

Clinical and Haematological Profile of Urban Working Women as Influenced by Nutritional Counselling

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ABSTRACT A sample of seventy working women aged 35-45 yrs belonging to middle income group were selected randomly and divided equally into two groups viz. Experimental (E) and Control (C). Nutrition Counselling (NC) was imparted to group E through modules, printed booklets, lectures, demonstrations, visual aids etc. by nine individual and three group contacts for a period of three months. All the subjects had lower haemopoietic indices at T_1 , but at T_2 there was significant ($P \leq 0.05$) improvement in the overall haematological profile in group E, while no improvement was observed in case of group C. It was observed that iron deficiency anaemia was highly prevalent in both the groups, but the condition improved in group E at T_2 as the subject started taking whole grain cereals, pulses, and green leafy vegetables. Various disorders like diabetes, hypertension, obesity, high serum cholesterol, arthritis, etc. were seen in majority of the subjects in both the groups but there was overall improvement in the clinical picture of the subjects in the group E at T_2 with the impact of NC. So the perusal of data clearly indicated that there is need for educating the women by changing their attitudes regarding nutrition and health through nutrition counselling.

INTRODUCTION

Women is an integral part of her family and her health is of utmost importance as it reflects health of the family and its environment, so are stresses and strains a feature of her own work environment. The problem further intensified in workingwomen, as they have to cope up with all the pressures of a professional worker and also all the strains of being a housewife. There are strains of looking after her family, cooking, cleaning etc. and above all her job. Pressure of dual work, stress and lack of enough time resulted in greater drudgery and consequently poor nutritional and health status. Today, in India workingwomen constitute 22.7% of total population of India as against 51.5% of the male workers. Globally, women are projected to account 47% of the labour force by the year 2005 (Harshala and Premakumari, 2000).

Clinical assessment is essential part of all nutrition surveys, since the ultimate objective is to assess the level of health of individual as influenced by the diet. Iron deficiency anaemia is a problem of serious public health significance, incidence being 60-70% among women (Srilaksmi, 2002) as it impacts on psychological behaviour and work performance. Nutrition counselling is an effective tool of changing the food habits of the people without affecting their sentiments. It is a process by which knowledge, attitudes and beliefs about food and health are channelised into

actual practices (Orstead et al., 1985). Very few controlled studies have been conducted to find out the impact of nutrition counselling (NC) on the health status and haematological profile of urban workingwomen. So, taking this point in view, the present study was carried out.

MATERIALS AND METHODS

A sample of seventy working women (teachers) in the age group of 35-45 yrs from four schools of Kotkapura city (Punjab) belonging to middle income group were selected and equally divided into two groups viz. Experimental (E) and Control (C) during the year 2004. The subjects of group E were imparted nutrition counselling (NC) through modules, lectures, demonstrations, visual aids etc. by nine individual and three group contacts for a period of three months. The respondents were clinically examined for various nutrient deficiency symptoms with the help of a medical officer. Various nutritional disorders like diabetes, hypertension, obesity, high serum cholesterol, and arthritis prevalent among the subjects were also recorded at T_1 (before NC) and T_2 (after NC). A series of haematological investigations of the subjects viz. Haemoglobin (Hb), (Dacie and Lewis, 1975) Packed Cell Volume (PCV), Red Blood Cell Count (RBC) were analysed and Mean Corpuscular Volume (MCV), Mean

Corpuscular Haemoglobin (MCH) and Mean Corpuscular Haemoglobin Concentration (MCHC) were calculated at T_1 & T_2 . The results were statistically analysed using student 't' test (Sukhminder et al., 1998).

RESULTS AND DISCUSSION

The demographic information of the subjects in the present study revealed that average per capita monthly income in group E and C was Rs. 2517±121.5 & Rs. 2243±109.2 respectively, while the figures in India and Punjab was Rs. 1498.17 and 2137.68 respectively at current prices (Anonymous, 2002), which indicated that the subjects of the present study had higher income. In group E, 37 per cent subjects were graduates and 63 per cent were post graduates, while in case of group C, the corresponding values were 43 and 57 per cent respectively. It is reported that literacy rate of females in India and Punjab was 54.16 and 63.55 per cent respectively (Anonymous 2004). Regarding the dietary habits, it was observed that 77 & 71% and 23 & 29% of subjects were vegetarian and non-vegetarian in group E and C respectively. It was surprising to note that more than half of the subjects were in the habit of skipping one meal a day either breakfast or lunch. Majority of the subjects were fond of eating out/buying ready made foods like *samosa*, *petties*, *pakor*s, *pavbhaji*, *noodles*, *hot dogs*, *burgers* etc. and the corresponding figures were 74 and 86 per cent in case of group E and C respectively.

Clinical Manifestations of Nutrient Deficiencies:

According to WHO (1972) classification, majority of the subjects (77 and 71%) were anaemic as their Hb level was (<12 g/dl) and it was observed that only (23 and 25%) were non-anaemic at T_1 in group E and C respectively. Table 1 depicted that commonly observed deficiency symptoms of iron deficiency were paleness of the skin which was most common among the subjects (10%) followed by paleness and smoothness of tongue (7.1 and 5.7%), paleconjunctiva (4.3 and 5.7%), flatnails (2.9 and 1.4%) koilonychia (1.4 and 0.0%) in group E and C respectively at T_1 . The situation however improved at T_2 , the corresponding figures were 5.7 & 8.6%, 4.3 & 5.7%, 1.4 & 5.7%, 1.4 & 0.0% in both the groups respectively. Main reason for iron deficiency anaemia was low dietary intake coupled with low absorption from habitual Indian diets, the absorption being around two percent. These deficiency symptoms could also be attributed to poor selection of foods and improper cooking practices i.e. sifting of flour, more use of washed pulses (as it took less time to cook), excessive and repeated frying etc. which destroyed vitamin B complex and more consumption of fast foods and readymade foods. However at T_2 , the subjects of group E started consuming unsifted flour, whole pulses, sprouted and fermented foods, GLV's, more salads in their daily dietaries. Moreover, they were advised to take nutrient supplement of iron, folic acid and vitamin B-complex as per the prescription of medical officer which too resulted in the improvement of deficiency symptoms such as lethargy,

Table 1: Clinical manifestations of nutrient deficiencies

Health problem	Group E (n=35)				Group C (n = 35)			
	T_1		T_2		T_1		T_2	
	n	%	n	%	n	%	n	%
1. Symptoms of Anaemia								
a Pale conjunctiva	3	4.3	1	1.4	4	5.7	4	5.7
b Paleness of skin	7	10	4	5.7	7	10	6	8.6
c Paleness and smoothness of tongue	5	7.1	3	4.3	4	5.7	4	5.7
d Flat nails	2	2.9	1	1.4	1	1.4	1	1.4
e Koilonychia	1	1.4	1	1.4	-	-	-	-
f Fatigue	13	18.6	6	8.6	18	25.7	17	24.3
2 Angular stomatitis	2	2.9	0	-	-	-	-	-
3 Cheilosis	2	2.9	0	-	1	1.4	1	1.4
4 Glossitis	2	2.9	0	-	1	1.4	1	1.4
5 Anorexia	2	2.9	0	-	3	4.3	4	5.7
6 Bleeding of gums	4	5.7	1	1.4	-	-	1	1.4
7 Feeling of lethargy	22	31.4	12	17.1	19	27.1	17	24.3

angular stomatitis, cheliosis, glossitis, anorexia, bleeding gums etc.

Prevalent Diseases Among the Subjects: The morbidity status of the subjects revealed that most common health problem faced by the subjects was obesity (>20% normal body weight) (Table 2). The average weight of the subjects in group E and C was 64.88 ± 1.23 and 65.03 ± 1.40 kg at T_1 , which was higher as compared to standard values of 50 kg. But at T_2 it was observed that the weight reduction was 2.08 kg in a span of 3 months in group E which could be due to increased physical activity, increased involvement in household activities, reduction in total energy intake (from fats and sugars) as they had reduced the consumption of ready-made foods, fast foods, fried foods, sweet meats and included more of fibrous foods alongwith mild exercises, morning/evening walks etc. the picture remained same in group C at T_2 .

The change in weight in terms of BMI has been depicted in Table 3. Decrease in weight

among the subjects of Group E resulted in decreased percentage of hypertension (34.29 to 25.71%), serum cholesterol (42.86 to 31.43%), arthritis (17.14 to 11.43%) low blood pressure (8.57 to 5.71%) at T_1 and T_2 respectively. But the condition of these ailments remained same in group C at T_2 . The improvement in the clinical picture of group E could also be attributed to change in their life style pattern as they had increased physical activity through regular morning or evening walks, mild exercises, yoga etc. at T_2 alongwith their improved dietary habits.

Haemopoietic Status: Table 4 depicted mean Hb, PCV, RBC count, and MCV, MCH and MCHC values of both the groups. The mean level of Hb was 10.09 ± 0.21 & 11.00 ± 0.15 g/dl and 9.81 ± 0.15 & 9.90 ± 0.14 g/dl in group E and C at T_1 & T_2 respectively and was below the standard values of 12 g/dl (WHO, 1972). However, with the impact of NC there was significant ($P < 0.01$) improvement in Hb at T_2 in group E as the

Table 2: Prevalent diseases among the subjects (multiple responses)

Diseases	Group E (n=35)				Group C (n = 35)			
	T_1		T_2		T_1		T_2	
	n	%	n	%	n	%	n	%
Diabetes	5	14.29	5	14.29	6	17.14	6	17.14
Hypertension	12	34.29	9	25.71	13	37.14	13	37.14
Low blood pressure	3	8.57	2	5.71	-	-	-	-
Obesity (>20% body wt)	56	17.14	4	11.43	7	20.00	7	20.00
High serum cholesterol (≥ 2 or μ g/dl)	15	42.86	11	31.43	16	45.71	16	45.71
Arthritis	6	17.14	4	11.43	7	20	7	20
Any other								
Back ache	12	34.30	5	14.129	16	45.71	13	37.14
Headache	10	28.57	3	8.57	15	42.85	12	34.29
Gastric ulcer	1	2.86	1	2.86	-	-	-	-
Acidity	2	5.71	-	-	-	-	-	-
Gall bladder stones	1	2.86	1	2.86	-	-	-	-
High uric acid	1	2.86	-	-	-	-	-	-

Table 3: Distribution of the subjects according to BMI classification (WHO, 1995)

BMI class (kg/m ²)	Presumptive	Group E (n=35)				Group C (n = 35)			
		T_1		T_2		T_1		T_2	
		n	%	n	%	n	%	n	%
< 16.00	CED Grade III (Severe)	-	-	-	-	-	-	-	-
16.0-16.99	CED Grade II (Moderate)	-	-	-	-	-	-	-	-
17.0-18.49	CED Grade I (Mild)	2	5.7	-	-	1	2.9	1	2.9
18.5-24.99	Normal	8	2.3	11	31.4	6	17.1	6	17.1
25.0-29.99	Obese Grade I	20	57.1	22	62.9	25	71.4	25	71.4
30.0-39.99	Obese Grade II	5	14.3	2	5.7	3	8.6	3	8.6
> 40	Obese Grade III	-	-	-	-	-	-	-	-

CED - Chronic Energy Deficiency

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Table 4: Haemopoetic status of subjects

Blood parameters	Group E (n = 35)			Group C (n = 35)			Standard value
	T_1	T_2	t-value	T_1	T_2	t-value	
Hb (g/dl)	10.09±0.21	11.00±0.15	2.95**	9.87±0.15	9.90±0.14	0.45 ^{NS}	12 ⁺⁺
PCV (%age)	31.09±0.59	32.48±0.55	1.86*	30.95±0.60	30.97±0.59	0.38 ^{NS}	32-48 ⁺
RBC (million/m ³)	3.50±0.99	3.61±0.10	2.04**	3.49±0.09	3.50±0.09	0.91 ^{NS}	4.0-5.5 ⁺
MCV (fl)	88.83±1.13	89.98±1.18	2.02*	87.68±1.25	87.71±1.25	0.95 ^{NS}	78-94 ⁺
MCHC (%)	32.16±0.25	33.53±0.17	1.94*	30.63±0.2	30.66±0.2	0.49 ^{NS}	32-38 ⁺⁺
MCH (pg)	28.57±0.41	30.17±0.42	2.25**	26.28±0.42	26.29±0.42	0.62 ^{NS}	27-32 ⁺⁺⁺

***-Significant at 1%

**-Significant at 5%

*-Significant at 10%

NS Non significant

+ - Hunter and Bomford (1967)

++ - WHO (1972)

+++ - Passmore and Eastwood (1987)

subjects were taught to increase the intake of GLV's, unsifted flour, whole pulses, fruits rich in vitamin C, fermented foods, sprouted pulses etc. Moreover, the anaemic subjects were advised to take iron and folic acid supplements as per the prescription of a medical officer. The mean PCV values were slightly lower than the standard value of 32-48 per cent. Similarly, the RBC count in both the groups was also below the standard value of 4.0-5.5 million/m³ (Hunter and Bomford, 1967), which indicated prevalence of microcytic anaemia among the subjects. The mean MCV values of both the groups were in the normal range of standard values. The reported values of MCHC of the present study were close to lower limit of normal range (32-38%) as suggested by WHO (1972). Low MCHC values of the subjects (below 30) were an indication of microcytic hypochromic anaemia. (RBC's contain less Hb than normal). There was significant (P£0.05) increase in MCH values of group E at T_2 , which might be due to the impact of NC as they were taught during the NC sessions to increase the intake of GLV's, sprouted pulses, fruits rich in vitamin C etc.

CONCLUSION

It was seen that inspite of good purchasing power, the diet of the working women was not balanced due to ignorance, strenuous pressure of work or activity both at home and at work place, coupled with lack of time. Hence, the present study emphasized the need for educating the women by making them aware of their nutrient needs, use of cheap, locally available

nutritious foods in their daily diets for improving their nutritional and health status. The perusal of the data clearly indicated that women learnt to a considerable extent and had shown significant improvement in their nutritional and health status after imparting NC, but the interaction with them needs to be for a much longer time i.e. minimum six months, to bring about all desired changes as old myths of wrong dietary habits were engraved in their minds.

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