

# Impact of nutrition counseling on knowledge, attitude and practice of pre-obese employees of University of Agricultural Sciences, Bengaluru

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The present study was carried out in Gandhi Krishi Vignana Kendra campus of UASB during 2016-2017 to know the efficacy of nutritional counseling on knowledge, attitude and practices of pre-obese employees of University of Agricultural Sciences, Bengaluru. A sample of 120 employees comprising both men and women (having BMI range from 25.0 – 29.9) in the age group of 35 to 55 years working in GKVK Campus of UASB were selected following purposive sampling method. The results of the study revealed a positive efficacy of nutrition counseling in improving the nutrition knowledge to bring favourable attitude towards optimum nutrition which can be translated into change in practices.

**Key Words :** Pre-obese, Impact, Nutrition counseling, Knowledge, Attitude, Practice

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## INTRODUCTION

Change in lifestyle and dietary pattern along with improved socio-economic status stemming from rapid modernization has resulted in occurrence of chronic and degenerative diet related diseases in India. Urbanization and globalization have inevitably altered dietary habits and lifestyle practices contributing to emergence of obesity among Indian population with special reference to urban

scenario. Many factors can contribute to obesity and overweight, including lifestyle choices (e.g., lack of exercise, too little sleep), medical conditions (e.g., hypothyroidism) and genetics (*i.e.*, heredity). Nutrition counseling has been realized as one of the essential means of imparting knowledge to improve or maintain good health and nutritional status of the individuals.

The data from University of Agricultural Sciences Bengaluru (UASB), Dispensary revealed that more than 50 per cent of employees (teaching and non-teaching staff) were over weight, suffering from degenerative disorders such as diabetes and heart diseases. Diet and nutrition counseling of the staff can create awareness by imparting knowledge on better dietary pattern there by developing positive attitude towards health management. The education materials could be effective in imparting knowledge and the nutrition education module can serve as a ready reckoner for conducting nutrition education programmes. Hence, it is of interest to study the impact

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of nutrition counseling on knowledge, attitude and practice of selected pre-obese employees of UASB having BMI range from 25.1 – 29.9.

## METHODOLOGY

The present study was carried out in Gandhi Krishi Vignana Kendra campus of UASB during 2016-2017. A sample of 120 employees comprising both men and women in the age group of 35 to 55 years working in GKVK campus of UASB were selected following purposive sampling method based on the criteria of weighing 20 per cent above the normal weight for height (*i.e.*, having BMI in the range of 25.1 to 29.9) using the data available at UAS Dispensary, GKVK campus, Bengaluru. Willingness to participate in the study was also one of the criteria for selection of the employees for the study. The sample was divided into two groups *i.e.* control and experimental groups comprising 60 respondents under each group.

### Development of questionnaire for knowledge, attitude and practices (KAP) test :

A composite questionnaire comprising of 30 statements related to health and nutritional concepts was formulated. Ten questions pertaining to each aspect of knowledge, attitude and practice about nutrition, obesity, dietary management for pre-obese subjects, consequences, remedies etc. were covered. Questionnaire was used to pre-test the KAP of respondents before the onset of counseling to plan the contents for the counseling sessions. The same questionnaire was used before and after counseling period to assess the impact of nutrition counseling. For each statement the correct answer was given a score of one and the wrong or unanswered answer was given a score of zero. (FAO, 2014). Thus, the minimum and maximum score one could get was zero and thirty, respectively.

### Nutrition counseling:

Nutrition counseling programme was planned based on the results of pre nutrition knowledge test. A nutrition intervention of counseling was carried out during January to March 2016. The subjects were imparted nutrition counseling through modules, lectures, participatory demonstration, visual aids etc. by six individual and three group contacts for a duration of three months. Lectures on various topics such as: (a) importance of nutrition for

good health, (b) ill effects of obesity and its management, (c) preventive measures for obesity etc. were delivered to the subjects.

Nutrition counseling materials were developed in Kannada language to use in the counseling session. Two leaflets (Good Nutrition for optimum health, diabetes and life style management by diet modification) and three charts (Importance of fruits and vegetables for health management, millets for diet diversification and food security, Prevention of anemia by iron rich foods) were prepared and explained to the subjects during the counseling programme. Extension teaching methods were adopted to counsel the respondents such as group discussions, power point aided lectures by medical practitioners and nutritionists, use of suitable audio-visual aids (film shows, leaflets, charts and booklets).

### Impact assessment:

The mean scores of knowledge, attitude and practice (KAP) were determined for pre and post-nutrition counseling session and used to determine the impact of nutrition counseling after three months on KAP scores of subjects. Gain in scores, per cent gain in KAP levels and quantum of improvement was calculated using following formulae.

$$\text{Gain in scores} = \text{Mean score of post test} - \text{Mean score of pre test}$$

$$\text{Per cent gain} = \left( \frac{\text{Gain in scores}}{\text{Mean pre test scores}} \right) \times 100$$

$$\text{Quantum of improvement} = \frac{\text{Post test scores}}{\text{Pre test scores}}$$

The collected data was scored, tabulated and analyzed using frequency, percentage, standard deviation and 't' test.

## OBSERVATIONS AND ASSESSMENT

The results obtained from the present investigation as well as relevant discussion have been summarized under following heads :

### Gender-wise description of pre and post-scores of KAP levels of pre obese employees :

The mean scores of knowledge of the male and female subjects were 6.96 and 7.06, respectively in control group before the commencement of nutrition counseling (Table 1). The subjects in the control group were not

given nutrition counseling but the same questionnaire was given to depict their KAP levels after three months duration. The mean scores of knowledge of male and female subjects from control group showed least enhancement in post-evaluation *i.e.* 7.10 and 7.07, respectively. Similar trend was observed for attitude scores (6.8 and 7.5, respectively for male and female employee increased to 6.9 from and 7.56, respectively). The mean scores of practice also had shown slight change *i.e.* from 8.20 to 8.26 for male and no change in scores of female subjects of control group. The difference was non-significant showing negligible improvement in the KAP levels.

The mean scores of KAP levels of male and female subjects in the experimental group before and after the nutrition counseling are depicted in Table 1. The mean scores of knowledge before counseling of male and female subjects were 7.60 and 6.83, respectively which increased significantly ( $p < 0.01$ ) to 8.26 and 8.10, respectively after counseling period. Similarly, the levels of attitude had increased from 7.23 to 8.10, respectively for male respondents whereas from 7.40 to 7.70, respectively for female respondents after the counseling ( $p < 0.05$ ). The levels of mean scores of practice enhanced from 8.36 to 9.13 for male and 8.46

to 9.53 for female subjects, respectively indicating significant difference ( $p < 0.01$ ) of experimental group.

### Gender-wise impact of nutrition counseling on KAP levels of pre obese employees:

It is evident from Table 2 that per cent gain in knowledge, attitude and practice levels was 8.68, 12.03 and 9.21, respectively among male subjects and was 18.59, 4.05 and 12.64, respectively among female subjects of experimental group. Gain in scores was 1.26, 0.3 and 1.06, respectively for female subjects and 0.66, 0.86 and 0.76, respectively for male subjects. The quantum of improvement in the mean scores was in the range of 1.04 to 1.18 for females and 1.08 to 1.11 for male subjects. The per cent gain in knowledge and practice levels was higher among females compared to male subjects. The lower per cent gain in attitude levels might be due to the complexity of mind to modify the attitude towards new aspects in a short span of duration. However, the quantum of improvement which is more than one indicating the positive effect of the nutrition counseling on KAP levels of experimental group. In respect of control subjects, the per cent gain in knowledge, attitude and practice levels was 2.01, 0 and 0.73, respectively among male subjects, whereas in the case of female subjects, the per cent gain

**Table 1: Gender-wise description of pre and post scores of KAP levels of pre obese employees**

Parameters	Control (n=60)						Experimental (n=60)					
	Male (n=30)			Female (n=30)			Male (n=30)			Female (n=30)		
	Pre-evaluation	Post-evaluation	P value	Pre-evaluation	Post-evaluation	P value	Pre-evaluation	Post-evaluation	P value	Pre-evaluation	Post-evaluation	P value
Knowledge	6.96 ± 1.74	7.1 ± 1.29	0.05 <sup>NS</sup>	7.06 ± 1.20	7.07 ± 1.17	0.31 <sup>NS</sup>	7.6 ± 1.19	8.26 ± 0.90	0.00 <sup>**</sup>	6.83 ± 1.08	8.1 ± 0.95	0.00 <sup>**</sup>
Attitude	6.8 ± 1.74	6.9 ± 1.64	0.50 <sup>NS</sup>	7.53 ± 1.22	7.56 ± 1.19	0.36 <sup>NS</sup>	7.23 ± 1.33	8.1 ± 1.02	0.00 <sup>**</sup>	7.4 ± 0.72	7.7 ± 1.02	0.09 <sup>*</sup>
Practice	8.2 ± 0.76	8.26 ± 0.94	0.33 <sup>NS</sup>	8.33 ± 0.88	8.33 ± 0.95	0.50 <sup>NS</sup>	8.36 ± 1.03	9.13 ± 0.77	0.00 <sup>**</sup>	8.46 ± 0.77	9.53 ± 0.62	0.00 <sup>**</sup>
Overall	21.96 ± 1.10	22.16 ± 2.22	0.48	22.92 ± 1.24	22.96 ± 2.05	0.42	23.19 ± 1.68	25.4 ± 2.35	0.00 <sup>**</sup>	22.69 ± 1.21	25.33 ± 1.22	0.00 <sup>**</sup>

NS= Non-significant

\* and \*\* indicate significance of values at P=0.05 and 0.01, respectively

**Table 2: Gender-wise impact of nutrition counseling on KAP levels of pre obese employees**

Parameters	Control (n=60)						Experimental (n=60)					
	Male (n=30)			Female (n=30)			Male (n=30)			Female (n=30)		
	Gain in scores	Quantum of improvement	% gain	Gain in scores	Quantum of improvement	% gain	Gain in scores	Quantum of improvement	% gain	Gain in scores	Quantum of improvement	% gain
Knowledge	0.13	1.01	2.01	0.01	1.00	0.14	0.66	1.08	8.68	1.26	1.18	18.59
Attitude	0	1	0	0.033	1	0.39	0.86	1.11	12.03	0.3	1.04	4.05
Practice	0.06	1	0.73	0	1	0	0.76	1.09	9.21	1.06	1.12	12.64
Overall	0.2	1.00	0.91	0.04	1.00	0.17	2.21	1.09	9.52	2.64	1.11	11.63

in knowledge, attitude and practice levels was 0.14, 0.39 and 0, respectively. Gain in scores was 0.01, 0.33 and 0, respectively for female subjects and 0.13, 0 and 0.06, respectively for male subjects. The quantum of improvement in the mean scores was one for all the three parameters of KAP for females and 1.00 to 1.01 for male subjects. The per cent gain in knowledge was higher among males compared to female subjects.

The gain in scores of KAP was meager among male as well as female subjects of control group. The quantum of improvement was in the range of 1.0 to 1.01 for males and only 1.00 for females which shows negligible improvement in the parameters. The per cent gain in knowledge and practice levels of males were negligible *i.e.* 2.01 per cent and 0.73 per cent. The per cent gain in mean scores of attitude was not observed at all. The female subjects showed 0.14 per cent and 0.39 per cent gain in knowledge and attitude levels, respectively. The per cent gain in practice was not observed. The change was very meager and non-significant ( $p < 0.05$ ) irrespective of gender among males and females of control group.

It is also evident that the mean scores of KAP levels of pre-obese employees enhanced significantly in the experimental group after nutrition counseling irrespective of gender. However, the increase in attitude level was less significant ( $p < 0.05$ ). This could be attributed to the difficulty in modification of a person's attitude as compared to knowledge and practice. The quantum of improvement is more than one in all three parameters of KAP. In this particular study, the short duration counseling

might have made a no table improvement in the attitude. However, the impact of nutrition counseling was evident with use of audio-visual aids and leaflets to enhance the KAP levels in the subjects of experimental group. The findings of the study is line with the findings of Sangha *et al.* (2006); Kaur and Sangha (2007) and Monga *et al.* (2008).

### Pre and post-mean scores obtained by subjects (combined) of control and experimental groups:

#### Control subjects:

The data of KAP scores obtained by pre-obese employees of control group who did not under go nutrition counseling is depicted in Table 3. The results reveal that a meager change was observed in post-scores of knowledge, attitude and practice increased slightly from 7.01, 7.16 and 8.26 to 7.05, 7.18 and 8.30, respectively. However, the difference was not statistically significant. The quantum of improvement was 1.00 for all scores and the per cent knowledge gain was in the range of 0.27 to 0.57 among control subjects after three months.

#### Experimental subjects:

Table 4 depicts that the mean scores of knowledge improved from 7.21 to 8.18 after nutrition counseling for employees of experimental group. The mean scores of attitude and practice improved from 7.31 and 8.41, respectively to 7.90 and 9.33, respectively. The increase in mean scores for all parameters (KAP) was highly significant ( $p < 0.01$ ). It has reflected in the higher gain in

**Table 3: Pre and post mean scores obtained by pre obese employees (combined) of control group**

Parameters	Pre evaluation (Mean $\pm$ SD)	Post evaluation (Mean $\pm$ SD)	P value	Gain in scores	Quantum of improvement	% gain
Knowledge	7.01 $\pm$ 1.2	7.05 $\pm$ 1.47	0.3367 <sup>NS</sup>	0.03	1.00	0.57
Attitude	7.16 $\pm$ 1.54	7.18 $\pm$ 1.47	0.5 <sup>NS</sup>	0.01	1.00	0.27
Practice	8.26 $\pm$ 0.82	8.3 $\pm$ 0.97	0.1607 <sup>NS</sup>	0.03	1.00	0.48
Overall scores	22.43 $\pm$ 2.22	22.43 $\pm$ 1.56	0.2546 <sup>NS</sup>	0.08	1.00	0

NS = Non-significant

**Table 4: Pre and post mean scores obtained by pre obese employees (combined) of experimental group**

Parameters	Pre- evaluation (Mean $\pm$ SD)	Post evaluation (Mean $\pm$ SD)	P value	Gain in scores	Quantum of improvement	% gain
Knowledge	7.21 $\pm$ 1.19	8.18 $\pm$ 0.92	0.00005**	0.96	1.13	13.45
Attitude	7.31 $\pm$ 1.06	7.9 $\pm$ 1.03	0.00017**	0.58	1.07	8.07
Practice	8.41 $\pm$ 0.90	9.33 $\pm$ 0.72	0.00001**	0.91	1.1	10.93
Overall scores	22.93 $\pm$ 2.33	25.41 $\pm$ 1.66	0.00086**	2.45	1.1	10.81

\*\* indicate significance of value at  $P = 0.01$

knowledge, attitude and practices of 0.96, 0.58 and 0.91, respectively. The per cent gain in knowledge was in the range of 8.07 to 13.45 for KAP scores which was satisfactory to denote the effectiveness of counseling for a short duration of 3 months. The per cent gain in knowledge score was 13.45 which is higher compared to that of practice and attitude *i.e.* 10.93 and 8.07, respectively. The quantum of improvement in knowledge, attitude and practice scores was 1.13, 1.07 and 1.1 times more indicating the effectiveness of counseling on KAP levels of experimental subjects. The data reflects the higher perception of knowledge at short duration by extension teaching techniques, whereas lower levels of gain in practice followed by attitude indicates the higher perception of practice but lower perception of attitude. The results clearly indicate that knowledge dissemination is faster than bringing changes in both attitude and practices at a short duration of time.

The data of KAP levels after nutrition counseling among experimental group showed that the impact of nutrition counseling was highly significant on knowledge, attitude and practice irrespective of gender (Tables 3 and 4). There was no significant difference between the mean scores of knowledge, attitude and practice of males and females of the control group. The efficacy of nutrition counseling was evident by the higher per cent gain in knowledge scores as well as no table quantum of improvement observed among experimental group. The efficacy was higher in the experimental group might be due to regular personal contact, group discussion during sessions and effective utilization of audio-visual aids (film shows and power point aided lectures, use of visual aids such as leaflets, charts and booklets) along with personal counseling that might have helped to enhance the

knowledge, attitude and practice scores significantly ( $P < 0.01$ ) among the subjects. A positive efficacy of nutrition counseling in improving the nutrition knowledge to bring favourable attitude towards optimum nutrition which can be translated into change in practices was evident by the results of the study. Similar findings were reported by Kaur and Sangha (2007) and Monika *et al.* (2015).

### Conclusion:

The results of the study indicated that nutrition counseling has significant impact to increase the levels of knowledge, attitude and practice among the sampled respondents. Hence, nutrition counseling is essential for bringing favourable modification in knowledge, attitude and practices of pre-obese employees to prevent the consequences of obesity in their future life and to sustain optimum healthy lifestyle.

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