

Impact of Supplementation of Selected Foods on Stress Management among Working Women

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Abstract:- All of us face different challenges and obstacles during life and sometimes the pressure is hard to handle. When we feel demands placed on us, we experience stress. Stress is a psychological and physiological response to the events that upset our personal balance in some way or upset other. The study was carried on Arni Taluk of Thiruvannamalai District of Tamil Nadu, where a number of silk fibre mills are located. The main objective of this study was assessed the stress level through the Occupation stress index for 250 working women. From these scale the investigator was selected 40 women from high stress group. Some of the foods that can help in reducing stress and anxiety are Almond, Ashwagandha, Banana, Broccoli, Cottage cheese, fortified breakfast cereals, Ginseng, green tea, lime juice, milk, blue berries, oranges, oats, whole-grain rice and spinach. Based on the investigator was supplemented the experimental group (E1=10, E2=10, E3=10) such as Lime juice, Milk and Banana respectively. The impact of supplementation was evaluated by studying the changes in their stress level by the occupational stress schedule and their performance. Lime juice and Banana was highly significant at one per cent level. The effectiveness of the nutrition education imparted to improve nutritional knowledge of the selected women was evaluated using the same questionnaire at the end of the study. The impact of nutrition education was evaluated by comparing the mean pre test and post test scores of the selected women.

Keywords:- Working Women, Stress, Spinning Mill, Milk, Lime Juice & Banana.

I. INTRODUCTION

The status of women in India has been subject to many great changes over the past few millennia. From equal status with men in ancient times through the low points of the medieval period, to the promotion of equal rights by many reformers, the history of women in India has been eventful. In modern India, women have adorned high offices in India including that of the President, Prime minister, Speaker of the Lok Sabha etc. The incumbent President of India is a woman. Women in India now participate in all activities such as education, politics, media, art and culture, service sectors, science and technology, etc.

Women make up almost half of the adult population in the world. Men are incomplete without women. Women are the mothers of all. Their work is imminent individually, in family, in society, in nation and in the economy on the

whole. But they are evaluated not at par with men at many respects along with their participation in work and employment (Murty, 2001). Interrelated with economic power is employment which is a source of income in the family. Indian women contribute substantially to the economic activities of the country.

There had been increased female work participation as revealed by census data. In urban India, work participation rates of all workers had gone up from 8.31per cent in 1981 to 9.91per cent in 1991, as compared with the declined, male work participation from 49.06per cent to 48.95per cent during the same period. In rural areas, the relative share of the female workers was higher among landless agricultural labourers. Due to the existing social conditions, taboos and customs, low level of women's literacy, physical weakness, early marriage and child bearing, timidity, and male domination, there has been discrimination against women in the society. This is despite their higher share of job involvement (Reddy, 2002).

Women may suffer from mental and physical harassment at workplaces, apart from the common job stress. Sexual harassment in workplace has been a major source of worry for women. Since long, women may suffer from tremendous stress such as hostile work environment and harassment which is defined in legal terms as 'offensive or intimidating behavior in the work place'. Stress at work is a relatively new phenomenon of modern lifestyles.

The nature of work has gone through drastic changes over the last century and it is still changing at whirlwind speed. They have touched almost all professions, starting from an artist to a surgeon or a commercial pilot to a sales executive. With change comes stress, inevitably professional stress or job stress poses a threat to physical health. Work related stress in the life of organized workers, consequently affects the health of organizations. Job stress is a chronic disease caused by conditions in the work place that negatively affect an individual's performance and / or overall well-being of his body and mind. One or more of a host of physical and mental illnesses manifests job stress. In some cases job stress can be disabling. In chronic cases a psychiatric consultation is usually required to validate the reason and degree of work related stress.

These nutrients include various kinds of vitamins, minerals, amino acids and fatty acids. Since stress uses up all the nutrients that we have in our body at a faster rate, we should ensure that we have adequate amounts of all the nutrients especially magnesium, potassium and calcium.

Studies have shown that body depletes its stores of nutrients during stress, mainly proteins, B vitamins as well as vitamin C and A. Almond, Banana, Cottage cheese, lime juice, milk, orange, whole grains and green tea play an effective role in the reduction of stress.

II. MATERIALS AND METHODS

The area selected for the study by the investigator was in and around Arni Taluk of Thiruvannamalai District of Tamil Nadu, where a number of silk fibre mills are located. The investigator selected six mills - Lakshmi Sarasvathi mill, Rajendran mill, Babu mill, Rajalakshmi mill, Parameswari mill and Murugan mill for the general study. Since she hails from that area, she could establish good rapport with the womenfolk working there. Among the various mills Murugan Silk Fibre mill at Arni, was selected for supplementation study.

A Schedule was developed to collect details regarding the socio economic background, dietary details, health and hygiene, life style pattern and food frequency pattern. The schedule also included details on stress and awareness about stress relieving foods. The schedule was pretested on ten adult women and then used for the survey.

For the purpose of assessing the levels of stress experienced by the adult women a schedule developed by Dr. A.K. Sri Vastava and Dr. A.P. Singh (1981), Department of Psychology, Banaras Hindu University in Varanasi was used.

This schedule consists of some statements that employees say or feel about various components and conditions of their job. They are required to encircle anyone of the following five responses which indicates the extent of agree or disagree with each statement to describe the nature and conditions of their job and also their own experiences and feelings about their job. This schedule was administered to all the 250 adult women in the local language, Tamil and they were asked to tell about their responses which were entered in individual schedules for further processing.

III. NUTRITIONAL STATUS

➤ *Body Mass Index:*

BMI values of the women were calculated using the formula in the present study and compared with standard values. Accordingly the women were categorized into Normal, Underweight, Overweight and Obese. This helps to assess the nutritional status of the selected women.

➤ *Clinical Examination:*

Using Sri Lakshmi's Table of Clinical examination helps in identifying nutritional deficiencies and reveals the anatomical changes due to malnutrition that can be diagnosed by naked eye.

Clinical assessment was done for all the 250 women by the investigator using the standardized schedule and recorded.

➤ *Biochemical assessment:*

Accordingly 0.02ml of blood was collected from the selected 40 women for supplementation study by finger prick method and they were estimated for haemoglobin by using cyanmethaemoglobin method (Plate VI). The biochemical test was conducted by the laboratory technicians and the values obtained were recorded.

➤ *Food Intake:*

A 24 hour food recall was carried out for all the selected 40 adult women to assess their food and nutrient intake using a schedule. The foods consumed by the individuals were quantified using standardised cups and nutrient intake was calculated using the nutritive value of Indian foods by ICMR and compared with Recommended Food and Dietary allowances ICMR, (2000).

➤ *Blood Pressure:*

Blood pressure was measured following the standard procedures at the subject's upper arm. It was measured on the inside of an elbow at the brachial artery, in terms of the systolic pressure and diastolic pressure for the selected 40 adult women.

➤ *Conduct of Supplementation study:*

The selected 40 women were divided into four groups, each group consisting of ten women from high stress group. Totally ten members each were grouped together according to their likes towards foods namely, Lime juice, Milk and Banana. Ten women from high stress group served as control.

Each group of the three groups of adult women were supplemented with 200 ml lime juice, 200ml milk (1 tumbler) and one banana respectively during the midmorning break. They were oriented about the amount and timings of the supplements to be consumed. They were periodically monitored and confirmed about their consumption daily. The supplementation was carried out for a period of three months and the effect of supplementation was evaluated.

➤ *Conduct of nutrition education:*

The nutritional knowledge and information on stress and its management was elicited from the women using a specially formulated questionnaire. The questionnaire consisted of 30 multiple choice questions on stress and health related problems.

Scores were assigned to the options - one mark for appropriate answer and zero for wrong answer which helped in easy evaluation of the knowledge status and after imparting nutrition education through selected packages.

Nutrition education was conducted for a period of five days each month for each target group except control group in the mill premises. The education programme consisted of lecture method, to impart nutrition education to the various groups.

IV. RESULTS AND DISCUSSION

➤ *Background Information*

The findings of the study indicated that a majority of 50 per cent women were suffering from high stress, followed by 42 per cent moderate stress and 8 per cent with low stress.

A number of research findings indicate that working women are exposed to stress at a higher level than men. In the present study also a higher percentage of women were undergoing high stress needing proper intervention strategies.

➤ *Body Mass Index (BMI)*

Parameters	BMI class*	Number	Per cent
CED** Grade III	<16.0	0	0
CED Grade II	16.0-17.0	3	7.5
CED Grade I	17-18.5	1	2.5
Low Weight	18.5-20.0	1	2.5
Normal	20-25.0	10	25
Obese Grade I	25.0-30.0	13	32.5
Obese Grade II	>30.0	12	30
Total		40	100

Table 1:- Body Mass Index Of The Selected Women
 *Luzzi, et.al, (1992) **Chronic Energy Deficiency

Only 25 per cent of the women had BMI values within normal range but 2.5, 2.5 and 7.5 per cent of the women came under the category of low weight, Chronic Energy Deficiency Grade I & II respectively. A higher percentage of 30 and 32.5 per cent of women came under the category of Obese Grade I & II respectively. None of the selected women were in grade III Chronic Energy Deficiency.

➤ *Blood pressure values*

Among the selected 40 women, 15 per cent had normal blood pressure, 67.5 per cent suffered from low systolic or diastolic pressure and 17.5 per cent had high blood pressure for which many of them are not taking tablets. The systolic and diastolic changes in the blood pressure may be due to their stressful condition.

➤ *Blood Haemoglobin levels*

Haemoglobin Level	*Category of Anaemia	Number	Per cent
<7g/dl	Severe	0	0
7-9g/dl	Moderate	11	27.5
9-11g/dl	Mild	13	32.5
>11g/dl	Normal	16	40
Total		40	100

Table 2:- Haemoglobin Levels And The Category Of Anaemia Of The Selected Women (N=40)
 ICMR standard >11g/dl
 Mean haemoglobin level 10.8±1.45g/dl
 *Vinodhini (1993)

Only 40 per cent of the women studied, had normal haemoglobin levels, whereas 27.5 per cent of the women had moderate anaemia and 32.5 per cent of the women had mild anaemia. The mean haemoglobin level of the selected women was found to be 10.8g/dl which was less than the

ICMR cut-off value. None of the subjects selected were found to suffer from severe anaemia. Poor choices of foods and skipping meals could be the reasons for the higher prevalence of moderate and mild anaemia among the selected women.

➤ *Clinical examination*

S. No.	ORGANS	SYMPTOMS	Number	Per cent
1.	Hair	a) Hair loss	110	44
		b) Brittle easily	46	18
		c) Hair thinning	79	32
		d) Dandruff	85	34
2.	Skin	a) Pigmentation	54	22
		b) Lesions	50	20
		c) Dryness	118	47
		d) Delayed wound healing	74	30
3.	Face	a) Acne	64	26
		b) Rashes	85	34
		c) Dryness	50	20
4.	Nails	a) Poor nail growth	70	28
		b) Inflammation of nails	64	26
		c) White spots on finger nails	93	37
		d) Transverse lines	32	13
5.	Teeth	a) Bleeding gums	84	34
		b) Dental caries	110	44
		c) Chalky teeth	41	16
6.	Nervous system	a) Behaviour disturbance	103	41
		b) Sleep disturbance	113	45
		c) Mental tension	96	38

Table 3:- clinical Symptoms Among The Selected Women (N=40)

A maximum of 44 per cent women had loss of hair. Thinning and dandruff problems were reported by 32 and 34 per cent. A majority of 47 per cent of women reported dryness of skin as the problem whereas pigmentation and lesions were reported by 22 and 20 per cent of women respectively. Delayed wound healing was reported by 30 per cent of women. Majority of women (34 %) had rashes in face and other problems such as acne and dryness were reported by 26 and 20 per cent of women respectively. A maximum of 37 per cent women had white spots on finger nails. Poor nail growth and Transverse lines were reported

by 28 and 26 per cent of women respectively. A majority of 45 per cent women had sleep disturbances. Behaviour disturbance and mental tension were reported by 41 and 38 per cent of women respectively.

These results revealed that some form of vitamin and mineral deficiency was noted among few women whereas majority of the women were found to be clinically sound.

➤ *Stress Scores:*

Groups	Initial	Final	Difference	't' Value
A(Limejuice)	206±11.50	106.1±13.41	-99.9	32.300**
B (Milk)	186.3±17.65	113.3±9.46	-73.0	9.837**
C (Banana)	198.2±13.79	100.2±22.67	-98.0	15.746**
Control	201.6±15.74	221.0±6.89	+19.4	5.615**

Table 4:- mean Stress Scores Obtained By The Adult Women Before And After Supplementation (MAXIMUM SCORES: 230)
**Significant at one per cent level

The mean stress scores of experimental group A before supplementation was 206 and it had decreased to 106 after supplementation with limejuice and the reduction in stress scores was statistically significant at p<0.01 level. There was a significant change seen in experimental group B

supplemented with milk with a reduction in stress scores from 186.3 to 113.3 and it was also statistically significant at p<0.01 level. The mean of experimental group C before supplementation was 198.2 and it had decreased to 100.2

after supplementation with banana and the reduction was statistically significant at $p < 0.01$ level.

The mean stress scores of control group was 201.6 and it had increased to 221.0 which was statistically significant at $p < 0.01$ level.

Groups	Initial	Final	Difference	't' Value
A(Limejuice)	10.2±2.74	24.3±2.83	+14.1	13.317**
B (Milk)	10.4±2.17	24.2±2.74	+13.8	12.072**
C (Banana)	9.10±2.07	24.0±2.44	+14.9	22.664**
Control (No education)	5.60±4.64	1.70±.94	-3.9	2.830**

Table 5:- Mean Scores Obtained By The Adult Women Before And After Nutrition Education (Maximum Scores: 30)

**Significant at one per cent level

The mean scores of group A showed that the initial level of knowledge about stress and the significance of nutritional status was very low with a score of 10.2. After attending the education programme on stress the mean scores were found to increase to 24.3, and it was statistically significant at $p < 0.01$ level. There was a significant change seen in experimental group B from an initial score of 10.4 to 24.2 after attending the education programme. The difference was statistically significant at $p < 0.01$ level. The mean scores of experimental group C which was very low in

the beginning with a score of 9.10 but the mean scores increased to 24.0 after the education programme and it was significant at $p < 0.01$ level. The mean scores of control group was 5.60 with no education and it decreased to 1.70, which was statistically significant at $p < 0.01$.

➤ Nutrient intake:

The nutrient intake of the selected women in comparison with ICMR(2000) recommended allowances are presented and discussed in table VI.

NUTRIENTS	ICMR	GROUP A	GROUP B	GROUP C	CONTROL
Energy (kcal)	2225	1697±23.7	2360±6.06	2160±2.92	1486±33.2
Protein (g/day)	50	51±2	49±2	57±14	47±6
Fat (g/day)	20	17±15	17±15	10±50	13±35
Calcium (mg/day)	400	659±64.75	463±15.75	383±4.0	462±15.5
Iron (mg/day)	30	12±60	9±70	9±70	11±63.3
Vitamin A (µg/day)	600	527±12.1	363±39.5	332±4.6	462±23
Ascorbic acid (mg/day)	40	55±37.5	38±5	32±20	34±15
Thiamin (mg/day)	1.1	0.98±10.9	1.3±18.0	0.82±0.82	1.16±5.54
Riboflavin (mg/day)	1.3	1.5±15	1±23	0.8±38	0.9±30.7

Table 6

The mean nutrient intake compared with the ICMR (2000) recommended allowances revealed that consumption of protein, fat iron, vitamin A, vitamin C, thiamin and riboflavin was very much inadequate among all the groups.

V. SUMMARY AND CONCLUSION

The findings of the study indicated that a majority of 50 per cent women were suffering from high stress, followed by 42 per cent moderate stress and 8 per cent with low stress. Regarding consumption of stress relieving foods 99 per cent of the women did not consume any fruit juice daily and only one per cent of women consumed fruit juice daily. About 61 per cent of the women did not have time to relax. Effect of supplementation of the selected stress relieving foods showed a reduction in the mean stress level scores among all the groups which were statistically significant at one per cent level. Haemoglobin levels of all the supplemented groups were found to increase by 1.3g (A-Lime juice) 1.0 (B-Milk) 1.1 (C-Banana) g/dl over the three

months period which were found to be significant at one per cent level. Control group showed a significant reduction in Haemoglobin levels. The mean stress scores of the supplemented groups were found to reduce over the three months period among Group A by 99.9, Group B by 73 and Group C by 98 which were found to be statistically significant at one per cent level. Control group which received no supplementation showed a significant increase in stress scores when the three experimental groups were compared Lime juice (A) and Banana (C) supplemented groups showed no statistically significant difference whereas comparison between the other groups showed a significant difference. Evaluation of the nutrition education among the women of all the experimental groups showed a highly significant increase in the scores whereas control group with no education showed a significant reduction in their knowledge scores. Comparison among the experimental groups showed no statistically significant differences after education.

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