

## **Effect of Nutritional Awareness on Sleep Quality among Dementia Patients**

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### **ABSTRACT:**

This study investigated the effect of nutritional awareness on sleep quality among dementia patients. This was conducted at an outpatient clinic at the Institute of Psychiatry affiliated to Ain Shams University Hospitals, Misr El-Gedida psychiatric Hospital, using a sample of 100 dementia patients. Four tools of data collection were used, including ( I) an interview questionnaire that contain Socio-demographic characteristics about dementia patients, including name, age, living duration, and whether they have a chronic illness. II- Pittsburgh Sleep Quality Index, (PSQI) scale to assess sleep quality indexes, III- Nutrition assessment, which includes: Dietary intake by: 24- hours. Dietary recall for 15 days for diets was taken along with the food habits of the patients IV booklets of nutritional awareness to improve sleep quality among patients. The results revealed an improvement in the total score of sleep quality. Subjective sleep quality, sleep latency, sleep duration, sleep disturbance, use of sleep medication, and daytime dysfunction are significantly different after using a nutritional awareness program.

**Keywords: Nutritional awareness, Sleep quality, Dementia patient.**

## Introduction

Sleep is a physiological mechanism for regaining energy and recovering from fatigue, and it is vital for health and older people (**Wood ward., 2007**). Sleep quality may be one of the most common difficulties at facing geriatrics, with 58% reporting sleeping difficulties, at least a few nights per week (**Irwin, et al., 2008**). Sleep is an important aspect of maintaining the body's circadian rhythm. Inadequate sleep contributes to depression, accidents, impaired cognition, and a poor quality of life. While normal ageing changes interfere with the quality of sleep, other disease conditions and medications used by older adults compromise sleep patterns (**Smyth .,2012**). In Egypt, the prevalence of dementia among individuals aged  $\geq 50$  years was estimated to be 2.01%-5.07% (**Elshahidi et al., 2017**). In the USA, the number of aged 65 and older with Alzheimer's dementia (AD) by mid-century may grow to 13.8 million. This represents a steep increase from the estimated 5.7 million Americans who have Alzheimer's dementia today (**Alzheimer's Association., 2018**). Alzheimer's disease may contribute to 60-70% of cases. Dementia is currently the seventh leading cause of death among all diseases (**WHO., 2022**).The total number of people with dementia is expected to rise to 75.6 million in 2030 and almost triple in 2050 to 135.5 million. (**WHO, 2019**).

Nutrition is a basic human need and a prerequisite to a healthy life. Nutrition is defined as the science of foods, the nutrients, and other substances, their action, interaction, and balance in relation to health and diseases, and it is the process by which the organism ingests, digests, absorbs, transports, and utilizes nutrients and disposes of their end products, in addition, nutrition must be concerned with the social, economic, cultural and psychological implications of food and eating (**Nedelitcheva., et al 2009**).

Nutrition can be linked to causes or cures for many sleep problems. Dietary supplements containing melatonin "precursors" L-tryptophan and 5- Hydroxytryptophan (5-HTP), are also used as sleep aids. The amino acid L-tryptophan is converted to 5-HTP, which is converted to serotonin and then melatonin (**National Institutes of Health. 2009**). Which are essential amino acids that cannot be made by the human body and therefore must be consumed through food. Tryptophan and a related metabolite, 5-HTP, are the precursors of the neurotransmitter serotonin, which is linked to sleep and depression. Serotonin in the bloodstream

increases rapid eye movement (REM) that occurs during the deep stages of sleep. So, why eat foods with tryptophan? Why not just eat serotonin? Because serotonin does not pass through the blood- brain barrier, tryptophan and 5-HTP pass through. Eating nearly “carbohydrate- only” food triggers insulin production. Insulin clears the other amino acids from the bloodstream and gives tryptophan exclusive access to enter the brain. Simple carbohydrates such as sugars and sweets have the greatest impact but are not the best choices nutritionally. Food can also be the cause of sleep disorders (**Afaghi et al., 2007**).

In this respect, poor sleep quality alters the levels of leptin and ghrelin, resulting in factors for the development and exacerbation of insulin resistance. These hormones controlling appetite and body fat. Leptin, released by fat cells, signals the brain to feel satiety. Ghrelin, produced in the stomach, signals hunger. Weight gain is only one of the many side effects of insufficient sleep, but it can lead to long-term health problems. Sufficient sleep and a regular sleep schedule are critical in controlling appetite and promoting a healthy eating pattern. Studies showed those who slept less than eight hours a night were more likely to be overweight( **Zadeh et al .,2012** )

About 30 % of the total population in Egypt suffers from sleep disturbances in 1 of every 3 people has a sleep disorder (**European Sleep Research Society, 2010**). Sleep disturbances among dementia patients represent a highly common phenomenon. Sleep disorders may even be associated with accidents, falling down, poor health conditions, and poor life quality. In daily living, this causes difficulties in cognitive performance (concentration and memory problems), mood swings, and emotional distress, and creating a lack of general physical and mental well-being. Nutrition awareness wants and needs are important improve their sleep quality.

This study aims to investigate the effect of nutritional awareness on sleep quality among dementia patients.

### **Subject and Methods:**

#### **Sample**

This was conducted at an outpatient clinic at the Institute of Psychiatry affiliated to Ain Shams University hospitals and psychiatric hospitals using a convenient sample of (100) dementia patients (55 males, 45 females) their ages ranged from 60 to 85 years, and the sample

was divided according to age groups (60 - 69 ) years, (70+) years. According to recommended dietary allowances. The following data were collected through a questionnaire that was applied by caregivers.

**Tools for data collection:** Four tools were used in this study:

**I-** An interview questionnaire contains sociodemographic data about dementia patients, including name, age, living duration, and whether they have a chronic illness.

**II-** Pittsburgh Sleep Quality Index (PSQI). Scale to assess the sleep quality index. The Pittsburgh Sleep Quality Index (PSQI) is a self-report questionnaire that assesses sleep quality and quantity. The original version was designed to measure sleep reports over a one- month interval. The 19-items self-report questionnaire yields 7 component scores: subjective sleep quality, sleep latency, duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction.

Do not happened in the last month-----Zero

Less than once a week-----1

Once or twice a week -----2

Three times a week -----3

A Cronbach's alpha of 0.83 was reported for the Global Sleep Quality scale. A global sleep quality score greater than 5 discriminated between good and poor sleepers and yielded a diagnostic sensitivity of 89.6% and specificity of 86.5%. There is evidence of the reliability and validity of the PSQI among the elderly. Internal consistency reliability (alpha = 0.80) (**Buyse et al, 1989**).

**III - Nutrition assessment, which includes:**

Dietary intake by:

24 hr. Dietary recall for 15 days for the adequacy of diets was taken from dementia patients by caregivers. Each food item was gathered and the Food Composition Tables of the National Institute of Nutrition (1996). The mean values were compared with the Recommended Nutrients Intakes, **RNI (2001)** for vitamins and minerals, and the Recommended Dietary Allowances (**RDA, 1989**) for protein and energy and Food habits: They were measured through a questionnaire designed by (**Nagib et al., 2005**)

#### **IV- booklet of nutrition awareness to improve sleep quality:**

According to the assessment, the researcher designed a dietary guidelines booklet as a mode of support system for dementia patients by caregivers. It aims to acquire knowledge regarding the sleep. Acquire knowledge regarding importance of nutrition. Effect of nutrition on sleep quality.

### **II.Operational design**

#### **Fieldwork**

The researcher reviewed current and past available literature in the various aspects related to the topic to be acquired with in-depth information about the subjects. Once official permission was granted to proceed with the study, the researcher initiated data collection. Dementia patients were identified by caregivers. The researcher met with each subject and informed her about the purpose and the nature of the study. A 24-hour dietary recall for 15 days for the adequacy of diets was taken from patients by caregivers. They were instructed to record all foods& drinks the caregivers had each day and follow up them by the telephone each food item was gathered and analyzed. Food habits were measured. After that the researcher explained to the caregivers how to fill out the forms of socio-demographic questionnaire and scale that assess sleep quality (Pittsburgh Sleep Quality Index). Then, the assessment by the researcher was done by individually interviewing each patient. The time required for filling in the questionnaire varied from one to the other depending on educational, psychological and social status; The researcher visited them two times every week during the day, time from 12 pm to 3 pm.

#### **Statistical Design**

Data entry and statistical analysis were done using the SPSS 16.0 statistical software package. The statistical analysis of the data was revised, coded, analyzed, and tabulated using a number and percentage distribution in order to determine whether there were significant differences or not, comparisons were done using the arithmetic mean, standard deviations, and correlation coefficient test. Pearson correlation analysis was used for assessment of the inter-relationships among quantitative variables, and Spearman rank correlation for ranked ones (Vandallen., 1997).

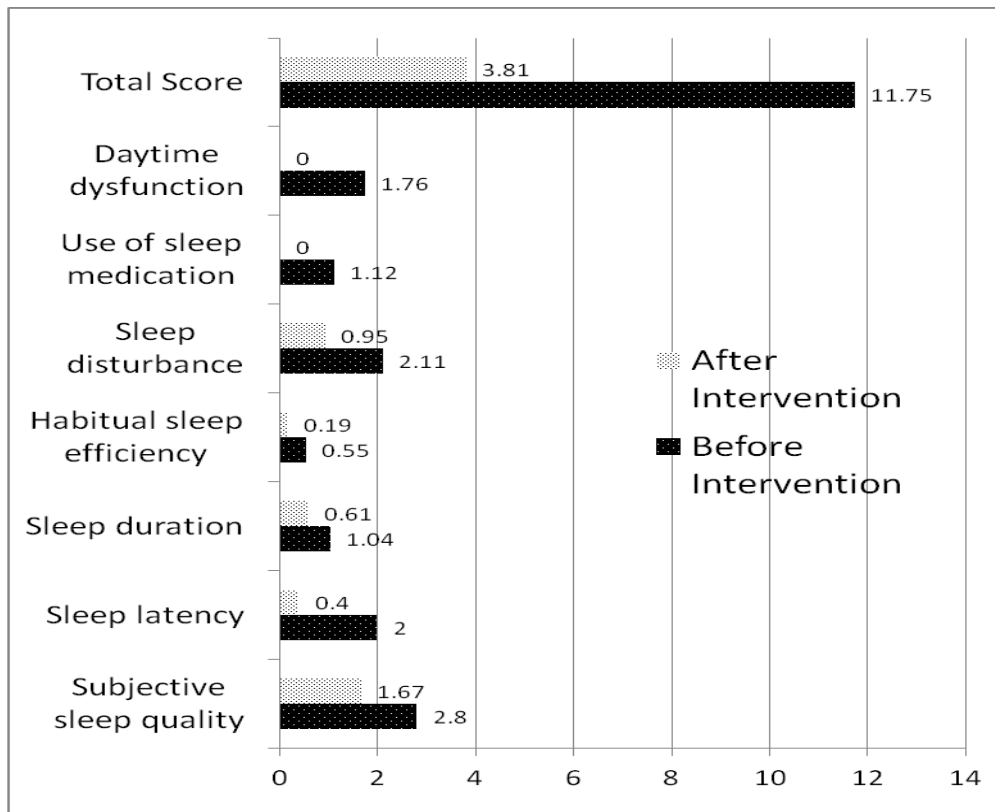
**Results and discussion:**

Dementia, especially in its late stages, affects patients' life like being dependent, malnourished, and having psychological and sleep problems. Poor sleep quality is a symptom that should be taken seriously among patients and caregivers, because it may be a prodromal for serious physical and psychological illness and affect their sense of well-being. Sleep quality is associated with positive outcomes such as better health, less daytime sleepiness, greater well-being and better psychological functioning (Dowson et al., 2008) & (Harvey et al., 2008).

**Table 1** shows that subjective sleep quality, sleep latency, sleep duration, sleep disturbance, use of sleep medication, and daytime dysfunction are significantly different at  $<0.001$  P value at 96% confidence interval of the difference.

**Table (1) paired comparison between before and after intervention score of the sleep components measured by PSQI.**

	Paired Differences					t	P value
	Mean	Std. Deviation	Std. Error Mean	96% Confidence Interval of the Difference			
				Lower	Upper		
Subjective sleep quality	1.143	0.612	0.062	0.990	1.287	16.169	<0.001
Sleep latency	1.5	1.030	0.121	1.366	1.849	13.328	<0.001
Sleep duration	0.416	0.965	0.123	0.212	0.653	4.190	<0.001
Habitual sleep efficiency	0.365	0.966	0.115	0.139	0.587	3.212	0.002
Sleep disturbance	1.210	0.406	0.046	1.068	1.257	24.854	<0.001
Use of sleep medication	1.131	0.999	0.113	0.895	1.355	9.605	<0.001
Daytime dysfunction	1.755	0.796	0.092	1.569	1.951	19.390	<0.001
Total Score	7.52	5.774	1.23	6.239	8.939	19.128	<0.001



**Figure (1) paired comparison of total score sleep components as measured by PSQI between before and after intervention.**

**Figure 1** shows the improvement in the total score of sleep quality appeared in 11.75 total score before the intervention, compared to 3.81 after the intervention. The study demonstrated that subjective sleep quality, sleep latency, sleep duration, sleep disturbance, use of sleep medication, and daytime dysfunction are significantly different at  $<0.001$  P value at 95% confidence interval of the difference, This is matched with **Viana et al (2011)**. who illustrated an expressive percentage of elderly individuals in their study that reported sleep problems in general. Of these, the most frequent were fragmented sleep and waking up during the night and not being able to return to sleep, followed by sleeping poorly at night and increased sleep onset latency.

Comparing sleep conditions among the elderly before and after awareness, significant differences are found. The researchers taught the elderly how nutrition affects sleep and that they generally must follow the recommended dietary allowances. The recommended dietary level

depends on the bioavailability of nutrients from a given diet. The term bioavailability indicates what is absorbed and utilized by the body. Dietary guidelines are a translation of scientific knowledge on nutrients into specific dietary advice. They represent the recommended dietary allowances of nutrients in terms of diets that should be consumed by the population. The booklet recommended the concept of nutritionally adequate diets. A balanced diet should provide around 50-60% of total calories from carbohydrates, preferably from complex carbohydrates, about 15% from proteins and 20-30% from both visible and invisible fat. In addition, a balanced diet should provide other non-nutrients such as dietary fiber. Antioxidants such as vitamins C and E, beta-carotene, riboflavin and selenium protect the human body from free radical damage (**Dietary guidelines., 2010**).

As appeared in Table 2, there is a relationship between dementia patients who have chronic disease and dementia patients who are free from disease and the score of sleep components as measured by PSQI before and after intervention, that is significant relation at P value .096 before intervention compared to 105 after improvement.

**Tracy (2012)**. Added that Poor sleep quality is one of the defining features of chronic insomnia. Sleep quality as a “complex phenomenon that is difficult to define and measure objectively.” The present study included 100 cases, their mean age was  $75.6 \pm 8.4$  years and more than half of study sample had a morbid condition. While relationship between chronic disease and free from disease and score of sleep components as measured by PSQI before and after intervention, it is found that significant relation at P value .095 before intervention compared to .103 after improvement. This is point to that ageing alone does not cause sleep disruption, but rather the conditions that often accompany ageing result in poor sleep. This belief was supported by **Roepke & Ancoli (2008)**. Who demonstrated that data from the National Sleep Foundation’s survey of older adults found a positive relationship between the amounts of sleep and medical conditions such as cardiac disease, pulmonary disease, stroke and depression.



**Table (2) relationship between dementia patients who have chronic disease and those who are and free from chronic disease and the score of sleep components as measured by the PSQI before and after intervention**

		Disease		t-test	p value
		Free	Have a chronic disease		
Before	Subjective sleep quality	2.76 <sup>b</sup> ± .43	2.83 <sup>b</sup> ± .45	-.538	.592
	Sleep latency	2.18 <sup>b</sup> ± .46	1.88 <sup>ab</sup> ± .87	1.621	.108
	Sleep duration	.86 <sup>a</sup> ± .82	1.15 <sup>ab</sup> ± 1.02	-1.275	.205
	Habitual sleep efficiency	.48 <sup>a</sup> ± .86	.61 <sup>a</sup> ± .92	-.632	.528
	Sleep disturbance	2.02 <sup>b</sup> ± .18	2.17 <sup>b</sup> ± .36	-1.688	.095
	Use of sleep medication	1.51 <sup>ab</sup> ± .94	.86 <sup>a</sup> ± .98	2.812	.007
	Day time dysfunction	1.81 <sup>ab</sup> ± .81	1.74 <sup>ab</sup> ± .77	.359	.722
	Total Score	11.63 ± 2.79	11.51 ± 3.38	.422	.677
Improvement	Subjective sleep quality	1.21 <sup>ab</sup> ± .66	1.09 <sup>ab</sup> ± .60	.755	.454
	Sleep latency	1.84 <sup>ab</sup> ± .79	1.44 <sup>ab</sup> ± 1.16	1.603	.115
	Sleep duration	.36 <sup>a</sup> ± .81	.47 <sup>a</sup> ± 1.08	-.432	.667
	Habitual sleep efficiency	.41 <sup>a</sup> ± .93	.33 <sup>a</sup> ± 1.00	.292	.771
	Sleep disturbance	1.06 <sup>ab</sup> ± .25	1.22 <sup>ab</sup> ± .47	-1.651	.105
	Use of sleep medication	1.49 <sup>ab</sup> ± .94	.87 <sup>a</sup> ± .97	2.812	.007
	Day time dysfunction	1.79 <sup>ab</sup> ± .81	1.73 <sup>ab</sup> ± .78	.357	.722
	Total Score	8.30 ± 3.13	7.56 ± 3.86	1.118	.266

•Values denoted arithmetic means ± standard deviation of the mean. •Colum with different letter means that there were statistically significant different at (P<0.05).

Also, the results show that any physical health problem like breathing difficulty, cough, or frequent going to bathrooms may cause sleep disturbances to the elderly. This explanation is consistent with **Abdalla, (2000)** who mentioned that although some of the sleep changes experienced by elderly are related to aging, other sleep changes are associated with chronic disease and other health problems such as trips to bathrooms, cough, and noise. Similar results are reported in many sources (**Burkhardt et al., 2001**) and **Catherine & Paul., 2012**).

**Yang et al (2012)** stated that meal should have varying nutrition needs, by addressing nutritional risks and providing new restorative comprehensive meals to meet these needs **Nedeltcheva., et al (2009)** who also mentioned that the nutrition education wants and needs for patients and service providers are important to improve their health and their sleep quality **Saleh (2003)** and **Gruber et al (2009)** stated that malnutrition among patient is usually contributed to physical risks such as chronic illness.

**Regarding nutritional results:**

**24- hour recall:-** results revealed that in table (3):-

**Table (3): Percent of nutrients sufficient for dementia patients according toRNI 2001and RDA1989**

Group	Before awareness		After awareness	
	(60-69)Yrs. n.48	(70+)Yrs. n.52	(60-69)Yrs. n.48	(70+)Yrs. n.52
<b>%</b>				
<b>Protein</b>				
<b>Plant</b>	21.0 <sup>b</sup> ± 1.8	62.0 <sup>d</sup> ± 1.9	25.0 <sup>b</sup> ± 2.6	57.0 <sup>c</sup> ± 1.4
<b>Animal</b>	28.0 <sup>b</sup> ± 2.7	70.0 <sup>d</sup> ± 2.8	46.0 <sup>c</sup> ± 1.5	76.0 <sup>d</sup> ± 2.3
<b>Total</b>	49.0 <sup>c</sup> ± 4.5	132.0 <sup>cd</sup> ± 4.7	71.0 <sup>d</sup> ± 4.1	133.0 <sup>cd</sup> ± 3.7
<b>Fat</b>				
<b>Plant</b>	14.0 <sup>a</sup> ± 2.3	11.0 <sup>a</sup> ± 1.7	9.0 <sup>a</sup> ± 2.1	11.0 <sup>a</sup> ± 1.6
<b>Animal</b>	11.0 <sup>a</sup> ± 1.7	9.0 <sup>a</sup> ± 2.3	9.0 <sup>a</sup> ± 2.4	8.0 <sup>a</sup> ± 2.5
<b>Total</b>	26.0 <sup>b</sup> ± 3.0	21.0 <sup>b</sup> ± 3.0	18.0 <sup>a</sup> ± 4.5	19.0 <sup>a</sup> ± 4.1
<b>Carbohydrate</b>	61.0 <sup>c</sup> ± 1.9	50.0 <sup>c</sup> ± 2.8	40.0 <sup>c</sup> ± 1.6	30.0 <sup>b</sup> ± 1.5
<b>Energy</b>	89.0 <sup>d</sup> ± 2.6	109.0 <sup>d</sup> ± 1.6	80.0 <sup>d</sup> ± 1.7	90.0 <sup>d</sup> ± 2.6

•Values denoted arithmetic means ± standard deviation of the mean. •Colum with different letter means that there were statistically significant different at (P<0.05).

**Protein:** It is clear that the low percentage of protein sufficient was about (49%, 132%) for young and old patients before awareness while it was about (71.0%, 133%) young & old patients after awareness respectively. **Fat:** the high percent of fat consumption was (26%, 21%) in young and old patients before awareness while it was (18%, 19%) after awareness. About **Carbohydrate:** It was found that the low percentage of carbohydrate after awareness (40.0%, 30.0%) for young & old patients while before awareness (61%, 50.0%). There is no RDA for dietary carbohydrate, but the current guidelines of the U.S Department of Agriculture and U.S Department of Health and Human Service recommended that 55% or more of total Kilocalories are supplied by carbohydrate. While **energy**, it is compared with energy RDA (1800& 1500 kcal for elderly young and old respectively) the intake of energy before awareness were (89%, 109%) while after awareness were (80%, 90%) in young & old patients respectively. these results are consistent with the final report of NIN, 2001. which reported also a decrement intakes of energy, at expense of carbohydrate and fat intakes. So consistent with **FAO, (1993)** results. This insufficient energy intake

didn't as resultant of low food served, (Shi, et al., 2008) reported that food served to elder's energy was more than RDA.

**Con. table (3): Percent of nutrients sufficient for dementia patients according to RNI 2001 and RDA1989.**

Group	Before awareness		After awareness	
	(60-69)Yrs. n.48	(70+)Yrs. n.52	(60-69)Yrs. n.48	(70+)Yrs. n.52
%				
<b>Vitamins</b>				
<b>Vit. A</b>	25 <sup>a</sup> ± 1.3	35 <sup>a</sup> ± 1.3	104 <sup>d</sup> ± 2.2	100 <sup>cd</sup> ± 1.5
<b>Fresh</b>	35 <sup>b</sup> ± 2.4	30 <sup>a</sup> ± 2.5	94 <sup>cd</sup> ± 1.6	117 <sup>cd</sup> ± 2.1
<b>Cookes</b>	60 <sup>c</sup> ± 3.7	65 <sup>c</sup> ± 3.8	198 <sup>d</sup> ± 3.8	217 <sup>d</sup> ± 3.6
<b>Total</b>				
<b>B1</b>	69 <sup>c</sup> ± 1.6	60 <sup>c</sup> ± 1.06	101 <sup>cd</sup> ± 1.9	93 <sup>cd</sup> ± 1.07
<b>B2</b>	128 <sup>d</sup> ± 2.4	128 <sup>d</sup> ± 1.6	201 <sup>d</sup> ± 2.8	200 <sup>d</sup> ± 2.02
<b>Vit.c</b>				
<b>Fresh</b>	60 <sup>c</sup> ± 1.4	70 <sup>c</sup> ± 2.3	81 <sup>c</sup> ± 2.1	215 <sup>d</sup> ± 1.3
<b>Cooked</b>	30 <sup>b</sup> ± 2.1	20 <sup>a</sup> ± 1.6	24 <sup>a</sup> ± 2.2	43 <sup>b</sup> ± 2.3
<b>Total</b>	90 <sup>cd</sup> ± 3.5	90 <sup>bc</sup> ± 3.9	105 <sup>cd</sup> ± 4.3	258 <sup>d</sup> ± 3.6

•Values denoted arithmetic means ± standard deviation of the mean. •Colum with different letter means that there were statistically significant different at (P<0.05).

**Con. table (3): Percent of nutrients sufficient for dementia patients according to RNI 2001and RDA1989.**

Group	Before awareness		After awareness	
	(60-69)Yrs. n.48	(70+)Yrs. n.52	(60-69)Yrs. n.48	(70+)Yrs. n.52
%				
<b>Minerals</b>				
<b>Ca</b>	32.0 <sup>a</sup> ± 1.3	35.0 <sup>a</sup> ± 1.4	77.0 <sup>c</sup> ± 1.6	70.0 <sup>c</sup> ± 2.1
<b>Ph</b>	89.0 <sup>c</sup> ± 1.2	88.0 <sup>c</sup> ± 2.3	160.0 <sup>cd</sup> ± 1.5	150.0 <sup>d</sup> ± 1.7
<b>Fe</b>	50.0 <sup>b</sup> ± 2.1	120.0 <sup>d</sup> ± 1.6	85.0 <sup>c</sup> ± 2.2	130.0 <sup>cd</sup> ± 2.6
<b>Zn</b>	130.0 <sup>cd</sup> ± 2.4	155.0 <sup>cd</sup> ± 1.9	145.0 <sup>d</sup> ± 2.6	201.0 <sup>d</sup> ± 3.7
<b>K</b>	50.0 <sup>b</sup> ± 2.8	51.0 <sup>b</sup> ± 2.3	71.0 <sup>bc</sup> ± 2.4	58.0 <sup>b</sup> ± 2.2

•Values denoted arithmetic means ± standard deviation of the mean. •Colum with different letter means that there were statistically significant different at (P<0.05).

**Vitamin A:** - Using the food composition tables mentioned, the mean intakes of carotene, retinal and total vitamin A were calculated as IU, and then these means were calculated as mg retinal to be compatible with RNI (500, 600 mg retinal for young and old of both elderly sexes).

Vitamin A sufficient was about (60%, 65%) for young and old patients before awareness while (198%, 217%) after awareness. To confirm this results, the outcomes of the final report of **NIN, (2001)** documented this high vitamin. A deficient at patients. **Vitamin B intake:** Recommended Nutrient Intakes of Vit.B1, B2 are (1.1mg/ day) for aging as reported by **FAO& WHO joint (RNI, 2001)**. It was found the high percent were equal (101%, 93%) of vit.B1 in young & old patients and (201%, 200%) vit.B after awareness while was (60%, 69%) of vit.B1 in young and old patients and was (128% for both) of vit.B2 before awareness. **Vitamin C intake:** the RNIs of ascorbic acid are 45mg/ day for elderly. But it must be mentioned that RNIs for vitamin C were assessed according to prevent vitamin C deficiency symptoms, and neglected the role of it as antioxidant. Other countries followed 3 days RDA/ day (**Luo et al., 2013**) for non-smokers. Vitamin. C sufficient was about (105%, 258%) for patients respectively after awareness

**Minerals: Calcium:** - the RNIs of calcium are 1300mg / day for both age groups. Calcium sufficient was high percentage (77%, 70%) for young and old patients after awareness but before were (32%, 35%) respectively. no doubt that reflected a high rescue of calcium deficient osteoporosis (**Abdalla, 2005**). **Phosphorus:** according to the **RDA (1989)**, phosphorus is 800 mg/ day. It was (160%, 150%) after awareness but (89%, 88%) before awareness. **Iron:** the **RNIs** of iron mean values were 13 mg/ day for females for both age groups. Iron sufficient was high percentage after awareness (85%, 130%) but was (50%, 120%) before awareness. **Zinc:** The **RNIs** of zinc are 6mg/ day for females. Zinc sufficient was (130%, 155%) before awareness but it was (145%, 201%) after awareness for young and old patients respectively. **Potassium:** it could be noticed that the high percent of potassium was (71%, 58%) after awareness but before was (50%, 51%) for young and old patients.

As regard to the nutritional practices of the dementia patients. The present study revealed that there is a significant difference between the total score of the patients' nutritional state before and after awareness. This may be due to increased knowledge regarding balanced diet among caregivers (highly significant difference) after implementation of the program which could convey the effectiveness of the awareness in relation to its content, objectives, intervention, and evaluation, as well as the permissive atmosphere of conduct as patients were allowed to ask questions giving them actual chance to participate.

These findings are supported by **Abdalla (2005)** who stated that nutritional awareness can be effective in reducing the risks of cardiovascular disease, increasing knowledge of nutrition, and

promoting healthy eating among the patients. After awareness, some items regarding patients 's nutritional state have improved such as eating fewer than 2 meals and eating a few amounts of fruits and vegetables, improved, this could be due to presence of chronic illness, polypharmacy, presence of gastrointestinal upset that interfere nutritional status. Another factors that may responsible for the nutritional problems is that patients do not have balanced meals per day because of absence of a qualified dietitian to plan or approve meals, in addition, food is served in a non-attractive and appetizing way and meals are provided only at set times, regardless, if the patient is hungry or not.

**Table (4): Food habits among dementia patients**

Group	Before awareness		After awareness	
	(60- 69)Yrs n. 48	(70+) Yrs n. 52	(60- 69)Yrs n. 48	(70+) Yrs n. 52
%				
Water				
-Drink in early morning/ day	23 <sup>a</sup> ± 2.3	26.2 <sup>a</sup> ± 1.6	32 <sup>a</sup> ± 1.7	43 <sup>b</sup> ± 1.5
- Drink during meal/ day	18 <sup>a</sup> ± 1.3	6 <sup>a</sup> ± 1.4	5.7 <sup>a</sup> ± 1.3	2 <sup>a</sup> ± 1.4
-Soft drink/week				
1/week	35 <sup>ab</sup> ±3.6	46 <sup>b</sup> ±4.8	20 <sup>a</sup> ±5.1	32 <sup>a</sup> ±2.7
2+/week	41 <sup>b</sup> ±6.2	49 <sup>b</sup> ±6.3	33 <sup>a</sup> ±8.1	37 <sup>b</sup> ±6.4
Breakfast	56 <sup>c</sup> ±5.4	76 <sup>c</sup> ±8.2	98 <sup>d</sup> ±4.3	97 <sup>d</sup> ±7.4
No. of main meals/day				
2 /day	65 <sup>c</sup> ±6.1	70 <sup>c</sup> ±3.5	80 <sup>c</sup> ±2.8	75 <sup>c</sup> ±5.2
3/ day	35 <sup>b</sup> ±3.9	30 <sup>a</sup> ±6.5	20 <sup>a</sup> ±7.2	25 <sup>a</sup> ±4.8
No. snacks /day				
1-2	90 <sup>c</sup> ±8.2	100 <sup>d</sup> ±6.2	70 <sup>c</sup> ±3.5	75 <sup>c</sup> ±3.6
3+	10 <sup>a</sup> ±1.8	0	30 <sup>a</sup> ±6.5	25 <sup>a</sup> ±6.4
Fresh Veg./week(gm)	202 <sup>c</sup> ± 1.9	153 <sup>c</sup> ± 2.5	405 <sup>d</sup> ± 2.4	251 <sup>d</sup> ± 1.3
Fresh fruits/week(gm)	500 <sup>d</sup> ± 1.6	251 <sup>d</sup> ± 1.7	700 <sup>f</sup> ± 1.3	502 <sup>e</sup> ± 1.6
Dairy products (gm)/ day	228 <sup>c</sup> ± 1.3	203 <sup>c</sup> ± 1.4	550 <sup>e</sup> ± 1.5	454 <sup>e</sup> ± 1.7

• Values denoted arithmetic means ± standard deviation of the mean. • Colum with different letter means that there were statistically significant different at (P<0.05).

**Food habits:** the results of food habits are presented in Table (4).The highest percentage of drinking water in early morning/ day was (43%) in (70+) yrs group after awareness. While was (26.2%) before awareness. Also high percent were (550gm/ week) in (60-69) yrs. after awareness but were (228gm/ week) before awareness.

As mentioned by **Bloom et al. (2009)** they stated that good nutrition promotes health (by averting malnutrition, preventing dietary deficiency disease and promoting optimal functioning, as well as, good sleep quality and both physical and mental well-being. This explained the significant relationship between nutrition and health among dementia patients.

Dietary habits can be influenced by psychosocial conditions such as: isolation, loneliness, depression and cognitive impairment. Physical disability can limit shopping ability; economic restraints can limit food choice. Cultural habits, cohort effects, negative family conditions, and side effects of drugs are also possible causes of impaired nutrient intake (**Pierre 2009**).

The food habits results is not agreement with (**Williams and Rees, 1997**) who recommended that the consumption of fresh vegetables& fruits should be (5:6 units)/ day at least. it is clear that those patients may be at risk, for some diseases such as constipation, this is in agreement with (**Abdalla 2005**) it was found that our elderly consumed insufficient quantities from milk and its products as shown compared to the recommendation(3 units / day).No doubt that reflected a high risk of calcium deficient(Osteoporosis).

### **Conclusion**

Total score of sleep quality appeared to improve after nutritional awareness. Subjective sleep quality, sleep latency, sleep duration, sleep disturbance, use of sleep medication, and daytime dysfunction are significantly different after using nutrition awareness. Nutrition can be linked as causes or cures for many sleep problems. Nutrition awareness among patients has a significant effect on improving sleep quality. Some foods can be a sleep inducer while others can keep you awake. To sleep better, most individuals can benefit from well-planned meals containing protein earlier in the day and a high-carbohydrate snack about one to four hours before bed. Some of the healthiest high-carbohydrate snack choices boost serotonin levels.

### **Recommendations**

- Enhancing sleep involves developing regular sleep habits, i.e., eating light food within 3 hours of bedtime, avoiding the use of stimulants (coffee, tea, cigarettes, alcohol, chocolate, colas), avoiding watching scary or anxiety provoking movies, not exercising before bedtime and trying to avoid arguments, if possible. Spend an hour before bedtime to take a relaxing bath, read a book and drink a cup of hot Chamomile.
- Multidisciplinary research team for further intervention approaches for sleep quality
- National awareness program about the importance of healthy nutrition for good sleep quality.

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## تأثير الوعى الغذائى على جودة النوم عند مرضى خرف الشيخوخة

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تهدف هذه الدراسة الى معرفة تأثير الوعى الغذائى على جودة النوم عند مرضى خرف الشيخوخة عن طريق القائمين برعايتهم. اشتملت الدراسة على (100) مريض ذكور واناث لديهم مشاكل فى النوم. تراوحت أعمارهم ما بين (60- 70) سنة فاكثر اجريت هذه الدراسة بالعيادات الخارجية بمركز الطب النفسى بجامعة عين شمس ومن مستشفى الصحة النفسية بمصر الجديدة (عيادة المسنين). تم تطبيق الاستمارات الاتية 1- استمارة قياس المستوى الاجتماعى ويحتوى على الاسم والسن ومكان الاقامة والامراض المزمنة التى يعانون منها. 2- مقياس بتسبرج لجودة النوم . 3- استمارات لتقييم الحالة الغذائيه وهى استمارة تقييم الطعام المتناول فى 24 ساعة السابقة لمدة (15) يوم واخذ المتوسط ثم مقارنة بالتوصيات علاوه على استبيان لمعرفة العادات الغذائيه . 4 - كتيب وعى غذائى لتحسين جودة النوم. اظهرت النتائج تحسن ملحوظ بعد استخدام برنامج الوعى الغذائى فى جودة النوم والفترة المطلوبة للدخول فى النوم ومدة النوم واضطرابات النوم واستخدام ادوية تساعد على النوم نستخلص من الدراسة ان للتغذية دور كبير يمكن ان تكون سبب او علاج لكثير من مشاكل النوم كما ان للوعى الغذائى لدى مرضى خرف الشيخوخة والقائمين برعايتهم علاقة مؤثرة فى تحسن جودة النوم. بعض الاطعمة تساعدك على الاسترخاء وبعضها يجعلك مستيقظا وتوصى الدراسة باتباع ارشادات صحية للنوم مثل الذهاب للنوم فى ميعاد محدد وتجنب المنبهات كما توصى الدراسة بمزيد من الابحاث والبرامج لعلاج مشاكل النوم وبرامج التوعية الغذائيه لاهمية الغذاء الصحى فى تحسين جودة النوم.

الكلمات المفتاحية: جودة النوم ، الوعى الغذائى ، مرضى خرف الشيخوخة.