

**A Comparative Study Of The Impact Of Nutrition Education On
The Health And Lipid Profile Of Women (Professionals And
Non-Professionals)**

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Abstract

Women are doing multiple roles in the society which are bearing household and family responsibilities and working outside the home thereby causing poor dietary and nutritional status. Nutritional education with emphasis on the intake of a balanced diet can result in the enhancement of their nutritional status. Hence the present study “**A Comparative Study Of The Impact Of Nutrition Education On The Health And Lipid Profile Of Women (Professionals And Non-Professionals)**” deals with the improvement in the blood and lipid profile of women after counseling for six months. Three hundred women from different age groups, professions, economic and marital status and hailing from various districts of Haryana were enrolled for the study. Nutrition education was imparted individually followed by group contacts for a period of six months through modules, lectures, demonstrations, leaflets and visual aids. The subjects in the groups - professionals and non-Professionals showed the positive impact of counseling as a reduction in the clinical signs of malnutrition especially of vitamin B-complex and vitamin C were observed. Following counseling for six months, an increase in the Hb level of the subjects from the groups-professionals, non-professionals and housewives was observed. In the corresponding groups, the haemoglobin level increased to-12.4 to 12.9 g/dl and all the subjects were in the category of non-anaemic subjects. It was deduced that the nearly normal lipid profile of the subjects from the groups-professionals, non-professionals and housewives improved non-significantly after counseling for six months. It was observed that increase in physical activity levels, improved dietary intake along with positive life style changes resulted in bringing about the desirable changes in the lipid parameters of women.

Key words- Counseling, Haemoglobin, lipid, dietary intake, anaemia

Women's health is of utmost importance as it reflects the health of the family but in some cases, dual stress of manual labour and conflicting demands of work in and outside the home have been shown to have adverse effects on her nutritional status

(Jain and Singh,2003). However, if they want to be accepted as efficient homemakers as well as employees, they have to consume a nutritionally balanced diet. This will not only improve their health and nutritional status but will also reduce their weight. Since health and nutritional status of an individual depends on the food she eats, the components of the diet must be chosen judiciously, to provide all the nutrients needed in adequate amounts and proportions(Jha, 2002).

The nutritional status reflects the health of a person and is influenced not only by the diet consumed but also on the ability of the body to utilize these foods (Mehta, 1990).The counseling is used as an intervention for the promotion of health by enhancing the knowledge of the respondents about the consumption of a balanced diet. The first requirement of nutritional counseling or advice is that it should enable the woman to assess her own diet and its composition and compare it with the advice. However, the counselor should emphasize upon bringing a change in the attitudes, knowledge and behaviour of an individual (Buttriss, 1997). Eating well, drinking lots of water, consuming fresh fruits and vegetables boosts energy and water helps the body to function properly. The improved dietary habits can lead to changes in women's general health and a disease free life. It can minimize infections and chronic diseases and can reduce birth defects and health care costs. The adults with healthy life style also make good diet choices and greater knowledge and more positive attitudes, beliefs about nutrition influence these (Gates *et. al*, 1998; Ridley, 2000).

The present study was conducted on the women respondents belonging to Haryana state. The state was stratified into four zones* and five districts were selected for carrying out the research. The selected districts were Yamunanagar, Panipat, Bhiwani, Faridabad and Gurgaon. Purposive selection of the subjects was done. Three hundred women were selected and further divided into three groups according to their occupation. In the present study the subjects belonged to the group-professionals, non-professionals and housewives (Table1). The present study aims to provide a practical and positive approach to the women to improve their health and nutritional status. The objectives of the present study are:-

- To assess the clinical signs and lipid profile in women (professional and non-professional).
- To impart counseling and to evaluate its impact on the Health and lipid profile of women (professional and non-professional).

COLLECTION OF DATA:

The study on women –professionals, non-professionals and housewives was done in two phases. **In the first phase**, the field studies were done to collect the general information about the women respondents. The first phase of study was done on

300 women. **In the second phase**, the assessment of nutritional status of these women was done by doing clinical and biochemical assessment. For collecting the data, a questionnaire was drafted with definite, concrete and well-defined questions. Pre-testing of questionnaire was done on 30 subjects to find out the drawbacks and modify the questionnaire to ensure a clear understanding of the questions.

A meeting was arranged with the selected respondents to confirm their participation in the study and women selected for this study were assured of absolute anonymity. In the interview method, every respondent was interviewed individually and doubts if any were cleared by explaining each and every question. The respondents were requested to fill up the questionnaires within a week. The above information was obtained by using the questionnaire cum interview method both before and after counseling for six months.

ASSESSMENT OF NUTRITIONAL STATUS BEFORE AND AFTER COUNSELING

The nutritional status of the subjects was assessed from the clinical and biochemical assessment before and after counseling for six months.

CLINICAL ASSESSMENT:

Among professionals - the clinical signs observed before counseling were paleness of skin and scaly skin which were noticed in 10 per cent of the subjects. However, after counseling - the percentage of the subjects for the paleness of skin reduced to 6 per cent and for scaly skin- the number of subjects reduced to 8 per cent. Before counseling the other clinical signs exhibited by the subjects were - Paleness and smoothness of tongue by 7 per cent; Bleeding of gums by 6 per cent; Pale conjunctiva by 4 per cent; along with flat nails, angular stomatitis, cheilosis, glossitis, anorexia and appearance of dark circles under the eyes noticed in 3 per cent of the subjects in each case (Table1). However, after counseling - the percentage of subjects reduced to 4 per cent for paleness and smoothness of tongue; along with 1 per cent each for pale conjunctiva, flat nails and bleeding of gums. The symptoms - angular stomatitis, cheilosis, glossitis, anorexia and dark circles under the eyes were not observed in the subjects after counseling. Koilonychia was not visible in the subjects both before and after counseling for six months.

In the category of non-professionals - 10 per cent of the subjects showed the clinical signs - paleness of skin along with scaly skin which following counseling reduced to 9 per cent in each ailment. Pale conjunctiva and paleness of tongue was present in 6 per cent of the subjects before and after counseling however the

number of subjects - having flat nails, cheilosis and glossitis reduced from 3 per cent to 1 per cent in each ailment along with 4 per cent showing signs of anorexia before and after counseling. In the category of Housewives - scaly skin was noticed in 10 per cent of the subjects which reduced to 9 per cent after counseling. However no effect of counseling was evident in the number of subjects showing the clinical signs - pale conjunctiva, paleness of skin, paleness and smoothness of tongue and anorexia. The corresponding percentage of subjects showing the above signs were 5, 6, 5 and 4 per cent for each ailment which did not reduce after counseling.

The subjects in the groups - professionals and non-Professionals showed the positive impact of counseling as a reduction in the clinical signs of malnutrition especially of vitamin B-complex and vitamin C were observed. Close to the present findings, Johansson and Anderson, (1998) also noticed an improvement in the intake of nutrients and a reduction in the clinical signs of malnutrition after counseling.

BIOCHEMICAL ASSESSMENT:

a) HAEMOGLOBIN LEVELS OF THE SUBJECTS AND THE SEVERITY OF ANAEMIA:-

Before counseling among professionals, non-professionals and housewives-50 per cent of the subjects in each case had the mean haemoglobin level in the range of 11.2 to 11.8 g/dl (Table 2) and were in the category of subjects suffering from marginal anaemia according to the reference level of Hb -11 to 11.9 g/dl, as suggested by NIN, (1986). However, the remaining 50 per cent of the subjects in the corresponding groups had the mean haemoglobin level between 12.4 to 12.9 g/dl and were in the category of non-anaemic subjects according to the reference level of ≥ 12 g/dl as suggested by NIN (1986). Following counseling for six months, an increase in the Hb level of the subjects from the groups-professionals, non-professionals and housewives was observed. In the corresponding groups, the haemoglobin level increased to 12.4 to 12.9 g/dl and all the subjects were in the category of non-anaemic subjects (NIN, 1986). Arora, (1997) and Kaur, (1998) also noticed an improvement in the mean Hb levels of their subjects after counseling.

LIPID PROFILE:

TOTAL CHOLESTEROL: Before Counseling, the mean serum total cholesterol level in professionals, non-professionals and housewives was 189.25 ± 18.3 , 188.25 ± 17.3 and 189.02 ± 18.3 mg / dl respectively. However, as revealed in the Table 4, all the subjects from different occupations and sub-groups of the corresponding

groups had mean cholesterol level within the normal range of $< 200\text{mg / dl}$ (Raghuram *et al* 2000). In comparison with the present findings, Sharma, (1998) and Kaur *et. al*, (2004) had observed lower values i.e. $187.5 \pm 16.14\text{ mg / dl}$ and $187 \pm 8.09\text{ mg/dl}$ respectively, while Ridley,(2000) had found much higher cholesterol levels (240mg / dl) among women of nearly normal weight. However, after counseling for 6 months, a non-significant reduction in the cholesterol level of the subjects was observed and the respective decreased values of blood cholesterol for professionals, non-professionals and housewives was 187.58 ± 25.10 , 187.60 ± 25.01 and $187.62 \pm 25.20\text{ mg/dl}$. In blood cholesterol level, the variation among the different groups was non-significant before and after counseling (Table 3)

HIGH DENSITY LIPOPROTEIN CHOLESTEROL (HDL-C) : In comparison to the desirable level of $> 50\text{ mg/dl}$ (Ghafoorunissa and Krishnaswami, 1994), the mean HDL-Cholesterol level before counseling among groups- professionals, non-professionals and housewives was 50.46 ± 10.99 , 50.43 ± 10.77 and 50.42 ± 10.96 respectively. The findings of the present study are in concurrence with the studies of Kaur *et. al*, (2004) who also reported a higher level of HDL-Cholesterol ($47.2 \pm 1.56\text{ mg/dl}$) in women respondents with normal weight.

After counseling, a significant increase in the HDL-C level was observed in subjects from the group of professionals where the HDL-C level increased to 65.90 ± 6.1 . However, in the corresponding categories of non-professional and housewives the HDL-C level apparently increased to 50.52 ± 6.3 and $50.46 \pm 6.4\text{ mg. /dl}$ respectively. The findings of the present study are in accordance to the findings of Ghafoorunissa and Krishnaswami, (1994) who proposed that it is desirable to have higher levels of HDL because they carry cholesterol from blood and tissues to liver to be processed for excretion. Statistically, the variation among the groups with regard to their HDL-C level was non-significant before and after counseling.

LOW DENSITY LIPOPROTEIN CHOLESTEROL (LDL-C):

As observed in Table 3, the mean LDL-Cholesterol of professional, non-professional and housewives was 102.02 ± 12.40 , 102.04 ± 11.48 and $102.04 \pm 11.48\text{ mg/dl}$ which was much lower than the upper limit of 120mg / dl . (Raghuram *et al* 2000). After counseling, the respective values decreased to 99.34 ± 20.99 , 99.35 ± 20.89 and $99.36 \pm 20.86\text{ mg/dl}$. However, the difference between the pre and post counseling values of LDL-Cholesterol was statistically non-significant in all the groups. The findings of the present study reveal that counseling helped in the slight reduction in the LDL-C level of the subjects thereby improving their

health. The present findings are very close to the observations made by Krishnaswami and Ghafoorunissa (1999).

VERY LOW DENSITY LIPOPROTEIN CHOLESTEROL (VLDL-C):

Due to nearly normal weight, the VLDL-C level of the subjects from the categories of professional, non-professional and housewives was considerably lower than the desirable limit of $< 30\text{mg / dl}$ (Raghuram *et. al.*, 2000). The mean VLDL-C value for the corresponding subjects was 23.72 ± 10.67 , 23.73 ± 10.69 and 23.74 ± 11.67 mg/dl. However, after counseling, the respective values decreased to 23.70 ± 10.55 , 23.70 ± 10.58 and 23.71 ± 11.64 mg/dl but the decrease was non-significant in all the groups. Further, statistical analysis of the VLDL-C values did not point out any significant variation among the groups either in the beginning or at the end of the study. The findings are also very close to the observations made by Krishnaswami and Ghafoorunissa, (1999).

TRIGLYCERIDES: Before counseling, the mean total triglyceride (TG) level in professionals, non-professionals and housewives was 138.64 ± 38.54 , 138.65 ± 37.64 and 138.60 ± 38.62 mg/dl which was much lower than the reference standard of 150 mg/dl for a normal healthy adult (Raghuram *et. al.*,2000). After counseling, the respective values reduced to 138.62 ± 38.34 , 138.65 ± 37.30 and 138.65 ± 38.58 mg/dl. Further, statistics applied to the data disclosed that in the total triglyceride values, the variation among the groups was non-significant, both before and after counseling. The findings of the current study are in accordance to the observations made by Sharma, (1998), who reported a lower triglyceride level ($139.25 \pm 25.55\text{ mg/dl}$) in women with normal weight.

It was deduced from the above results obtained before and after counseling that the nearly normal lipid profile of the subjects from the groups-professionals, non-professionals and housewives improved non-significantly after counseling for six months (Table 3).In the current study, all the subjects had total cholesterol, HDL-C, LDL-C, VDL-C levels and TG level within the normal range according to the reference standard of Raghuram *et.al.*, (2000). However, the best lipid profile was observed in professionals due to a significant increase in HDL-C level following counseling. The findings of the present study are close to the observations made by Krishnaswami and Ghafoorunissa, (1999); Grover and Jyoti, (2006) and very close to the findings of Ranjan *et. al.*, (2006) and Lindstrom *et. al.*, (2005) who observed that increase in physical activity levels, improving dietary intake along with positive life style changes resulted in bringing about the desirable changes in the lipid parameters of women.

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Table 1: Distribution of different categories of respondents on the basis of clinical signs before and after counseling.

		PROFESSIONAL(N=150)				NON-PROFESSIONALS(N=75)				HOUSEWIVES (N=75)			
		BC		AC		BC		AC		BC		AC	
		N*	%	N*	%	N*	%	N*	%	N*	%	N*	%
1.	Pale Conjunctiva	6	4	2	1	5	6	18	6	4	5	4	5
2.	Paleness of skin	15	10	9	6	8	10	27	9	5	6	5	6
3.	Paleness and smoothness of tongue	10	7	6	4	5	6	18	6	4	5	4	5
4.	Flat Nails	4	3	2	1	2	3	3	1	--	--	--	--
5.	Koilynychia	0	--	--	--	--	--	0	--	--	--	--	--
6.	Scaly skin	15	10	12	8	8	10	7	9	8	10	7	9
7.	Angular Stomatitis	4	3	0	--	0	--	0	--	--	--	--	--
8.	Cheilosis	4	3	0	--	2	3	3	1	--	1	--	1
9.	Glossitis	4	3	0	--	2	3	3	1	--	1	--	1
10.	Anorexia	4	3	0	--	3	4	12	4	3	4	4	4
11.	Bleeding of gums	9	6	2	1	--	--	0	--	--	1	--	--

12.	Dark circles under the eyes.	4	3	0	--	--	--	0	--	--	1	--	--
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*Multiple response

Table 2: Distribution of the different categories of respondents on the basis of their haemoglobin level and severity of anaemia before and after counseling

Haemoglobin Level	Professionals (n=10)		Non Professionals (n=10)		House wives (n=10)	
	Before Counseling	After Counseling	Before Counseling	After Counseling	Before Counseling	After Counseling
Severe anaemic (≤ 7)	--	--	--	--	--	--
Moderate anaemic (8.0 - 9.9)	--	--	--	--	--	--
Mild anaemic (10 - 10.9)	--	--	--	--	--	--
Marginally anaemic (11 - 11.9)	5(50)	--	5(50)	--	5(50)	--
Non – anaemic (≥ 12)	5(50)	10(100)	5(50)	10(100)	5(50)	10(100)

*Classification according to NIN, (1986)

,**Figures in parentheses indicates percentage

Table 3: Distribution of the different categories of respondents on the basis of their lipid profile before and after counseling

		Professional (n=10)		Non Professional(n=10)		House wives(n=10)	
		Before Counselling	After Counselling	Before Counseling	After Counselling	Before Counselling	After Counselling
Total Cholesterol (mg/dl)	< 200*	189.25 ± 18.3	187.58 ± 25.10	188.25 ± 17.3	187.60 ± 25.01	187.02 ± 18.3	187.62 ± 25.20
HDL Cholesterol** (mg/dl)	> 50*	50.46 ± 10.99	65.90 ± 6.1	50.43 ± 10.77	59.52 ± 6.3	50.42 ± 10.96	50.46 ± 6.4
LDL Cholesterol (mg/dl)	120*	102.02 ± 12.40	99.34 ± 20.99	102.04 ± 11.48	99.35 ± 20.89	102.04 ± 11.48	99.36 ± 20.86
VLDL Cholesterol (mg / dl)	30*	23.72 ± 10.67	23.70 ± 10.55	23.73 ± 10.69	23.70 ± 10.58	23.74 ± 11.67	23.71 ± 11.64
Total triglyceride (mg/dl)	< 150*	138.64 ± 38.54	138.62 ± 38.34	138.65 ± 37.64	138.63 ± 37.30	138.60 ± 38.62	138.55 ± 38.58
t-test		NS	2.221**	NS	NS	NS	NS

* Raghuram *et. al.*, (2000)

** Significant at (p≤0.01)

