietary allowances (RDAs) for protein. For those taking in this many calories, this could be adequate. However, according to NHANES III data, 1 in 10 men and 1 in 10 women consume fewer than 750 kcal per day by the age of 80, respectively. This makes it exceedingly difficult to satisfy nutritional requirements. Although subclinical nutritional deficiencies may be more frequent and have a negative impact on health and functional capacity, overt nutritional deficits in the elderly are uncommon (7). The DRIs were created in 1997 and 1998, and as a result, numerous micronutrient needs are now established for those over the age of 70. No distinction was made between people over 50 and those over 70 in the 1989 RDAs. It's possible that the current B6 and B12 dosage guidelines are still too low. Additionally, the DRI for those over 70 may change due to the function of folate, its connection to homocysteine metabolism, and its potential involvement in reducing the occurrence of heart disease. Some age-related changes in body composition and function that may have an impact on nutritional needs.

IV. ELDERLY NUTRITION ASSESSMENT AND SCREENING

The majority of nutrition evaluations include anthropometric, biochemical, immunological, and, more recently, subjective information including functional status and self-perceptions of health. The Nutrition Screening Initiative has created specific screening and evaluation tools for seniors (NSI; 44). The American Dietetic Association, the American Academy of Family Physicians, and the National Council on Aging collaborated to create the NSI. It is designed to help different clinical and programme sites find older people who have nutritional issues and to provide scores that are in line with the level of nutritional risk. The Determine Your Nutritional Health screening checklist, Level I and II screenings, and the NSI are its three main parts. The mini-nutrition assessment (MNA), a more thorough evaluation instrument that is trustworthy and user-friendly for the senior population, was created to supplement the NSI (27).

It contains anthropometric information, such as height, weight, and weight loss, as well as questions on general geriatric care and self-evaluation. These vetted screening methods are used to determine which people need a comprehensive nutrition examination.

Data on height, weight, body mass index (BMI), skinfold thickness, and body composition evaluations such as mid-arm muscular circumference should all be included in a thorough nutrition assessment. Sadly, many of these metrics for older people have no guidelines. 1 to 2.5 cm of height are lost with age every decade following adulthood. Assessments of weight for height are therefore challenging to understand. Age-related variations in body weight include increases through middle age, stabilisation for 15 to 20 years, and subsequently declines (36). BMI values at both ends, i.e., 18 kg/m² and >30 kg/m², are linked to negative health consequences (22). Serious illnesses may actually be more readily beaten if an older person is just a little bit heavier than typical. However, obesity in older people is far more morbid than it is in younger groups. Age-related changes in body composition may be assessed using bioelectrical impedance measurement (BIA), which evaluates total body water and its distribution in the body as well as the ratio of fat to lean tissue fat-free mass (FFM).

Even equations created particularly for one set of senior people may underestimate or overestimate FFM in other elderly people with varied body weights and heights, therefore BIA equations must be population-specific and selected with caution (14,25,29,46). Although they are frequently employed to evaluate visceral protein status, biochemical measurements including albumin, prealbumin, and transferrin levels all have limitations as nutrition evaluation metrics. Serum albumin is the most accurate predictive marker for rehospitalizations, prolonged lengths of stay, and other problems in the elderly, despite being impacted by several clinical diseases (17).

A full nutritional assessment should also consider the numerous drugs that many older people take, many of which have negative interactions with nutrients or have crippling adverse effects. A recent study (56) evaluated the older population's consumption of dietary supplements that are not vitamins or minerals. In the cohort of participants questioned as part of the New Mexico Aging Process Study, supplement use grew from 14 to 46% during a 6-year period, with women using ginkgo biloba, lecithin, black cohosh, and other supplements slightly more frequently than males. Patients frequently neglect to inform their doctors about their supplement use because they believe it is unimportant. However, many supplements have distinct and important interactions with frequently given drugs. An older person's dental health and dentition should also be reviewed as part of a comprehensive nutrition evaluation since many senior people have loose dentures that can make it difficult for them to chew their meals. Furthermore, oral symptoms of nutritional deficits are frequent.

An examination of the person's socioeconomic situation should be part of a nutrition assessment since it influences their capacity to pay for meals and access to social support networks. Additionally, it shows the person's functional status, which includes how well a person can walk and climb stairs. It also reflects how effectively a person can perform everyday activities like feeding, cooking, and completing home chores. How nutritional status influences the quality of life associated with one's health is a subject of evaluation that has attracted increased attention recently (HRQOL). Assessment criteria have always been centred on outcomes like morbidity and death. These are frequently not as significant for the elderly as symptomatic relief, which raises HRQOL (1). As a result of improving health and preventing nutritional deficiencies, good nutrition enhances HRQOL. Age-associated dietary changes that may have an impact on HRQOL include eating, which is a sensory delight and improves psychological wellbeing when done with others. Standard nutrition assessment tools may not include requirements that are age-appropriate for the elderly, but they nevertheless offer valuable information that may be used to avoid or address nutrition-related issues.

A "nutrition focused" physical exam, which includes a straightforward assessment of height, weight, and BMI as well as the presence or absence of muscle wasting and edoema, and an evaluation of skin turgor, hair, oral mucosa, and dentition, would be practical recommendations for evaluating elderly patients who present to their primary care provider. Simple, direct inquiries on dietary intake, recent weight changes, notable changes in bowel habits, the patient's living arrangement, including who does the grocery shopping and cooking, should be asked by the doctor. The patient's completion of the nutrition screening form in the doctor's office would also be beneficial. If the doctor believes it is necessary, referrals might be made to nu

V. OBESITY AND OLDER PEOPLE

Obesity has become a significant issue in the US for people of all ages, especially those who are more mature (50 to 65 years). This is because a sedentary lifestyle and bad eating choices promote changes in body composition. The prevalence of obesity among people 60 to 69 years old grew by 44.9% during the years 1991 and 1998. In people over 70 years old, it went risen by 28.6% (41). Obesity in older people increases impairment and has a negative impact on quality of life. Compared to controls, obese people show indicators of incapacity up to 10 years sooner (18). Additionally, obesity is linked to higher rates of diabetes mellitus, hyperlipidemia, and hypertension. The prevalence of cardiovascular disease—the leading cause of mortality in the elderly—is subsequently raised by these disorders. BMI, the common anthropometric measure that characterises obesity, is also a helpful indicator for the elderly, as was previously described. However, the criteria for identifying obesity in the elderly on the basis of BMI need to be re-evaluated due to changes in height and body composition (31).

There is debate regarding whether the link between fat and higher mortality in the younger population holds true as we age. In reality, being overweight can be beneficial for older people, especially the oldest ones (4,12).

The Longitudinal Study of Aging, one of the biggest studies on ageing, began in 1984 with an in-home survey. There were follow-up polls conducted in 1986, 1988, and 1990. Using the initial 1984 data from this study, the connection between mortality and obesity was retrospectively examined while adjusting for various risk factors—but not for cigarette smoking. Sensitivity study revealed that obesity is protective when compared to slim or normal weight people (26).

Beyond adjusting for medical comorbidities, the Framingham Heart Study, which excluded current and past smokers, discovered higher mortality in the obese after age 65. (30). Data from the American Cancer Society's Cancer Prevention Study II have been released by Calle et al. (8), and they indicate a U-shaped connection between BMI and mortality for all ages. In people who had never smoked or had a history of illness, obesity was most significantly linked to mortality. It was shown that those with a lower BMI had a higher risk of complications and mortality from cardiovascular surgery than individuals with a higher BMI in a cohort of 1448 individuals with a mean age of 79 years who underwent cardiac surgery. Additionally, a higher BMI increases the risk of wound infections but not the risk of complications after cardiovascular surgery (37). However, it has also been shown that a BMI above 30 kg/m² was linked to increased mineral density of the femoral neck in a cohort of 845 elderly patients with poor socioeconomic level (3). Men and women with a BMI higher than 30 had an osteoporosis risk that was around one-third lower than that of people with a normal BMI.

The BMI threshold for obesity and overweight in older people is still up for debate. Obesity has various negative impacts on function in old life, despite the protective effect of BMI on mortality. Health care expenses are also raised by fat and overweight. According to a newly published longitudinal research, when BMI climbed, total Medicare costs rose dramatically. The study looked at the association between baseline BMI in middle age and Medicare expenses in later age (13).

In conclusion, the World Health Organization's expert subcommittee on nutrition recommends that overweight people with BMI values between 25 kg/m² and 30 kg/m² should only be considered at risk while under the age of 70 when establishing standards for the use and interpretation of anthropometry in the elderly (51). Even without a chronic illness, obese people over 70 should maintain their present weight (51).

VI. IMMUNE FUNCTION AND AGE

As we age, our immune systems get weaker. Immunosenescence is the name of this process. It increases the risk of infection, including influenza, pneumonia, and upper respiratory infections. Immune cell counts do not appear to decline with ageing. However, many of these cells have functional changes (24). An reduced antibody response to vaccination is another factor contributing to the immune system's decline in the elderly. Additionally, poor nutrition, which contributes to immune system impairment, is frequently present at the same time. The effects of nutritional supplementation on immunological function in the elderly have been studied, however the findings are conflicting. 65 people over the age of 65 were enlisted from Florida assisted and independent living institutions for a recent trial (34). In a prospective parallel, double-blind design, subjects were randomly assigned to receive either an isocaloric, isonitrogenous control formula for 183 days, or 8 oz of a nutritional supplement including antioxidants, zinc, selenium, fermentable oligosaccharides, and structured lipids. Less days of respiratory illnesses, increased lymphocyte proliferation, and a more robust antibody response to influenza vaccine were all seen in the participants receiving the experimental mixture. One of the first studies to demonstrate a clinically significant result following a straightforward dietary intervention in an older person.

VII. AGE-RELATED UNDERNUTRITION AND THE IMPACT OF NUTRITIONAL SUPPLEMENTS

With 30 to 40% of men and women over the age of 75 being at least 10% under their optimal body weight, a low BMI and undernutrition are more common in the elderly than obesity.

Significant protein calorie malnutrition is present in 5 to 12% of elderly people who live in the community, but it escalates to 23 to 85% of those who are hospitalised or in long-term care facilities (53). Elderly patients make up more than 40% of all hospital admissions today, and their hospital stays and disease tend to last longer than those of younger ones. As was previously mentioned, there are several factors that contribute to weight loss and poor nutrition, including chronic diseases, socioeconomic barriers, poor dental health, depression, dementia, as well as the regular functioning processes. Despite efforts to augment nutrition intake, nutritional status will unavoidably deteriorate during hospitalisation or institutionalisation. The severity of the dietary inadequacies directly relates to the risk of complications and mortality (49). The probability of death within a year after leaving a geriatric rehabilitation facility is a direct result of inadequate protein and calorie intake. When reported as a percentage of ideal at discharge, serum albumin and body weight were both reliable independent predictors of death (50). Even with the Nutrition Screening Initiative's assistance, identifying malnutrition remains a significant issue in hospitals. When the need for nutrition support is realised, patients are frequently permitted to maintain themselves on

extremely low calorie intakes for extended periods of time, which may be too little, too late. The effectiveness of nutritional supplements in preventing malnutrition in the elderly has been examined in several experiments. Through March 2001, all randomised controlled trials of oral protein and energy supplements in the elderly were examined by the Cochrane Metabolic and Endocrine Disorders Group (40). The analysis included 31 experiments with 2464 people, however many of the studies were subpar. Supplementation seems to result in a modest but steady weight increase, a shorter length of stay in the hospital, and a significant and positive impact on mortality. The research found that further large-scale, multicenter studies are necessary to prove the advantages of supplementation (40).

It is more challenging to describe and quantify the impact of dietary supplements on functional status and quality of life. Most of the time, the research period is too brief to demonstrate an impact. Older people have been given calcium and vitamin D tablets in an effort to avoid hip fractures. In The Nurses' Health Study (19), 72,337 postmenopausal women were evaluated at baseline in 1980, and then again in 1984, 1986, 1990, and 1994. The greatest relationship between decreased hip fractures and lower vitamin D consumption was seen. Calcium and milk both increased the risk of fractures. However, it was shown that falls had dropped 20% in women (mean age 60 years) whose diets contained vitamin D supplements (5).

The ability of supplements to lessen the functional alterations that age-related ageing brings about has been studied. Previously, debilitation and muscular atrophy were thought to be inevitable, but with the right nutrition, social support systems, and exercise, many of these functional changes may be slowed down or even reversed. Specific micronutrient supplements, in addition to caloric and protein supplementation, may aid in improving physical function as a person ages. It has been proposed that the oxidative damage induced by free radicals may be the source of the age-related reduction in muscle function. In the Invecchiare in Chianti Study (10), plasma antioxidant levels were linked to skeletal muscular strength and physical performance in a group of 986 Italians over the age of 65. The study assessed the impact of a daily consumption of antioxidants. Intakes of vitamins C, E, b-carotene, and retinal were calculated from questionnaires, whilst plasma concentrations of vitamins A and G were determined. Plasma antioxidant levels were found to favourably correlate with physical performance and strength. In addition, higher intakes of vitamin C, a particular dietary antioxidant, were linked to better strength. Antioxidants may be important for optimal muscular function, especially during the recovery period, as exercise increases antioxidant activity (38).

An attractive field of study combines diet, exercise physiology, and pharmaceuticals with the aim of preventing and curing muscle atrophy and the ensuing debilitation in the elderly in an effort to enhance their quality of life.

It is important for researchers to pinpoint elements that enhance our quality of life as we age, maximise the nutritional status of the elderly, identify people at risk for under nutrition and obesity early on, specify the ideal protein and micronutrient requirements, and work to fend off the age-related ravages of skeletal muscle loss and debilitation. Future nutritional research has a lot of interesting potential in these areas.

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