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Prevalence Of Dietary Deficiency In Stroke Survivors

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ABSTRACT

Introduction: Dietary deficit occurs when the body does not receive adequate nutrients from diet. This can contain vitamins, minerals, proteins, and other nutrients required for optimum health. Deficiencies might be caused by a poor diet, digestive issues, or medical conditions. Over time, they can cause weakness, fatigue, weak bones, low immunity, and delayed recovery. Eating a balanced diet with a range of nutrients helps prevent nutritional deficits. Dietary deficits can have significant impacts on stroke survivors, slowing down recovery and raising the risk of further health complications. Following a stroke, the body need necessary foods such as vitamins, minerals, proteins, and healthy fats to repair damaged brain cells, restore muscular strength, and enhance overall performance.

Objectives: To identify whether there are any dietary deficiency in stroke survivors and the extent in which it may occur.

Methods: The cross-sectional survey that was conducted in Karad City. The purpose of this survey is to determine how common dietary deficiency is in stroke survivors. Prior to conducting the survey, the ethical committee's approval was obtained. Patients were chosen based on inclusion and exclusion standards. With their permission, 100 stroke survivors participated in this study, and result was obtained by the statistician.

Result: The trial, which included 100 stroke survivors aged 35-65 years, was undertaken with ethical approval. This study revealed that the prevalence of dietary deficiencies among stroke survivors is 56.40%. The deficiencies identified in stroke survivors include vitamin D, folate, calcium, potassium, and magnesium. Additionally, our findings indicate that dietary deficiencies are more prevalent among females than males, and are more common in rural populations compared to urban areas.

Conclusion: Nutritional deficiencies among individuals who have survived a stroke is notably high, which has considerable consequences for their recovery and overall health in the long term. Therefore, regular assessments by healthcare professionals, along with tailored dietary interventions, are essential elements of a comprehensive care plan for stroke survivors.

Keywords: *Dietary Deficiency, Vitamin D, Calcium, Folate, Potassium, Magnesium , Urban Area, Rural Area.*

1. INTRODUCTION

A stroke is defined as a brain injury that involves "rapidly developing clinical signs of focal or global disturbance to the functioning of the brain, with symptoms lasting 24 hours or longer, or leading to death, with no apparent cause other than of vascular origin and includes cerebral infarction, intracerebral haemorrhage, and subarachnoid haemorrhage".The most frequent form is an ischaemic stroke, which is caused by a stoppage in blood flow to a specific part of the brain. Ischaemic stroke is responsible for 85% of all acute strokes. Hemorrhagic strokes, which occur when a blood artery bursts, account for 15% of all acute strokes. Hemorrhagic strokes are classified into two types: intracerebral haemorrhage (ICH) and subarachnoid haemorrhage, which account for around 5% of all strokes[1].Stroke is one of the leading causes of disability in people. Furthermore, people who have had a stroke are at a 43% greater risk of having another stroke over the next ten years, with an annual rate rise of 4% .As a result, long-term risk factor management, including correct diet, is critical in medical treatment, particularly during rehabilitation [2].There are several reasons why an increased consumption of fruits

and vegetables is desirable in the national diet. They are a rich source of vitamins and minerals. Several of these micronutrients have antioxidant properties and they may have a role in protecting against free radical-induced oxidative stress which has been linked with the pathogenesis of IHD and ischaemic stroke and other diseases. These essential antioxidants include vitamins C, E and A and carotenoids, and their concentrations in the body fluids is determined mainly by dietary intake [3]. Malnutrition is frequent in people with neurological disorders, including stroke. This anomaly is caused by directly associated tone urological illnesses, such as cognitive functions and disorders of consciousness, neurogenic vomiting, neurogenic dysphagia, depression, motor deficit, and gastrointestinal dysfunction [4]. Dysphagia is the most common neurological cause of nutritional disorders, and it includes disturbances in the swallowing process at any stage: from taking food into the mouth, keeping it in the buccal cavity, chewing and shaping it, and transporting it from the oral cavity to the stomach via the throat and oesophagus[5]. Neurogenic dysphagia can be caused by disturbances in the coordination of individual swallowing phases, paresis of the muscles involved in the act of swallowing, abnormal muscle tone, disruption in swallowing-breathing coordination, disturbance of sensation in the mouth or throat, involuntary movements, disturbances in the central control of swallowing, or most commonly a combination of these symptoms [6] Nutrition-Associated Chronic Diseases in Post-Stroke Patients include loss of bone mineral density (BMD) is a typical sign in stroke patients. Bone loss occurs immediately after a stroke and continues for the first several months. Then it stabilises at a slower rate but does not decrease for at least a year. The pathogenesis of post-stroke osteoporosis is complicated, since it might include lower bone load, decreased mobility, paresis, and changes in muscle mass and strength. However, it might also be due to dietary deficiencies. Long-term hypocalcaemia may also contribute to osteoporotic conditions. In a recent research by Siotto et al. on calcium levels in post-stroke patients, it was observed that 26.7% of patients had total calcium levels below the reference range, and it was hypothesised that serum calcium levels may be connected with patients' results during the rehabilitation program [7].

Sarcopenia is also a common occurrence following stroke, with an increased prevalence of 14-54%. Changes in muscle tissue occur within hours after a stroke, and muscle mass loss is fast, potentially leading to reduced physical function or impairment. Sarcopenia can be caused by several reasons, necessitating an interdisciplinary approach that includes rehabilitation and nutrition [8]. Vitamin D insufficiency is a prevalent concern among stroke patients, and it has been linked to reduced muscular strength, balance, and athletic performance. Although the findings of research on the effect of vitamin D supplementation on post-stroke rehabilitation are conflicting, the majority of them show its ability to support nervous system functioning and improve the rehabilitation process [9].Currently, there is a lot of interest in dietary supplements to help with rehabilitation, alleviate vascular disorders, reduce ischaemic brain damage, and improve processes of spontaneous healing and neuroplasticity. Data from various clinical research suggest medical advantages from nutritional supplements in post-stroke patient’s functional, cognitive, and emotional condition [10]. One of the most essential variables influencing post-stroke rehabilitation efficacy is optimal nutrition, which must be tailored to the patient's medical history and increased demands during the complicated biochemical processes of brain healing, as well as high physical and cognitive activity. Furthermore, malnutrition is linked to poor clinical and functional outcomes in post-stroke patients, including an increased incidence of infections and pressure sores, as well as longer hospital stays [11]. The link between nutritional status, food, and the functioning of the central nervous system is now well recognised. The literature review demonstrates the influence of specific nutrients from food on the nervous system, but multiannual population studies on eating behaviours and habits illustrate the protective effect of the diet. Certain diets have been proven to affect life expectancy, mortality, the risk of cardiovascular disease, and cognitive impairment. Diet, as a potentially adjustable lifestyle aspect, has the ability to avoid both main and secondary risk factors for a variety of illnesses, including stroke. The diet is evaluated both qualitatively (minerals, vitamins, lipids, and proteins) and quantitatively (amount of calories ingested). The link between nutritional status, food, and the functioning of the central nervous system is now well recognised. The literature review demonstrates the influence of specific nutrients from food on the nervous system, but multiannual population studies on eating behaviours and habits illustrate the protective effect of the diet. Certain diets have been proven to affect life expectancy, mortality, the risk of cardiovascular disease, and cognitive impairment. Diet, as a potentially adjustable lifestyle aspect, has the ability to avoid both main and secondary risk factors for a variety of illnesses, including stroke. The diet is evaluated both qualitatively (minerals, vitamins, lipids, and proteins) and quantitatively (amount of calories ingested) [12].

2. METHODS

Sample size was calculated after reviewing previous studies. The ethics committee approved the survey ensuring ethical guidelines were followed. Participants came from both urban and rural areas and had a history of stroke, muscle weakness, joint pain, and fatigue. Out of 211 participants, 100 had experienced a stroke. To identify dietary deficiencies in stroke survivors, blood and serum level tests were conducted. During data collection, patient history was also assessed. If a patient experienced joint pain, muscle pain, or cognitive changes, we inquired about their diet to identify potential nutritional gaps. We informed them about the survey during a follow-up visit and got their permission to participate. Blood samples were then collected to measure complete blood counts and serum nutrient levels, including vitamin D, Folate, and potassium, to check for deficiencies. The data was analyzed using Microsoft Excel, with the help of statisticians.

3. RESULTS

Table1. Socio-Demographic data

Demographic varibles	Number of participants (%)
Gender	
Male	50(50%)
Female	50(50%)
Age group	
35-45	15(15%)
46-65	75(75%)
Area	
Urban	50(50%)
Male	25(25%)
Female	25(25%)
Rural	50(50%)
Male	15(15%)
Female	35(35%)

Table1. Presents the socio-demographic characteristics of the study participants. The study included an equal distribution of genders, with 50% males and 50% females. The majority of participants (75%) were within the 46-65 years age group, while 15% belonged to the 35-45 years age range.Regarding the area of residence, an equal proportion of participants were from urban and rural areas (50% each). Within the urban population, 25% were males, and 25% were females. Similarly, among the rural participants, 15% were males, and 35% were females.

Table.2 Prevalence of Deficiencies found.

Deficiencies	**Urban population(%)**	
	Male	**Female**
Vitamin D	**15 (60%)**	**22(88%)**
Magnesium	**18(72%)**	**21(76%)**
Calcium	**13(52%)**	**15(60%)**
Folate	**15(60%)**	**18(72%)**

Potassium	**1 (0.4%)**	
	Rural population(%)	
	Male	**Female**
Vitamin D	**12(66%)**	**26(74%)**
Magnesium	**11(73%)**	**27(77%)**
Calcium	**07(46%)**	**19(54%)**
Folate	**08(53%)**	**09(54%)**
Potassium	**00(0%)**	**01(2%)**

Interpretation of Table 2: Nutrient Deficiencies

Table 2. shows the nutrient deficiencies among participants based on gender and location (urban vs. rural).In urban areas, women had higher deficiency rates than men. Vitamin D deficiency was found in 88% of women and 60% of men. Magnesium deficiency affected 76% of women and 72% of men. Calcium deficiency was seen in 60% of women and 52% of men, while folate deficiency was present in 72% of women and 60% of men. Potassium deficiency was rare, affecting only 0.4% of women and no men.A similar pattern was seen in rural areas, where women also had higher deficiency rates. Vitamin D deficiency was found in 74% of women and 66% of men. Magnesium deficiency affected 77% of women and 73% of men. Calcium deficiency was observed in 54% of women and 46% of men. Folate deficiency was found in 54% of women and 53% of men. Potassium deficiency was low, affecting 2% of women and no men.

4. DISCUSSION

The study aimed to investigate the dietary deficiency in stroke survivor. The study found that vitamin D deficiency was alarmingly high, particularly among urban women (88%) and rural women (74%), compared to men (60% in urban and 66% in rural areas. This may be attributed to differences in sun exposure, dietary habits, and possible biological factors affecting vitamin D synthesis. The relatively high prevalence in men also suggests a broader public health concern, necessitating targeted interventions such as fortified foods or supplementation programs. Magnesium deficiency was also prevalent, with urban women (76%) and rural women (77%) having higher deficiency rates compared to men (72% in urban and 73% in rural areas). Magnesium plays a crucial role in numerous physiological functions, and its deficiency can contribute to muscle weakness, fatigue, and cardiovascular risks. Calcium deficiency followed a similar trend, affecting 60% of urban women and 54% of rural women, compared to 52% and 46% in men, respectively. Given calcium's importance in bone health, this raises concerns about an increased risk of osteoporosis, particularly in women who may experience additional bone density loss post-menopause. Folate deficiency, critical for DNA synthesis and cell function, was notably high among women in urban (72%) and rural (54%) areas, with men also affected at slightly lower rates (60% and 53%). Folate deficiency poses significant health risks, particularly for women of reproductive age, as it can lead to complications such as neural tube defects in newborns. Potassium deficiency, in contrast, was rare, affecting only a small percentage of women (0.4% in urban and 2% in rural areas) and no men. This suggests that potassium intake is generally adequate, potentially due to widespread consumption of fruits and vegetables that naturally contain this essential nutrient. A previously conducted study emphasize the importance of nutrition in post-stroke rehabilitation. Nutritional supplements are recommended in patients who are undergoing rehabilitation very often due to the higher demand for bioactive compounds during complex processes of recovery. In a randomized, prospective, double-blind, single-center study on 116 post-stroke, undernourished patients during rehabilitation, a group with intensive supplementation achieved better results than the group with standard supplementation. However, they do not specifically discuss the effects of dietary deficiencies on stroke survivors[10]. Previous studies have shown that supplements like vitamin D and amino acids can help with recovery after a stroke. Although the results of studies on the effect of vitamin D supplementation on post-stroke rehabilitation are contradictory, most of them indicate its potential to support functions of the nervous system and enhance the rehabilitation process. Amino acid supplementation seems to be a very important factor in the prevention of muscle protein hypercatabolism that often occurs after stroke. Rehabilitation in combination with amino acid supplementation can contribute to the improvement of muscle mass and functional efficiency

in the early post-stroke phase.However, my research will focus on finding out which deficiencies exist in post-stroke patients [11,12].Other studies have shown how diet can help prevent strokes, but no research has focused on how common dietary deficiencies are. My research will address this gap. Research conducted in various countries like in kokura held in 2009 supports the role of nutritional supplementation in stroke recovery, highlighting its potential benefits in improving patient outcomes. However, there is still a lack of research specifically addressing dietary deficiencies in stroke survivors. Understanding the impact of dietary deficiencies on recovery could provide valuable insights into developing more effective nutritional strategies for stroke rehabilitation[13]. Other research has shown that nutritional deficiency is common in rural areas that surveys indicate that the diets of the rural population are inadequate and deficient in most of the nutrients However, my study focuses specifically on dietary deficiency in stroke survivors. While general nutritional issues in rural populations have been explored, there is limited research on how dietary deficiencies affect stroke recovery [14]. Cooking methods, Knowledge as well as attitude have impact on level of physical fitness and impact of lifestyle on disorders amongst the population [15-16].

5. CONCLUSION

This study shows overall prevalence of dietary deficiency in stroke survivors is (56.4%).Lack of awareness can cause these problems. Dietary deficiencies in stroke survivors can significantly impact recovery and overall health. Proper nutritional support is essential to optimize neurological recovery, reduce the risk of current strokes and improve quality of life. Regular monitoring by health care professionals, personalized dietary interventions are important components of a comprehensive care plan for stroke survivors.

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REFERENCES

[1] Warlow CP. Epidemiology of stroke. The Lancet. 1998 Oct 1;352:S1-4.

[2] Zielińska-Nowak E, Cichon N, Saluk-Bijak J, Bijak M, Miller E. Nutritional supplements and neuroprotective diets and their potential clinical significance in post-stroke rehabilitation. Nutrients. 2021 Aug 5;13(8):2704.

[3] Han J, Mao W, Ni J, Wu Y, Liu J, Bai L, Shi M, Tu J, Ning X, Wang J. Rate and determinants of recurrence at 1 year and 5 years after stroke in a low-income population in rural China. Frontiers in Neurology. 2020 Jan 23;11:2.

[4] Sato Y, Yoshimura Y, Abe T. Nutrition in the first week after stroke is associated with discharge to home. Nutrients. 2021 Mar 15;13(3):943.

[5] Clavé P, Shaker R. Dysphagia: current reality and scope of the problem. Nature Reviews Gastroenterology & Hepatology. 2015 May;12(5):259-70.

[6] Lapa S, Foerch C, Singer OC, Hattingen E, Luger S. Ischemic lesion location based on the ASPECT score for risk assessment of neurogenic dysphagia. Dysphagia. 2021 Oct;36:882-90.

[7] Yang FZ, Jehu DA, Ouyang H, Lam FM, Pang MY. The impact of stroke on bone properties and muscle-bone relationship: a systematic review and meta-analysis. Osteoporosis International. 2020 Feb;31:211-24.

[8] Mas MF, González J, Frontera WR. Stroke and sarcopenia. Current physical medicine and rehabilitation reports. 2020 Dec;8:452-60.

[9] Zielińska-Nowak E, Cichon N, Saluk-Bijak J, Bijak M, Miller E. Nutritional supplements and neuroprotective diets and their potential clinical significance in post-stroke rehabilitation. Nutrients. 2021 Aug 5;13(8):2704.

[10] Foley NC, Salter KL, Robertson J, Teasell RW, Woodbury MG. Which reported estimate of the prevalence of malnutrition after stroke is valid?. Stroke. 2009 Mar 1;40(3):e66-74.

[11] Rabadi MH, Coar PL, Lukin M, Lesser M, Blass JP. Intensive nutritional supplements can improve outcomes in stroke rehabilitation. Neurology. 2008 Dec 2;71(23):1856-61.

[12] Ikeda T, Morotomi N, Kamono A, Ishimoto S, Miyazawa R, Kometani S, Sako R, Kaneko N, Iida M, Kawate N. The effects of timing of a leucine-enriched amino acid supplement on body composition and physical function in stroke patients: a randomized controlled trial. Nutrients. 2020 Jun 29;12(7):1928.

[13] Siotto M, Santoro M, Aprile I. Vitamin D and rehabilitation after stroke: status of art. Applied Sciences. 2020 Mar 13;10(6):1973.

[14] Kokura Y, Maeda K, Wakabayashi H, Nishioka S, Higashi S. High nutritional-related risk on admission predicts less improvement of functional independence measure in geriatric stroke patients: a retrospective cohort study. Journal of Stroke and Cerebrovascular Diseases. 2016 Jun 1;25(6):1335-41.

[15] Yagnik A, Kanase S. Influence of cooking methods on physical fitness in urban and rural women. Website: www. ijpot. com. 2019 Jul;13(3):149.

[16] Jadhav PP, Kamble AN, Kanase SB, Mane DK. Knowledge, Attitude and Practices towards Lifestyle Disorders in Rural Communities, in Maharashtra, India. Journal of Evolution of Medical and Dental Sciences. 2021 May 10;10(19):1372-7.