Original Article

International Journal of Food, Nutrition and Dietetics
Volume 3 Number 2, May - August 2015
DOI: https://dx.doi.org/10.21088/ijfnd.2322.0775.3215.5

Impact of E-Counseling on Nutrient Consumption of Female Employees Working in a Call Centre

Shivani Sharma*, Vandana Bharti**

Abstract

Evolution is a long-term process of change, where desired characteristics are retained, undesirable ones allowed to regress, and undeveloped ones encouraged. Modernization, which has reformed the initial systems of work practices have also reformed the lives of the people. They want to be more productive, more involved, recognized and have stronger working relationships now. The impact of globalization on the transformation from traditional to modern business practices and operations in India is felt prominently with the development of call centers in the past few years. Call centers in today's world, plays an integral part of the most of the organization and plays a key role in the service delivery chain. It has given a new dimension to the work culture in Modern India. India's twelve hour time difference enables global organizations to provide their customers with 24 x 7 x 365 days services. This shift work alters the normal circadian rhythmicity – giving rise to concerns regarding health and well being. Odd working hours and poor patterns of eating result in poor nutrition. A total of 150 female subjects (n=150) were purposively selected for the present study and divided into two stages – initial and final stage (post counseling period). The data was collected using questionnaire method and 24hour dietary recall method. The subjects were counseled via "e-counseling" and various other methods of counseling such as PowerPoint presentation, personal counseling and printed material for a period of six months on the topics such as healthy diet, balanced diet, protein rich diet, and diet for maintaining normal weight, healthy food options etc. After six months the subjects were re-assessed for the present study. The feed-back of subjects included in the study group was received through either personal visits or e-mail. 92.0% of the subjects provided feed-back most frequently by personal visits while rest 8.0% responded through by e-mail. The age of all subjects were obtained with a span of 18 to 37 years with a mean spread of age was 23.46±3.88 years while 158.82±6.34 centimeter was reported as mean spread of height. It was inference statistically that the females were found with significantly differed calcium value. In study group after counseling, the mean consumed energy (1293.68 kcal), carbohydrate (298.71 gram), proteins (44.34 gram) and fat (46.81 gram) were reduced at final stage as compared to initial mean consumed energy (1302.68 kcal), carbohydrate (304.89 gram), proteins (45.49 gram), fat (47.89 gram) but the mean iron (31.30 milligram) was little bit higher as compared to initial mean iron (31.06 milligram) and these mean differences in two sampling stages were not confirmed significant ($p>0.05$). At post stage, the mean calcium (653.50 milligram) value were lower as compared to mean calcium (690.20 milligram) at initial stage and this difference was statistically strongly significant ($p<0.001$). Therefore, it was concreted that administration of counseling benefitted the recipients in the experimental group and is effective..

Keywords: Call Centre; Recommended Dietary Allowances (RDA's); E-Counseling; Nutrients.

Author's affiliation: *Research Scholar, **Assistant Professor, Home Science, Govt. Maharani Laxmi Bai Girls PG College.Fort Indore- 452 006 (M.P.)

Corresponding Author: Shivani Sharma, C-639, Sushantlok, Gurgaon- 122000, Near Blossom Play, School (Haryana).

E-mail: ssharma319@rediffmail.com

Introduction

In recent years, the call centre industry has experienced a phenomenal growth worldwide (AS. Saber *et al.*, 2004). Hence, according to a survey of 100 women, the average age group of women working in

call centre is 18-30 yrs, which include those who are just school pass, graduates and even housewives, call centers have emerged as the most sought after workplace for Indian women in recent times. Many of the shift workers digestive disorders may be attributed to both the irregularity of meal timings and poor quality of the food consumed like increased consumption of pre packed foods with preference to salty meals and little preference to vegetables, increased consumption of caffeinated drinks and alcohol, increased smoking, short sleeping hours and little physical exercise (Suwazono, *et al.,* 2003). Similarly, Salimpade (2011), study on Nutrition-related lifestyle practices, Dietary Patters, Nutrient Intake and Nutritional Status of Selected call center agents. The study arrived to determine association of nutritional status & Nutrition related lifestyle practices, dietary pattern and nutrient intake among selected call center agents. One hundred call centre agents of Metro Manila were interviewed on physical activity. Majority was normal in nutritional status. The adequacy of intakes of energy carbohydrates & fats were generally poor except for female group < 12 yrs old, because of their erratic schedule. Hence, concluded that there were no association found b/ w nutritional status and the following variables – nutrition related lifestyle, dietary pattern and nutrient intake. Adala, *et al*.(2007), found that 75% of its employees have normal BMI while the rest are either overweight, obese or underweight based on the BMI classification for adults . The meal patterns and dietary intake were also determined in the study using the Food frequency Questionnaire and 24-hr dietary recall method, respectively. The results for Vitamin A, Vitamin C, Thiamin, Niacin and Riboflavin were adequate based on the recommended dietary allowance. This is probably due to the employees, intake of vitamins and dietary supplements. However, calcium levels were found to be inadequate.

Materials and methods

The study was conducted on 300 young female employees (18-37yrs) working in a call centre named "Genpact" located in Gurgaon (Haryana). The subjects were selected through purposive sampling method and counseled for a period of six months via e-counseling. Personal visits, power point presentations and printed material or pamphlets was also used along with e-counseling for imparting information and knowledge on diet. "E-Counseling" is modern method of counseling which means use of email / internet for counseling purpose. The information was collected through questionnaire and 24 hr dietary recall method and then nutritive values was calculated. The nutrients were calculated by especially designed computer software based on nutritive value of Indian foods by *C. Gopalan (1996)* and consumed nutrients were checked against recommended dietary allowances *(ICMR 1989)* for the assessment of nutrient intake status. After six months the subjects were re-assessed for the present study. The feed-back of subjects included in the study group was received through either personal visits or e-mail. Descriptive statistics such as mean, frequencies and % were used to study the variables. Z-test was used to identify the significance of mean differences in nutritive values between initial and final observations in study group.

Results and Discussion

In this study the response rate was 100%. The results and analysis of the subjects are as follows:

Demographic profile

The age of all 150 female subjects were obtained with a span of 18-37years with a mean of 23.46 ±3.88 years. Major part belonged to age group of 18-23years and 23-28 years respectively (47.7% and 39.3%). Most of the females were single / unmarried (64.4%) and rest married (35.3%).The maximum strength of the employees(65%) possess masters degree and rest were graduates(19%), under graduates (9%) and high school 7%.

Work profile

In this study 86 females (28.7%) had work experience of minimum six months and 92(30.7%) females had experience of an year ,65(21.7%) reported to be working with the company for about two to three years and 67(22.3%) with an experience of an year or two .The total number of breaks while on shift was around 2 to 3 for a span of twenty minutes . 170(56.7%) females worked for five days a week and rest six to seven days i.e. 110 & 20(36.7% & 6.6%) respectively. It was observed that 81 (66%) females were on morning duty and 84 evening shifts (28%) and 69(23%) doing night shifts and 66(22%) day duty.

Nutrient consumption

The nutrient consumption of subjects was different in initial and final stages at post e-counseling

observations. The study revealed that 9.3% & 6.7% of females consumed normal calories as per RDA's i.e. (1875kcal/d) in the study group at both stages. Majority of population i.e. 44% recorded with inadequate calorie intake in initial stage, whereas a slight increase in number seen in post e-counseling stage as 49.3%. 27.4% at initial stage consumed adequate amount of calories i.e.1375-1775 kcal /d.

Table 1: Distribution of nutrients consumption among subjects (initial and final stage)

Variables	Reference	Range	Study group (n=150) Initial F (%)	Final F (%)
Energy(kcal/d) (Sedentary worker)	Reference RDA's 1875 kcal/d	1875 Kcal/d	14(9.3%)	10(6.7%)
	More than reference	1875-2375 kcal/d	11(7.3%)	5(3.3%)
	Adequate	1375-1775 kcal/d	41(27.4%)	37(24.7%)
	Inadequate	875-1375 kcal/d	66(44%)	74(49.3%)
	Poor	500-875kcal/d	18(12%)	24(16%)
Carbohydrates(g/d)	Reference 373gms/d	373 g/d	2(1.3%)	1(0.7%)
	< reference	97- 365 g/d	124(82.7%)	129(86%)
	➢ Reference	370 - 482 g/d	24(16%)	20(13.3%)
Proteins(g/d)	Reference 50gms/d	50g/d	6(4%)	3(2%)
	< reference	20-49g/d	90(60%)	62(41.3%)
	➢ Reference	51-99g/d	54(36%)	85(56.7%)
Fats (g/d)	Reference 20g/d	20g/d	5(3.3%)	3(2%)
	< reference	11-19g/d	2(1.3%)	2(1.3%)
	>reference	28-97g/d	143(95.4%)	145(96.7%)
Iron (g/d)	Reference 30g/d	30g/d	6(4%)	10(6.7%)
	< reference	4-29g/d	60(40%)	50(33.3%)
	➢ Reference	31-60g/d	84(56%)	90(60%)
Calcium (mg/d)	Reference 400mg/d	400mg/d	0	0
	< reference	120-394mg/d	24(16%)	29(19.3%)
	➢ Reference	410-1000mg/d	126(84%)	121(80.7%)

Source: RDA'S by ICMR (1989)

Table 2: Consumption of nutrients between initial and final stages of post e-counseling period

Variables		STUDY GROUP (n=150) Mean±SD	MD	Z-Value
Energy(kcal)	Initial	1302.68 ± 419.05	9.33	0.14 (p<0.05)
	Final	1293.35 ± 832.24		Not significant
Carbohydrates(gm)	Initial	304.89 ± 94.82	6.18	0.92 (p<0.05) Not significant
	Final	298.71 ± 92.33		
Proteins(gm)	Initial	45.49 ± 14.51	1.15	1.26 (p<0.05) Not significant
	Final	44.34 ± 11.71		
Fats(grams)	Initial	47.89 ± 17.65	1.08	1.01 (p>0.05) Not significant
	Final	46.81 ± 14.88		
Iron(mg)	Initial	31.06 ± 9.35	0.24	0.60 (p>0.05) Not significant
	Final	31.30 ± 7.89		
Calcium(mg)	Initial	690.20 ± 295.84	36.70	3.47 (p<0.001) Highly significant
	Final	653.50 ± 245.94		

The post e-counseling stage observed a slight fall in the number to 24.7%. 12% females had poor intake of calories i.e. (500-875kcal/d) at initial stage and 16% at post e-counseling stage.

Very few females consumed carbohydrate as per the RDA (373gm/d) at initial and final stages as 1.3% & 0.7% respectively. 82.7% consumed carbohydrates less than the given RDA's (97-365gm/d) at initial

stage. A slight increase was seen in the final stage of experimental and 86%. 60% and 13.3% number of females consumed carbohydrates more than the given RDA's (370-482gm / d) at initial and final stage.

Further the table reveals protein intake of the female executives and it was found that very few consumed protein as per the reference value i.e. 50gm / d as 4% at initial stage and 25 % at final stage. 60% females moderate amount of protein i.e. (20-49gm / d) of the given RDA's whereas at the post stage of e-counseling 41.3% females consumed moderate amount of proteins. 36% consumed more than the reference protein at initial stage, whereas an increase was seen at post stage consuming protein more than the reference protein as 56.7%.

The fat intake in female executives at post e-counseling stage and initial stage revealed that the maximum number of females at initial stage consumed fat more than the reference value as 95.4%. A slight increase was noticed in the number of females consuming fat more than the RDA at final stages as 96.7%. 3.3% at initial stage reported to consume fat as per the RDA i.e. 20gm / d, respectively. A slight change was observed at final stage of post counseling period as 2% who consumed fat as per the RDA. Only 1.3% consumed moderate amount of fat at initial stage but no change was observed at final stage of post counseling period.

40% females consumed iron less than the RDA i.e. 30gm / d at initial stage and 56% consumed iron more than the reference values at initial stage. Very little change was seen at final stage of both the groups during post counseling period for those who were consuming moderate amount of iron and more than the reference value as 33.3% and 60% respectively. Only 4% females were observed with iron intake as per the RDA's at initial stage whereas 6.7% consumed iron as per the reference value at final stage.

The calcium intake was noted as 16% females consuming moderate amount of calcium at initial stage and at final stage it was found to be 19.3%. Maximum number of females consumed calcium more than the reference value i.e. 410-1000mg / d as 84% and 80.7% at final stage were those who consumed more than the reference calcium.

The mean difference of the above mentioned results revealed that after counseling, the mean consumed energy (1293.68 kcal), carbohydrate (298.71 gram), proteins (44.34 gram) and fat (46.81 gram) were reduced at post stage as compared to initial mean consumed energy (1302.68 kcal), carbohydrate (304.89 gram), proteins (45.49 gram), fat (47.89 gram) but the mean iron (31.30 milligram) was little bit higher as compared to initial mean iron (31.06 milligram) and these mean differences in two sampling stages were not confirmed significant ($p>0.05$) on statistical ground with obtained z-value of 0.14,0.92 ,1.26,1.01 and 0.60, respectively .At final stage, the mean calcium (653.50 milligram) value were lower as compared to mean calcium (690.20 milligram) at initial stage and this difference was statistically strongly significant ($p<0.001$) with obtained z-value of 3.47.

Conclusion

At final stage, all nutrient parameters except carbohydrates and fats of female executives of study group were different and improved. The statistical confirmation indicated that the females in study group had significantly differed carbohydrate and iron at initial stage but significantly differed energy, proteins, iron and calcium at final stage.

Therefore, it was concreted that administration of counseling benefitted the recipients in the experimental group and is effective.

Acknowledgement

The authors are thankful to the hospital and the call centre "Genpact" for providing us the opportunity to conduct the research in their organization.

References

1. Adala KB, Bolinguist EAB, Echon MAP,Vinluan KCJ. 2007. "Nutritional status of call centre agents aged 20-35years at a selected company". Thesis University of the Philippines Manila.
2. As-Saber, S.N., Holland, P. & Teicher, J.2004 . "Call Centres in India : An Eclectic Phenomenon in Global Human Resource Management". *Labour and Industry*, 14 (3).
3. Salimpade Hannah Yvette .14th Dec2011." Nutrition related lifestyle practices, dietary pattern , nutrient intake and nutritional status of selected call center agents". Posted in ; Chronic disease , GHF 2012, Research Project.
4. Suwazono Y, OkuboY,Kobayashi E,KidoT, Nogawa.K.Oct 2003. "A follow up study on the association of working conditions and lifestyle with the development of perceived mental symptoms in workers of a telecommunication enterprise". *Occupational Medicine (London)*. 53 (7): 46-442.