

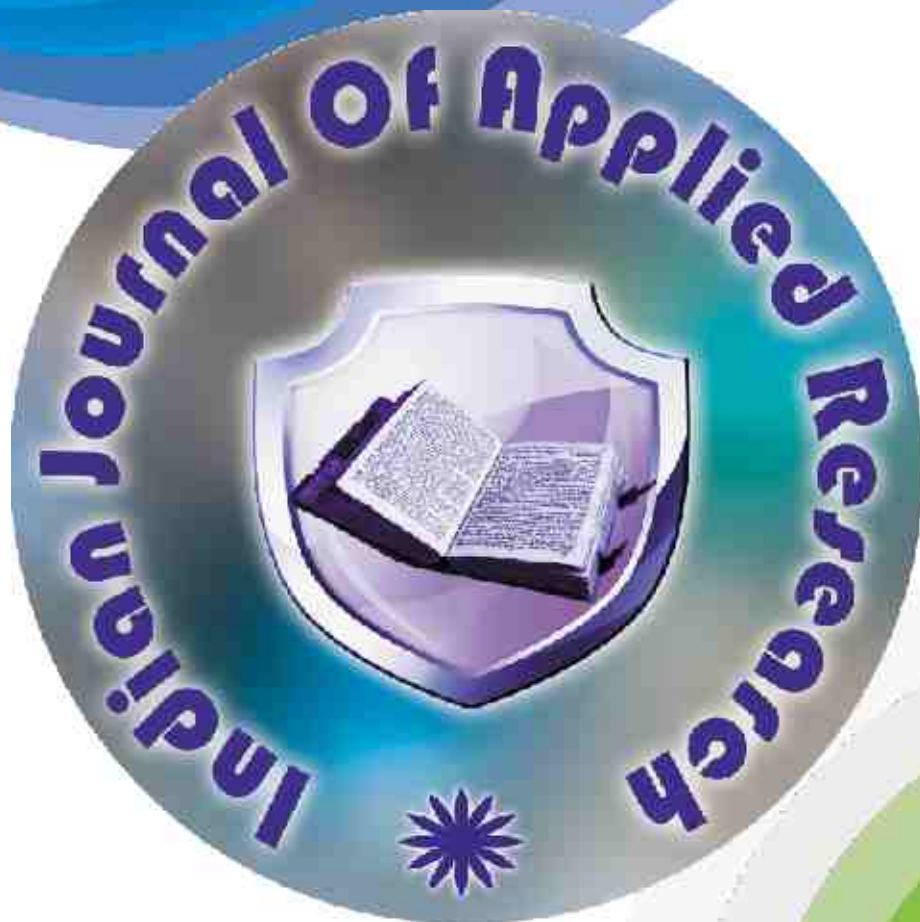
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## Impact Of Holistic Nutrition Education Package On Diabetes Mellitus Control In Middle Aged Women

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### ABSTRACT

*Diabetes mellitus (DM) adversely affects health in middle aged men. DM is aggravated by nutritional imbalance, lack of exercise and absence of focused approach. The objectives of the present study were, to prepare a holistic nutrition education package (HNEP) for DM and to assess its impact in DM control in middle aged women (MAW). A HNEP for DM was designed. A study sample of 60 MAW with noninsulin dependent diabetes (NIDDM) and having Glycosylated hemoglobin (HbA1c/GHb) more than 7 was selected. Data about dietary practices, exercise, BMI, focused approach was collected before and after HNEP administration. Education session was repeated. HbA1c levels were reassessed at 4 months and 6 months. Assessment at the end of 6 months revealed that, food intake as per Recommended Dietary Allowances (RDA) improved from 20.00% to 96.67% and fatty food consumption decreased from 91.67% to 15.00%. Regular exercise regime adoption improved from 6.67% to 67.67% due to HNEP. BMI assessment showed significant reduction in overweight category from 53.33% to 30.00%. Blood test for GHb level revealed that 23.33% respondents achieved normal levels at the end of 4 months and 50.00% achieved normal level at the end of 6 months of HNEP application. 100% respondents agreed that the trio of diet + exercise + determination is the main determinant of diabetes control. HNEP has a positive, wide ranging and sustainable impact in DM control.*

**Keywords : Diabetes, Holistic nutrition education package, Glycosylated hemoglobin**

### Introduction

**D**iabetes Mellitus (DM) is a life style disorder increasing alarmingly in men as well as women. It adversely affects mainly health, working capacity and family budget. DM though genetically linked is precipitated & aggravated by factors like improper nutrition, lack of exercise, ignorance & misconcepts. DM is actually a nutrition related disorder to a great extent. 50 to 60 % diabetic patients do not achieve the glycemic target of HbA1C below 7 percent. (Kavita Venkatraman et al. 2009) Nutritionist as Home-Scientist need to accept DM as an emerging challenge of with the help of innovative approach of holistic nutrition education, i.e. trio of appropriate nutrition + adequate exercise + positive mental drive; open up an innovative horizon of nutritionist & diabetics involved in a team approach, to tackle the challenge of DM. Need based medical help can be supplementary. Such an approach necessitates changing text book based nutrition education in to one which is easy to understand for a diabetic, domestically applicable, targeted at stable diabetes control & combined with other factors of lifestyle improvement in diabetics. Intensive evidence based dietary advice could help people with diabetes. (Kirsten Coppell, 2010) It was, therefore, decided to undertake the present study.

### Objectives

The objectives of the study were -

1) To prepare a holistic nutrition education package for diabetes.

2) To assess its efficacy in middle aged (45-50 yrs) diabetic women.

### Methodology

Holistic nutrition education package (HNEP) in the form of small book was prepared in regional Marathi language. It combined nutrition education in DM along with emphasis on strong will necessary for a diabetic and physical exercise helpful for a diabetic. HNEP included self-explanatory diagrams, tables, quotations and answers to frequently asked questions.

From a large group of diabetic middle aged women (MAW) a study sample of 60 with noninsulin dependent diabetic (NIDDM) and having glycosylated hemoglobin (HbA1c) more than 7 was formed for the study. Diet higher in fat and lower in carbohydrate were associated with worse HbA1c levels. (Linda Delhanty, 2008) Data related to dietary practices, food intake, type of food, exercise pattern, BMI, HbA1c levels, focused approach etc was recorded 'before and after' application of HNEP.

A pilot study was conducted and then HNEP was applied on a study group. A copy of HNEP was given to each respondent. Interactive education sessions were undertaken previously. Power point presentation format using a laptop was used in follow up sessions of small groups. Length of the study was for the duration of 6 months. Reevaluation of HbA1c levels was done at 4 months of the study. The primarily assessed parameters mentioned above were reassessed at the end of six months.

**Salient Findings**

- Dietary practices:

Table 1 : Dietary Practices

Dietary pattern	Before HNEP		After HNEP	
	No.	%	No.	%
L + D	37	61.67	01	01.67
B + L + D	08	13.33	02	03.33
B + L + S + D	04	06.67	53	88.33
L + S + D	11	18.33	04	06.67

(B Breakfast; L Lunch; S Snack; D Dinner)

Table 1 shows that, adoption of breakfast + lunch + snacks + dinner pattern was 6.67% before and 88.33% after the HNEP. Lunch + dinner pattern was 61.67% before which shifted to 1.67% after HNEP showing significant positive change in healthy dietary practices.

- Type of food:

Fig.1 :Type of Food

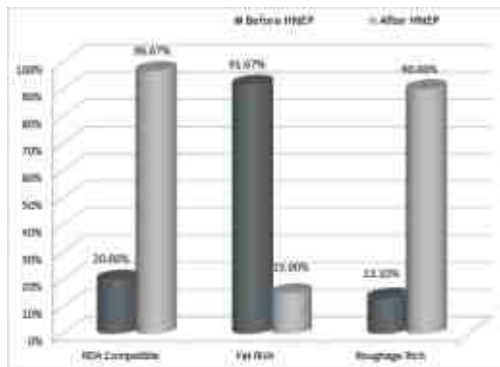


Fig. 1 indicates that, food intake as per Recommended Dietary Allowances (RDA) improved from 20.00% to 96.67% and fatty food consumption decreased from 91.67% to 15.00% whereas roughage food consumption increased from 13.33% to 90.00%.

- Body Mass Index (BMI)

Fig. 2 : Body Mass Index (BMI)

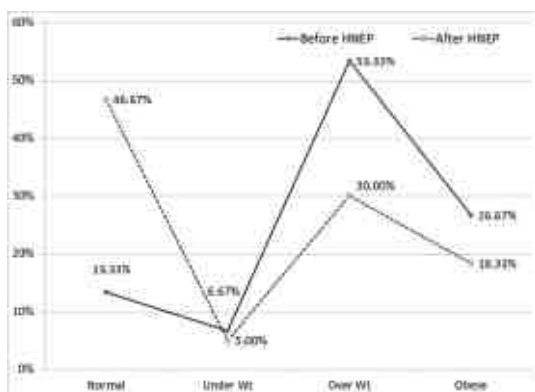


Fig.2 shows that, BMI assessment showed significant reduction in overweight category from 53.33% to 30.00% and normal weight category had positive shift from 13.33% to 46.67%.

- Glycosylated Hemoglobin -

Table 2 : Glycosylated hemoglobin HbA1c

HbA1c	Before HNEP		After HNEP			
	No.	%	04 months		06 months	
			No.	%	No.	%
> 7	60	100	46	76.67	30	50.00
< 7	00	00	14	23.33	30	50.00

Table 2 shows that, blood test for HbA1c level revealed that 23.33% respondents achieved normal levels of less than 7 at the end of 4 months and 50.00% achieved normal level at the end of 6 months of HNEP application. HbA1c level < 7 indicates stable diabetes control during previous three months.

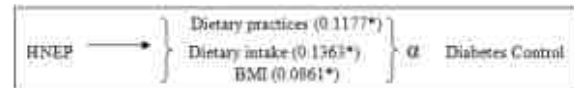
- Exercise -

86.67% diabetics understood importance of exercise and 76.67% implemented. Regular exercise regime adoption improved from 6.67% to 67.67% due to HNEP.

- Determination -

All the diabetics (100%) felt determined to achieve diabetes control by HNEP. DM was perceived as a nutrition related disorder and not a disease by 100% respondents and 100% respondents agreed that the trio of diet + exercise + determination is the main determinant of diabetes control.

- Co-Relationship Between Hnep And Diabetes Control



Statistically significant improvement was observed in various health parameters in the diabetics. HNEP had a positive, wide ranging and sustainable impact in DM control.

**Conclusions & Implications-**

Holistic nutrition adoption has capability to induce wide ranging improvement in diabetes status of a diabetic person, thereby enhancing the possibility of durable diabetes control. Society needs nutrition educational guidance from qualified nutritionist to tackle life style disorders like diabetes, hypertension, obesity, anemia etc. thereby opening up an innovative horizon for home scientists in extension education activity for the masses. People suffering from diabetes get better 'disorder-targeted education' with the help of booklets, power point presentations and interactive sessions.

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