NUTRITIONAL STATUS OF ELDERLY DIABETIC WOMEN

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***Abstract*— Despite the wealth of information available on a variety of manifestations and complications of Diabetes Mellitus relatively little information is available regarding Nutritional status of elderly diabetic women. In the present study, Nutritional status of 200 elderly Diabetic women living in rural areas around Vijayawada was assessed. A questionnaire was designed to collect information regarding back ground of the subject, Anthropometry, Biochemical investigations, Clinical history and Dietary habits using 24hr recall and food frequency. Data revealed that majority of the subjects stopped working and are dependent on their children for their livelihood because of the disease. Anthropometry of the subjects revealed that 42.5% were overweight & 12.3% were obese, largest group 72.2% had fasting blood glucose levels above 120mg/dl & 61.6% of women were found to be anaemic. Most of the women complained of vision problem and high blood pressure. Many reported a family history of diabetes. Diet survey showed that intake of proteins, vitamin- c, iron, carotene and calcium to be inadequate.**

***Keywords*— Elderly Diabetic Women, Nutritional status, Anthropometry, Biochemical investigation, Clinical study, Dietary habits.**

I. INTRODUCTION

Most clinical nutritionists would agree that in the care of sick elderly patients, nutritional concerns often rank far too low on the list of evaluation and treatment priorities. Why isn't nutrition more clearly recognized as a priority for the elderly by health professionals other than nutritionists? The need for nutritional assessment and intervention is particularly crucial in this age group in whom the incidence of chronic illnesses is high. The findings of the studies of the elderly subjects are at 'nutritional risk'. It is not too surprising that our counter parts in the clinics sometimes pay too little attention to nutrition (Connie W Bales 2001).[2]

Aging is a multifaceted event encompassing molecular, cellular, physiological and psychological changes. To provide nutritional care for the elderly, one must focus on all aspects of the aging phenomenon and beware of the biological changes experienced by the elderly, because the Geriatric population is an ever increasing segment in the society.

It is however important to note the metabolic changes that occur in the pattern of aging. One such chronic metabolic change is Diabetes Mellitus, increasing at faster rate in the elderly populations, which cannot be cured completely. The disease is prevalent in the developed as well as in the developing countries, contrary to the earlier belief that it is a disease of affluent populations. Diabetes has been recognized as a devastating and a deadly disease (Agbabiaka 2010).[1] Malnutrition is a common problem that affects 30-50% of bedfast diabetic elderly people (Shan A. 2013).[9] In the present study the nutritional status of elderly diabetic women was assessed since studies on elderly diabetic especially women are very limited.

II. METHODOLOGY

The study was conducted on a total number of 200 elderly diabetic women aged above 60 years, and were all NIDDM patients. A purposive sample was selected in the rural areas around Vijayawada. A

questionnaire was developed for the collection of data on various aspects like back ground information, anthropometry, biochemical investigations, clinical survey and dietary habits. Back ground information collected included age, education and occupation. Anthropometric measurements like height, weight, waist hip measurement were taken. BMI and Waist – Hip ratio was calculated.

Biochemical investigations like fasting blood glucose and blood haemoglobin are performed. Blood glucose was estimated using glucose oxidase method (Raghuramulu et al, 2003)[7] and haemoglobin by Sahli's method (Harsh Mohan, 2007).[6] In clinical survey age of onset of diabetes, family history, symptoms reported and risk factors associated with diabetes were collected.

The dietary intake survey was carried out to assess the actual food intake by 24hr recall method (Robinson, 1982).[8] Menu pattern from early morning to bed time was collected. The amount of each food item consumed and the nutrient intake was calculated (Gopalan et al, 1999).[5]

III. RESULT AND DISCUSSION

The results of the study were summarised and shown in tables. Table - I revealed that 17.2% of the subjects were illiterate and 66.5% had only primary school education.

Of the total subjects 62.8% were house wife's or retired from active occupation and are dependent on their children for their livelihood because of the disease. Previously they were agriculture coolies, daily wage labourers, workers in small-scale industries and house wife's.

TABLE - I
BACKGROUND INFORMATION OF THE SUBJECTS

EDUCATION				OCCUPATION	
ILLITERATES	LITERATES			RETIRED FROM ACTIVE OCCUPATION & HOUSE WIVES	ACTIVE OCCUPATION
	SCHOOL EDUCATION		ABOVE SCHOOL EDUCATION		
	PRE-SCHOOL	SECONDARY SCHOOL			
17.2%	66.5%	16.3%	NIL	62.8%	3.72%

Table – II reveals the anthropometry of the subjects. Of the total subjects 42.5% were overweight and 12.3% were obese. Obesity or overweight might be a predisposing factor for NIDDM. 54.8% had normal BMI. Waist hip ratio is a useful tool to measure the risk of chronic diseases. Ideal waist hip ratio for women is 0.8 (Griver and Henry, 1994).[3] Of the total subjects 58.2% had waist hip ratio above the accepted value since most of the subjects were obese and overweight.

TABLE – II

ANTHROPOMETRY OF THE SUBJECTS

BMI			W/H RATIO	
NORMAL	OVERWEIGHT	OBESE	NORMAL	ABOVE NORMAL
54.8%	42.5%	12.3%	41.8%	58.2%

The mean Fasting Blood glucose levels and hemoglobin of the subjects is presented in table III as per WHO standards. Largest group 72.2% had Fasting Blood glucose levels above 120 mg/dl. This indicates that diabetes was poorly controlled.

TABLE – III

FASTING BLOOD GLUCOSE AND HEMOGLOBIN OF THE SUBJECTS

FASTING BLOOD GLUCOSE mg/dl				BLOOD HEMOGLOBIN g/dl			
< 79	79 – 99	100 – 119	>120	>12 NORMAL	10 – 12 MILD	7 - 10 MODERATE	< 7 SEVERE
Nil	4.4%	23.4%	72.2%	39.4%	60.6%	1%	Nil

23.4% had fasting blood glucose level between 100 – 119mg/dl and 4.4% had fasting blood glucose level between 79 – 99mg/dl. 39.4% of the subjects had normal hemoglobin levels and 60.6% of the subjects are mildly anemic.

Under clinical history the age of onset of diabetes, symptoms noticed, family history and presence of associated diseases of diabetes was presented in Table – lV. The onset of diabetes was more between the age group of 50 – 60 years (63.5%). The various symptoms reported were polydypsia (54.6%), polyurea (83.4%), polyphagia (44.6%), weight loss (10%) and weakness (73.5%). Family history of diabetes was found to be high. A family history generally exists in NIDDM subjects. Many studies have shown that heredity is one of the major predisposing factor for the onset of diabetes (Gopalan, 1995).[4] Of the subjects complications of diabetes like heart problems (2.4%), kidney problems (0.5%), foot problems (23.3%) like tingling sensation and numbers of foot, skin problems (14%) like itching of skin was seen in uncontrolled subjects. Dental problems (44.4%) and eye problems (63.2%).

TABLE – lV
SYMPTOMS NOTICED DURING ONSET OF THE DISEASE

AGE OF ONSET		SYMPTOMS REPORTED		SUBJECTS WITH ASSOCIATED RISK FACTORS	
Years	%	Symptom	%	Associated risk factor	%
30 – 40	–	Polydipsia	54.6	Heart Problem	2.4
40 – 50	30.0	Polyphagia	44.6	Kidney Problem	0.5
50 – 60	63.5	Polyurea	83.4	Foot Problem	23.3
> 60	5.5	Loss of Weight	10	Skin Problem	14
		Weakness	73.5	Eye Problem	63.2
				Dental problem	44.4

The mean food intake from various food groups is presented in Table – V. In general the intake of various food items was very low. They have the habit of eating breakfast, lunch and dinner only. Majority of them do not consume snacks and mid morning items. The consumption of pulses and vegetables was found to be satisfactory. Almost all the subjects stopped the consumption of roots and tubers as well as pure sugar and sugar products. The nutrient intake that was computed using food composition tables is given in Table Vl. The intake of protein, vitamin C, carotene, calcium and iron was very low compared to RDA (ICMR). The carbohydrate and fat intake was higher than the RDA.

TABLE - V
MEAN FOOD INTAKE FROM VARIOUS FOOD GROUPS

Ingredients	g/day	Ingredients	g/day
Cereals		**Milk and Milk Products**	
Rice	125	Milk	25
Ragi	90	Buttermilk	180
Wheat flour	50	**Meat/Fish/Eggs**	
Rice parboiled	90	Egg	10
Semolina	45	Fish	10
		Poultry	15
Pulses		**Sugar and Jaggery**	
Black gram	60		
Red gram	75	Nil	-
		Condiments and Spices	
Green Leafy vegetables			
Amaranth Leaves	15	Ginger	1.2
Roots And Tubers		Green chillies	1.4
Nil	-	Garlic	0.4
Other Vegetables		Red chillies	1.0
Ridge guard	100	Curry Leaves	0.5
Ladies finger	78	Pepper	0.2
Plantain	94	**Fats And Oils**	
Brinjal	105		
Fruits		Refined Vegetable Oil	5.2
Orange	75		
		Total	**1252gm**

TABLE - VI
AVERAGE NUTRIENT CONSUMPTION OF SUBJECTS

NUTRIENTS	AMOUNTS
Carbohydrates (gm)	**270**
Protein (gm)	**28**
Fats (gm)	**25**
Energy (kcal)	**1417**
Calcium (mg)	**359**
Iron (mg)	**11.5**

Vitamin-C (mg)	**14.8**
Carotene (µg)	**385**

IV. CONCLUSIONS

The nutritional needs of the human beings vary according to their age and physiological conditions. Old people often have limited regenerative abilities and are more prone to diseases. Since the proportion of elderly men and women are increasing, there is a need for special emphasis on old age nutrition and health.

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