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Original Article

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Association of Stress on Physical Activity and Lipid Profile of Postmenopausal Women

Rhitu Sharma*, Vandana Bharti, Munira M. Husain*****

Abstract

Menopause is a term used to describe the permanent cessation of the primary functions of the human ovaries the ripening and release of ova and the release of hormones that cause both the creation of the uterine lining.[1] Menopause typically (but not always) occurs in women in midlife, during their late 40s or early 50s and signals the end of the fertile phase of women's life. The term post menopause is applied to women who have not experienced a menstrual bleed for a minimum of 12 months, assuming that they do still have a uterus, and are not pregnant or lactating.[2] This stage of life becomes very stressful. Stress influence health and disease and is the main reason for early ageing. Now a day's stress has become an integral part of day to day life style. Keeping the importance of post menopause present study was aimed to assess Association of Physical Activity with stress of 200 Post Menopausal Women aged 40-70 years living in Indore district. Result of the study reveals that Probability value of Chi square was 9.43 at 2 df which is a highly significant ($P < 0.009$, two tailed). As none of the Post menopausal women found heavy worker. Hence, highly significant association was found between physical activity and stress of Post menopausal women. Also, association of Lipid profile with stress in post menopausal women clearly reflects that the probability value of Chi-Square is 13.79 at 4 degrees of freedom which is highly significant ($p<0.008$, two-tailed). Therefore the obtained result concludes that there is a significant association between Lipid profile and stress in studied subjects.

Keywords: Post menopause; Lipid profile; Stress; Physical activity.

Introduction

Menopause is a natural stage of life, it is not disease or a disorder and therefore it does not automatically require any kind of medical treatment at all. Menopause is all the time in a women's life that takes place after her last period, or more accurately, all of the time that follows the point when her ovaries become inactive. A woman who still has her uterus (and who is neither pregnant nor lactating) can be declared to be in postmenopausal once she gone 12 full months with no flow at all, not even any spotting. It has been observed by many women that during the post menopausal phase of life they become very stressful. Stress influence health and disease and is the main reason for early ageing. So in present study the lipid profile of post menopausal women it's relation to their stress level has been discussed.

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Objectives

- To assess the association of Physical activity with stress level of post menopausal women.
- To assess the association of Lipid profile with stress level of post menopausal women.

Hypothesis

- There shall be no significant association of Physical activity with stress level of post menopausal women.

- There shall be no significant association of Lipid profile with stress level of post menopausal women.

Material and Methods

The present study was carried out on 200 Post menopausal women aged 40-70 years. Samples were selected by purposive sampling method. The study was conducted in different hospitals of Indore city. In this study, a structured questionnaire was used regarding life style pattern (Physical activity and Exercise) was considered. Lipid profile and a combination of Hari's stress inventory (2009) and Sinha's comprehensive anxiety test was used for assessment of stress. An anxiety test was categorized in three levels- low anxiety, normal anxiety and high anxiety. After explaining the purpose of the study consent was taken. A semi structured questionnaire was provided with proper guidance and assistance to samples. They were asked to answer questionnaire to assess the stress level. The descriptive statistics like mean and standard deviation for different study variables were calculated. Significance of difference in frequency distribution of studied sample have been found out using Chi square and difference in mean has been found out using 't' test.

Result and Discussion

The table 1 shows that 59.5% women were found to have normal cholesterol level (mean176.81±17.47 mg/dl). 40% were found in suspected ranges (mean219.66 ± 13.51 mg/dl) and only 0.5% was found in treatment needed category (270 mg/dl).100% post menopausal women were found in the suspected range (35-55mg/dl) of HDL. 45.5% post menopausal women were found to have normal serum triglycerides level (mean127.39±15.89mg/dl). 50.5% were found

Table 1: Status of Lipid Profile of Post Menopausal Women

Variable	Frequency (N)	Frequency Percentage %	Ranges	Mean ± S. D.
Level of Cholesterol (in mg/dl)				
<200mg/dl (standard risk)	119	59.5	133-198 mg/dl	176.81 ± 17.47
200-250mg/dl (suspected range)	80	40.0	200-248 mg/dl	219.66 ± 13.51
> 250 mg/dl (Treatment needed)	1	0.5	270 -270 mg/dl	270.00 ± 0.0
TOTAL	**200**	**100.0**		
Serum HDL Level (in mg/dl)				
35-55mg/dl (standard risk)	200	100.0	38-55 mg/dl	44.54 ± 2.59
TOTAL	**200**	**100.0**		
Triglycerides Level (in mg/dl)				
<150mg/dl (standard risk)	91	45.5	85-149 mg/dl	127.39 ± 15.89
150-200mg/dl (suspected range)	101	50.5	150-200 mg/dl	173.12 ± 13.56
> 200mg/dl (treatment needed)	8	4.0	198-210 mg/dl	203.00 ± 3.63
TOTAL	**200**	**100.0**		
Serum LDL Level (in mg/dl)				
<150mg/dl(standard risk)	151	75.5	62.40-146.60 mg/dl	109.42 ± 18.25
150-180mg/dl (suspected range)	46	23.0	150.00-180.00 mg/dl	157.04 ± 7.22
> 200mg/dl (treatment needed)	3	1.5	181.00-188.40 mg/dl	184.13 ± 3.83
TOTAL	**200**	**100.0**		
Serum VLDL Level (in mg/dl)				
<40mg/dl (standard risk)	191	95.5	17.00-39.60 mg/dl	30.26 ± 5.39
>40mg/dl	9	4.5	40.00-43.60 mg/dl	41.31 ± 1.17
TOTAL	**200**	**100.0**		

Table 2: Association of Lipid Profile with Stress of Post Menopausal Women

Variable	Population Particulars	Status of stress level			Chi value	df	P-value
		High Anxiety	Normal Anxiety	Low Anxiety			
Cholesterol	<200mg/dl (standard risk)	85(42.5%)	26(13%)	8(4%)	13.79	4	0.008
	200-250mg/dl (suspected range)	56(28%)	11(5.5%)	13(6.5%)			
	> 250 mg/dl (Treatment needed)	0(0%)	0(0%)	1(0.5%)			
	Total	200 (100.0%)					
HDL	>55 mg/dl (standard risk)	0(0%)	0(0%)	0(0%)			
	35-55mg/dl (suspected range)	141(70.5%)	37(18.5%)	22(11%)			
	<35 mg/dl (Treatment needed)	0(0%)	0(0%)	0(0%)			
	TOTAL	200 (100.0%)					
LDL	< 150 mg/dl (standard risk)	101(55.5%)	35(17.5%)	15(7.5%)	10.26	4	0.05
	150-180mg/dl (standard risk)	38(19%)	2(1%)	6(3%)			
	> 180mg/dl (Treatment needed)	2(1%)	0(0%)	1(0.5%)			
	Total	200 (100.0%)					
VLDL	<40mg/dl (standard risk)	135(67.5%)	36(18%)	20(10%)	1.38	4	0.05
	>40mg/dl	6(3%)	1(0.5%)	2(1%)			
	Total	200 (100.0%)					
Triglycerides	< 150 mg/dl (standard risk)	71(35.5%)	14(7%)	6(3%)	16.18	4	0.03
	150-200mg/dl (standard risk)	67(33.5%)	22(11%)	12(6%)			
	>200-180mg/dl (standard risk)	3(1.5%)	1(0.5%)	4(2%)			
	Total	200 (100.0%)					

Table 3: Physical Activity of Post-Menopausal Women

Variable	Population Particulars	Frequency (N=200)	Frequency Percentage %
Types of Physical work	Heavy	0	0.0
	Moderate	94	47.0
	Sedentary	106	53.0
	TOTAL	**200**	**100.0**
Daily Exercise	Yes	76	38.0
	No	124	62.0
	TOTAL	**200**	**100.0**
Duration of Exercise	15 Minute	0	0.0
	30 Minute	14	18.4
	More than 30 Minute	62	81.6
	TOTAL	**76**	**100.0**
Walking	Daily	148	74.0
	Weekly	15	7.5
	Occasionally	37	18.5
	TOTAL	**200**	**100.0**

Table 4: Association of Physical Activity with Stress of Post Menopausal Women

Variable	Population Particulars	Status of stress level			Chi value	df	P-value
		High Anxiety	Normal Anxiety	Low Anxiety			
Physical Activity	Moderate	73 (36.5)	9 (4.5)	12 (6)	9.43	2	0.009
	Sedentary	68 (34)	28 (14)	10 (5)			
	Total	200 (100.0%)					

Table 5: Association of Exercise with Stress of Post Menopausal Women

Variable	Population Particulars	Status of stress level			Chi value	df	P-value
		High Anxiety	Normal Anxiety	Low Anxiety			
Exercise	Yes	54 (27)	14 (7)	8 (7)	2.033	2	0.05
	No	87 (43.5)	23 (11.5)	14 (7)			
	Total	200 (100.0%)					

in suspected range (mean173.12±13.56mg/dl) and only 4% were found to have in treatment needed category (mean 203.00±3.63mg/dl). 75.5% women were found to have normal serum LDL level (mean109.42±18.25mg/dl). 23.0% were found in suspected range (mean 157.04±7.22 mg/dl) and only 1.5% were found in treatment needed category (mean 184.13±3.83 mg/dl). Most of the postmenopausal women (95.5%) were found in suspected range (mean30.26±5.39mg/dl) and only 4.5% were found in treatment needed category (mean 41.31±1.17mg/dl).

Association of Lipid profile with stress in post menopausal women is shown in table 2 The table clearly reflects that the probability value of Chi-Square is 13.79 at 4 degrees of freedom which is highly significant ($p<0.008$, two-tailed).It is evident that there is a significant association between Cholesterol and stress in post menopausal women. Further it was observed that for LDL Status, the probability value of Chi-Square is 10.26 at 4 df which is significant ($p<0.05$, two-tailed). Hence there is significant association observed between LDL and stress.Triglycerides level in post menopausal women was assessed which reflects a highly significant association between Triglycerides and stress with the probability value of Chi-Square i.e. 16.18 at 4 degree df which is significant ($p<0.003$, two-tailed).

It is obtained from table 3 that almost more than half of post-menopausal women 106 (53.0%) were engaged in Sedentary type of work while 94 (47.0%) were engaged in Moderate type of work. None post-menopausal women was found doing Heavy type of work. Further the table shows that 38% post menopausal women were found doing exercise daily. Remaining 62% were not doing exercise daily.

The physical activity of post menopausal women is shown in table 4 that probability value of Chi-Square is 9.43 at 2 degrees of freedom which is highly significant ($p<0.009$, two-tailed) as none of the subject was found Heavy worker. There is no doubt in confirmation that there is a highly significant association between Physical Activity and Stress in women. Hence it is clear that there is a significant association in physical activity of post menopausal women in relation to their stress level.

The table 5 reveals that number of post menopausal women who were doing exercise daily were less in high anxiety category (54) as compared to their non exercising counter parts (87). The probability value of chi square is 2.033 at 2 d.f. which shows a non significant value (p value<0.05, two tailed).The statistical analysis shows a non significant association between exercise and stress level.

Conclusion

The obtained result shows that there is a significant association between Lipid profile and stress in post menopausal women. Whereas Braz J Med Biol (2011); conducted study on young, middle-aged, and postpartum

women. Result revealed that anxiety disorders and depressive disorders had significant differences in lipid concentrations of TG, TC, HDL, VLDL, LDL, TC/HDL, or LDL/HDL among the 3 groups.[3] These results suggest that serum lipid profiles can be used as biological markers to distinguish depressive or anxiety disorders in menopausal women, larger samples are required to prove such results in the future. Nelson D.B. et al., (2008) concluded that high levels of physical activity were related to lower levels of stress. Also, post menopausal women who were doing exercise daily had less anxiety when compared to their non exercising counter parts. The statistical analysis shows a non significant association between exercise and stress level.[4] Whereas Camphell T.P. et al., (2010) studied on 173 overweight or obese post menopausal women. These findings suggest that aerobic exercise, accompanied by relatively marked gains in aerobic fitness, decrease oxidative stress among sedentary elder women.[5]

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Original Article

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Impact of Nutrition Education on Eating Habits of both Parents and Children While Treating Childhood Obesity

Taruna Meena*, Nandini Rekhade**

Abstract

Overweight and obesity in childhood presents many threats in terms of negative health consequences as well as psychosocial difficulties. Formative childhood years are crucial for the development of health behaviors and health outcomes that continue through adulthood. I am pleased to present you with the plan for solving the problem of childhood obesity. This entire study was conducted in Indore city and samples were also collected through random purposive sampling method from Indore itself. This research will help you to solve the main root behind the development of contributing factors of obesity. The research study done on **"The Impact of Nutritional Education on Parental Weight, Activity & Cardiovascular Risk Factors While Treating Childhood Obesity"** reveals that; On comparing the impact of nutritional education on nutritional status of both parents and children, while treating childhood obesity, it was found that nutritional education had a significant impact on improving the nutritional status of experimental groups parents ($P<0.05$) and children ($P<0.05$) in comparison to their control group counter parts ($P>0.05$). Similar results were obtained when impact of nutritional education on life style pattern and health status of both parents and children, while treating childhood obesity, it was found that nutritional education had a significant impact on improving the life style pattern of experimental groups parents ($P<0.05$) and children ($P<0.05$) in comparison to their control group counter parts ($P>0.05$). All the three null hypothesis were rejected in this study and the entire alternative hypothesis were accepted that "there is a significant impact of nutritional education on nutritional status, life style pattern and health status" of parents and children of experimental groups.

Keywords: Overweight;Psychosocial;Cardiovascular Risk Factors;Childhood Obesity.

Introduction

The family environment is where children first experience the social world: the place and time where they develop a sense of self and explore their prospects for the future. Subsequently, these early years are a critical period for the developing child and the messages that the family provides surely shape and direct that child. Obesity is a medical condition in which excess body fat has accumulated to the extent that it may have an adverse effect on health, leading to reduced life expectancy and/or increased health problems.[1] Overweight and obesity in childhood presents many threats in terms of negative health consequences as well as psychosocial difficulties. Formative childhood years are crucial for the development of health behaviors and health outcomes that continue through adulthood. There are three key characteristics that set children apart from adults in terms of obesity. Firstly children are not responsible for their own lifestyle choices; they are entirely dependent on others for most of their childhood. Secondly they are in a state of developmental transition and consequently have to pass through several key growth and feeding stages. Thirdly children are in a more vulnerable position. They respond more readily to the environment they are placed in, they are far less able to take corrective or modifying action to avoid obesity, and they are unable

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to consider the long term consequences of obesity. In order to ensure this the study was conducted with an "objective to assess impact of nutrition education on activity pattern of both parents and children, while treating childhood obesity".

Materials and Methods

This entire study was conducted in Indore City with an "objective to assess impact of nutrition education on activity pattern of both parents and children, while treating childhood obesity". In this research study 240 obese parents and children living in Indore district were selected by purposive random sampling technique. In this study 120, obese parents (more than 20% over ideal weight for age, height and gender) aged between 28-42 years and 120 obese children (more than 20% over ideal weight for age, height and gender) aged between 6-11 years with both parents living together were selected and were randomly assigned to either an experimental group (with counseling) or a control group (without counseling). Life style pattern was determined by 24 hour recall method.

Statistical analysis was done by using statistical tools like Z-test, mean, standard deviation, percentage, chi square test etc.

Results

The measured mean height of parents in Experimental Group- I was 166.28± 6.037 before observation and was similar after observation. Whereas; it was 162.33 ±6.305 before observation and was same after observation in Control Group-I. Similarly; the observed mean value of weight in Experimental Group-I in initial stage was 91.33 ± 8.535 kg and in final stage it was 87.24 ± 8.087 kg respectively. Whereas in control group-I it was 90.01±7.007 kg in initial stage and in final stage it was 90.64±7.876 Kg respectively. The observed mean waist hip ratio of Experimental Group –I in initial stage was 0.96 $\pm$ 0.083 and in final stage was 0.93 $\pm$ 0.070. Whereas in control group-I in initial stage it was 0.96±0.082 and in final stages it was 0.96±0.109 respectively.

Table Concludes: Table 4.1(a) concludes that; impact was found more appropriately on weight and waist hip ratio of Experimental group-1 after nutritional education compared

Table 4.1(b): Descriptive Statistics Regarding Anthropometric Variables For Experimental-2, Control-2 Groups

Anthropometric Variable		Mean		Std. Deviation		Std. Error of Mean	
		Exp-1	Ctrl-1	Exp-1	Ctrl-1	Exp-1	Ctrl-1
Height (in cm)	Before	166.28	162.33	6.037	6.305	0.779	0.814
	After	166.28	162.33	6.037	6.305	0.779	0.814
Weight (in kg)	Before	91.33	90.01	8.535	7.007	1.102	0.905
	After	87.24	90.64	8.087	7.876	1.044	1.017
Waist Heap Ratio (WHR)	Before	0.96	0.96	0.083	0.082	0.011	0.011
	After	0.93	0.96	0.070	0.109	0.009	0.014

Table 4.1(b): Descriptive Statistics Regarding Anthropometric Variables For Experimental-2, Control-2 Groups

Anthropometric Variable		Mean		Std. Deviation		Std. Error of Mean	
		Exp-2	Ctrl-2	Exp-2	Ctrl-2	Exp-2	Ctrl-2
Height (in cm)	*Before*	123.22	122.98	7.447	7.730	0.961	0.998
	After	125.27	123.70	7.428	7.943	0.959	1.025
Weight (in kg)	*Before*	34.61	34.85	6.176	6.121	0.797	0.790
	After	34.18	34.83	6.137	6.018	0.792	0.777

Table 4.2: Reason of Obesity of the Parents and Children with Levels of Measurement in Experimental and Control Groups

History of obesity	Parents		Children	
	Experimental-1	Control-1	Experimental-2	Control-2
Lack of Exercise/Activity	14 (23.3%)	6 (10.0%)	12 (20.0%)	16 (26.7%)
Improper time management/Lack of time	12 (20.0%)	11 (18.3%)	18 (30.0%)	12 (20.0%)
Sitting job/Sedentary lifestyle	2 (3.3%)	7 (11.7%)	1 (1.7%)	6 (10.0%)
Stress	2 (3.3%)	9 (15.0%)	0 (0.0%)	5 (8.3%)
Loneliness	0 (0.0%)	4 (6.7%)	5 (8.3%)	7 (11.7%)
Unhealthy Lifestyle	18 (30.0%)	17 (28.3%)	15 (25.0%)	10 (16.7%)
Improper diet schedule	12 (20.0%)	6 (10.0%)	9 (15.0%)	4 (6.7%)
Total	**60 (100.0%)**	**60 (100.0%)**	**60 (100.0%)**	**60 (100.0%)**

Table 4.3(a): Association of Exercise of Children with Levels of Measurement (Before and After) in Experimental and Control Group

Frequency of exercise	Children			
	Experimental-2		Control-2	
	Before	*After*	*Before*	*After*
No	26 (43.3%)	9 (15.0%)	40 (66.7%)	36 (60.0%)
Yes	34 (56.7%)	51 (85.0%)	20 (33.3%)	24 (40.0%)
Total	**60 (100.0%)**	**60 (100.0%)**	**60 (100.0%)**	**60 (100.0%)**
	[p<0.001; 2-tailed] Highly Significant		*[p>0.05; 2-tailed] Insignificant*	

Table 4.3(b): Association of Exercise of the Parents with Levels of Measurement (Before and After) in Experimental and Control Groups

Frequency of exercise	Parents			
	Experimental-1		Control-1	
	Before	*After*	*Before*	*After*
Daily	2 (3.3%)	12 (20.0%)	12 (20.0%)	13 (21.7%)
4 days/week	7 (11.7%)	16 (26.7%)	20 (33.3%)	26 (43.3%)
5 days/week	21 (35.0%)	24 (40.0%)	14 (23.3%)	5 (8.3%)
6 days/week	12 (20.0%)	8 (13.3%)	14 (23.3%)	5 (8.3%)
No Exercise	18 (30.0%)	0 (0.0%)	14 (23.3%)	16 (26.7%)
Total	**60 (100.0%)**	**60 (100.0%)**	**60 (100.0%)**	**60 (100.0%)**
	[p<0.001; 2-tailed] Highly Significant		*[p>0.05; 2-tailed] Insignificant*	

to its counterpart Control Group-1.

The measured mean height of children in Experimental Group- II was 123.22 ±7.447 cm before observation and was 125.27±7.428 cm after observation. Whereas; it was 122.98±7.730 cm before observation and was 123.70±7.943 cm after observation in Control Group-II. Similarly; the observed mean value of weight in Experimental Group-II in initial stage was 34.61 ± 6.176 kg and in final stage it was 34.18 ± 6.137 kg respectively. Whereas in control group-II it was 34.85±6.121 kg in initial stage and in final stages it was 34.83±6.018 Kg respectively.

Table Concludes: Table 4.1(b) concludes that; impact was found more fair enough on weight of Experimental group-II after nutritional education compared to its counterpart Control Group-II.

Table No. 4.2 shows the reasons for acquiring obesity in parents and children of both the experimental and control groups. In the experimental group 1, 18 (30%) parents had an unhealthy lifestyle, 14 (23.3%) lack of exercise/activity and 12 (20%) had improper diet schedule. These were the main reasons for acquiring obesity. In the control group 1, 17 (28.3%) parents had unhealthy lifestyle, 11 (18.3%) had no proper time management, 9 (15.0%) had stress, sitting job / sedentary life style and improper diet schedule were other causes for acquiring obesity.

From the table, it can be clearly seen that nutritional education had a positive impact in the improvement of life style of both the parents and children, thereby paving the way to healthy living and to control obesity in parents and to prevent childhood obesity.

Table No. 4.3(a) shows the association of exercise of children in both experimental and control group. In the children of experimental group 2, increase in the number of children now opting for exercise was observed. There was a highly significant impact of nutritional education on exercise of children in the experimental group 2 ($P<0.001$). While no such significant changes were observed in the children of control group 2 ($P>0.05$).

Thus, there was a positive impact of nutritional education in making these children opt for exercise, having a strong association on life style.

The obtained chi-value for exercise of parents of experimental group was 29.67 at 4 df which is significant ($p<0.001$, two tailed). The obtained chi-value for exercise of parents of control group was 5.22 at 4 df which is not significant ($p>0.05$, two tailed). In initial stage of both control and experimental group it was found that 3.3%, 11.7%, 35%, 20%, 30% parents (with direct counseling) in experimental and 20%, 33.3%, 23.3%, 23.3%, 23.3% parents (without direct counseling) in control group were doing exercise daily, 4 days/week, 5 days/week, 6 days/week and no exercise in a week respectively. In final stage it was found that 20%, 26.7%, 40%, 13.3%, 0% parents (with direct counseling) in experimental group and 21.7%, 43.3%, 8.3%, 8.3%, 26.7% parents (without direct counseling) in control group were doing exercise daily, 4 days/week, 5 days/week, 6 days/week and no exercise in a week respectively. The obtained chi-value for exercise in both children of experimental and control group was 11.66 at 1 df which is significant ($p<0.001$, two tailed) and was 0.574 at 1 df which is not significant ($p>0.05$, two tailed). It was found that in initial stage of both groups 56.7%, and 33% children were doing exercise and 43.3%, 66.7% children were not doing exercise and in final stage 15%, 60% children were not doing exercise and 85%, and 40% children were doing exercise respectively.

Discussion

Here from the above table we can see that lack of exercise is one of the major reason for developing obesity both on parents and children which in future will strongly affect health of an individual. The parental influence on the development of obesity is apparent. Children of parents who are overweight are more likely to be overweight themselves. This is concluded from above result that parent residing sedentary lifestyle are inheriting same life style pattern in their children's life. Modification in parental lifestyle pattern can bring the same changes in their overweight children and can overcome obesity. Kaplan, *et al*, 2007 found the same solution in relation to lifestyle pattern modification.[2]

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Original Article

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Nutritive Value Evaluation of Mushroom Fortified Indian Recipes

Vinita Singh*, Anjali Verma**

Abstract

Mushrooms are a high valued source of nutrition and mineral constituents which are of paramount importance in the present age. Mushroom powder was prepared by oven dried method. After that two products mathari and rava idli were prepared using mushroom powder. Bio-chemical analysis of rava idli and mathari revealed that 20% fortification of mushroom powder in these products retained high amount of protein and fibre and low amount of fat and carbohydrate than control sample. Idli and mathari are famous Indian dish and mushroom fortification improve there nutritive value as high in protein content, appreciable amount of fat, energy value and fibre content. So,both can be suggested for pre-schooler and school going children in their tiffin box and for fever, burn, trauma, diabetic and heart and post operative patients because of its high nutritive value.

Keywords: Oyster mushrooms (*Pleurotus sajor caju*); Indian recipes; Fortification; Malnutrition; Nutritive value; Rava; Besan; Refined flour.

Introduction

Mushrooms have been recognized as most loved vegetarian food, rich in nutrition, particularly protein. With their flavour, texture, nutritional value, very high productivity per unit area and time, less dependence on land and ability to grow on a variety of residual agricultural wastes, mushrooms have rightly been identified as a food source to fight malnutrition in developing countries.[1] Mushrooms are of excellent food value as they provide a full protein food containing all the twenty one amino acids besides containing useful amount of fats, vitamins and minerals. Mushroom protein being easily digestible (70-90%) is considered superior to vegetable proteins.[2] Two essential amino acids lysine and tryptophan are enormously present in mushrooms which are not found in cereals. Being low in caloric value (300 – 390 Kcal/100 g dry wt), low fat and high protein, they are considered as 'delight of diabetic patients'.[3] Folic acid and Vitamin B-12 which are normally absent in vegetarian foods are present in mushrooms (3 g fresh mushroom can supply 1 micro g vitamin B12, recommended for daily uptake).[4]

The present study was carried out in the Department of Food Science and Nutrition, M.A.B. college of Home Science, C. S. Azad University of Agriculture and Technology, Kanpur.

Research Methodology

Development of Products

1. Preparation of Rava Idli: Fortified rava idli in which rava+besan was replaced by mushroom powder at different levels as 5%, 10%, 15% and 20% were prepared.

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Method:

- Rava and besan (2:1 ratio) was taken in a bowl.
- 2 tsp. of curd was added in it and also water if necessary.
- Slurries was combined to form a thick batter and mixed well.
- Salt for seasoning (Approximately 1% v/v) was added in batter.
- Then, the batter was kept at room temperature over night for fermentation. After desired fermentation, the batter was poured into small cups in idli cooker.
- Then it was steamed for 10 minutes.

2. Preparation of Mathari: Fortified mathari in which refined flour was replaced by mushroom powder at different levels as 5%, 10%, 15% and 20% were prepared.

Method:

- Refined flour was taken and sieved.
- Salt and ajwain was added in flour.
- Then hydrogenated fat was added and mixed well.
- All ingredients were kneaded into soft dough using required water and then equal sizes of balls were made by them.
- Balls were made into different shape as like and then deep fried.

Nutritive Value of Prepared Products

The prepared samples were analyzed for nutritive value as protein, fat, carbohydrate, fiber and ash using standard procedure.

Statistical Analysis

The data obtained in the present investigation were tabulated statistically by using CRD (Completely Randomized Design).

Research findings and Discussion

1. Mean Score of Nutritive Value of Mushroom Fortified Rava Idli

The data of mean score were tabulated and analyzed statistically; result and discussion has been presented in Table 1.

Protein Profile: Table 1 shows that mean score of protein content in control sample was 11.76, while the mean value of protein of T_1(5%), T_2(10%), T_3(15%) and T_4(20%) fortified products were 12.57, 12.89, 13.44 and13.98 respectively. T_4(20%) sample was found highly significant in respect to protein content than control and other fortified products. It is clear from the table that protein content of 20% fortified product was higher than control and other fortified products which means that the protein content of products were increases as the level of fortification of mushroom powder increased in rava idli.

Fat Profile: It is evident from the table1 that the mean score of fat content in control sample of rava idli was 2.5 whereas the mean score of fat for T_1(5%), T_2(10%), T_3(15%) and T_4(20%) mushroom fortified products were 2.46,2.39,2.30 and 2.24 respectively. A perusal of data presented in table indicates that control and mushroom fortified products were significant to each others. The fat content of fortified products was decreased in some amount with increase in level of mushroom fortification. 20% fortified sample had contain less amount of fat than control and other fortified products.

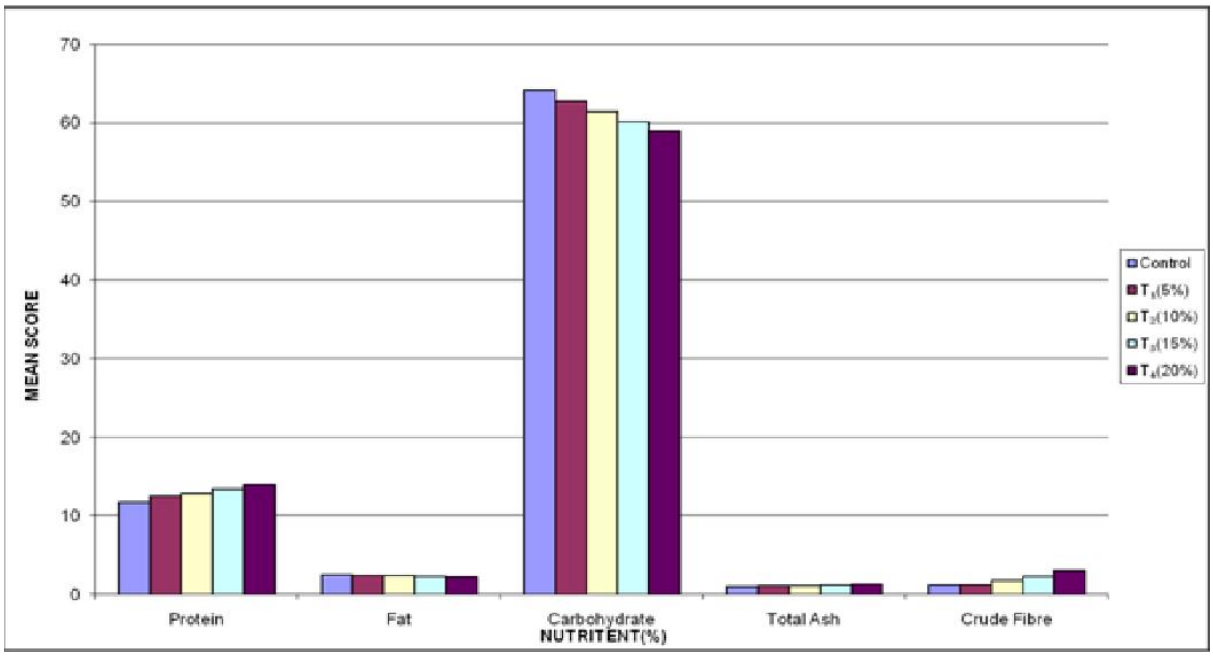
Carbohydrate Profile: Table 1 indicates that the mean score of carbohydrate content in control sample was 64.10 whereas for T_1(5%), T_2(10%), T_3(15%) and T_4(20%) mushroom fortified products were 62.69,61.4,60.40 and 60.12 respectively. The above table shows that control and fortified products were highly significant at the level of 5% critical difference. Table reveals that as the level of fortification of mushroom powder in rava idli increased, the carbohydrate content of products was decreased. It means that carbohydrate content

Table 1: Mean Score of Nutritive Value of Mushroom Fortified Rava Idli. (In per 100g)

S. No.	Study Group Products	Nutrients					Mean
		Protein (%)	Fat (%)	Carbohydrate (%)	Total Ash (%)	Crude Fibre (%)	
1.	Control	11.76	2.5	64.1	0.98	1.2	16.11
2.	T_1	12.57	2.46	62.69	1.07	1.26	16.01
3.	T_2	12.89	2.39	61.4	1.15	1.79	15.92
4.	T_3	13.44	2.3	60.12	1.22	2.37	15.89
5.	T_4	13.98	2.24	58.84	1.29	3.02	15.87
	Mean	12.93	2.39	61.43	1.14	1.93	

NOTE: T_1: 5% level of mushroom fortification, T_2: 10% level of mushroom fortification
T_3:15% level of mushroom fortification, T_4:20% level of mushroom fortification

Figure 1: Mean Score of Nutritive Value of Mushroom Fortified Rava Idli



of fortified products was lower than control sample.

Crude Fibre Profile: It is evident from the table 1 that the mean score of crude fibre content in control sample was 1.2 whereas for T_1(5%), T_2(10%), T_3(15%) and T4(20%) mushroom fortified products were 1.26, 1.79, 2.37 and 3.02 respectively. The above table shows that crude fibre content of control and fortified samples were highly significant. The fibre content of 20% fortified product was higher than control and other fortified products which reveals that the fibre content of products were significantly increased as the level of fortification of mushroom powder was increased in rava idli.

Total Ash Profile: Table 1 shows that mean score of total ash content in control sample was 0.98, while the mean score of T_1(5%), T_2(10%), T_3(15%) and T_4(20%) mushroom fortified products were 1.07, 1.15,1.22 and 1.29 respectively. The above table indicates that there were slight differences in total ash content between control and fortified products but the mean score of total ash content was high in T_5(20%) sample. It is concluded that T_4(20%) mushroom fortified rava idli had highest ash content.

2. Mean Score of Nutritive Value of Mushroom Fortified Mathari

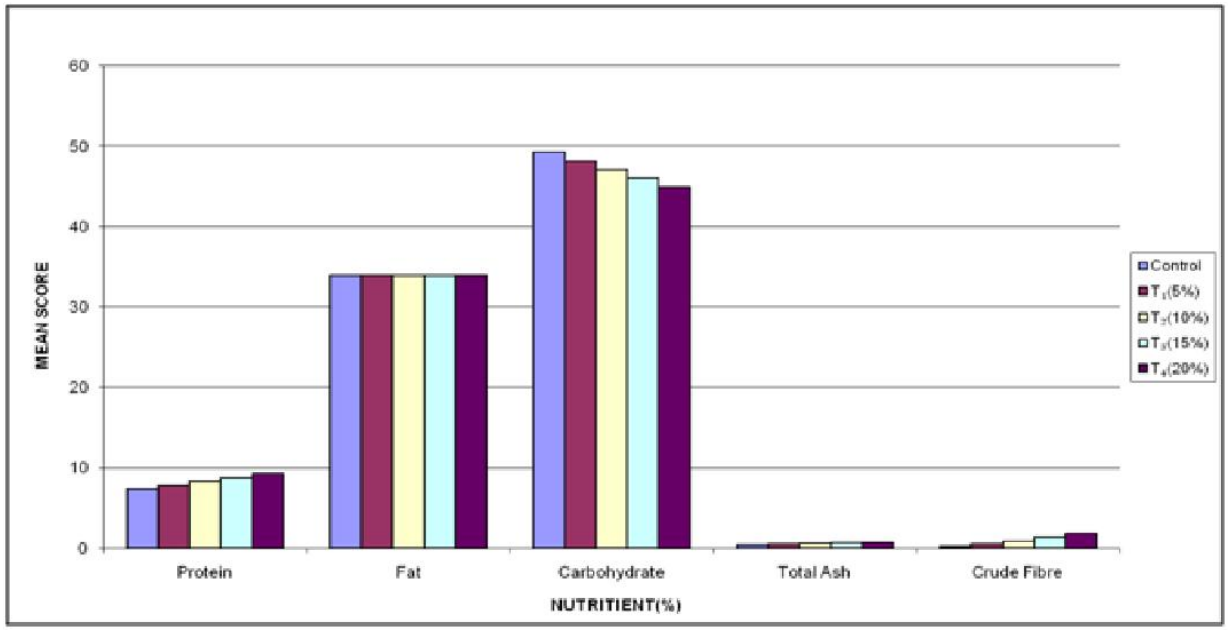
The data of mean score were tabulated and analyzed statistically; result and discussion has

Table 2: Mean Score of Nutritive Value of Mushroom Fortified Mathari (In per 100g)

S. No.	Study Group Products	Nutrients					Mean
		Protein (%)	Fat (%)	Carbohydrate (%)	Total Ash (%)	Crude Fibre (%)	
1.	Control	7.3	33.93	49.27	0.4	0.2	18.22
2.	T1	7.8	33.94	48.16	0.47	0.45	18.16
3.	T2	8.26	33.94	47.07	0.54	0.9	18.14
4.	T3	8.73	33.95	45.98	0.62	1.35	18.13
5.	T4	9.2	33.95	44.88	0.69	1.8	18.10
	Mean	8.26	33.94	47.07	0.54	0.94	

NOTE: T_1: 5% level of mushroom fortification, T_2: 10% level of mushroom fortification
T_3:15% level of mushroom fortification, T_4: 20% level of mushroom fortification

Figure 2: Mean Score of Nutritive Value of Mushroom Fortified Mathari



been presented in Table 2.

Protein Profile: Table 2 shows that mean score of crude protein content in control sample was 7.3, while the mean value of protein of T_1(5%), T_2(10%), T_3(15%) and T_4(20%) fortified products were 7.8, 8.26, 8.73 and 9.2 respectively. Table indicates that products were found significantly differed from each others. T_4(20%) sample was found highly significant in respect to protein content than control and other fortified products. It is clear from the table that protein content of 20% fortified product was higher than control and other fortified products.

Fat Profile: It is evident from the table 2 that the mean score of fat content in control sample was 33.93 whereas the mean score of fat for T_1(5%), T_2(10%), T_3(15%) and T_4(20%) mushroom fortified products were 33.94,33.94,33.95 and 33.95 respectively. A perusal of data presented in table indicates that control and mushroom fortified products were highly non significant to each others.

Carbohydrate Profile: Table 2 indicates that the mean score of carbohydrate content in control sample was 49.27 whereas for T_1(5%), T_2(10%), T_3(15%) and T_4(20%) mushroom fortified products were 48.16, 47.07, 45.98 and 44.88 respectively. The above table shows that control and fortified products were significant at the level of 5% critical difference. Table reveals that as the level of fortification of mushroom powder in mathari was increased, the carbohydrate content of products was

decreased.

Fibre Profile: It is evident from the table 2 that the mean score of crude fibre content in control sample was 0.2 whereas for T_1(5%), T_2(10%), T_3(15%) and T_4(20%) mushroom fortified products were 0.45, 0.9, 1.35 and 1.80 respectively. The above table shows that crude fibre content of control and fortified samples were significant. It means that they were differed from each other. The fibre content of 20% fortified product was higher than control and other fortified products which reveals that the fibre content of products were increased as the level of fortification of mushroom powder was increased in mathari.

Total Ash Profile: Table 2 shows that mean score of total ash content in control sample was 0.4, while the mean score of T_1(5%), T_2(10%), T_3(15%) and T_4(20%) mushroom fortified products were 0.47, 0.54,0.62 and 0.69 respectively. Table indicates that there were slight differences in total ash content between control and fortified products but the mean score of total ash content was high in T_4(20%) sample.

Conclusion

The nutrient analysis of products (Mathari and Rava Idli) concluded that the nutritive value of products can be increased with fortification of mushroom powder at different increasing level as 5%, 10%, 15% and 20%. In all prepared products the protein and fibre content increases and fat and carbohydrate content decreases with increase in the mushroom powder fortification level. The substitution of mushroom powder showed significant contribution of amino acids and increases the Biological Value and Digestibility Coefficient. Hence the developed supplementary foods are recommended in the diet of vulnerable groups to overcome protein malnutrition. The study suggests that mushroom powder can be used for fortification in Indian traditional recipes because of its exotic flavour and nutritive value similar to the products which is prepared by fresh mushroom.

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Chinese Herbal Medicine for Cancer Pain: Regional Contribution to a Global Problem

Kumar Senthil P.*, Prasad Krishna, Shenoy Kamalaksha***, Kumar Vijaya K.****, Jeganathan******

Abstract

This article is aimed to raise the question of usefulness of Chinese herbal medicine for treating people with cancer pain. Only three studies were found in PubMed, and Chinese herbal medicine had the potential to be an effective therapeutic adjunct to medical analgesic management, by reducing their adverse effects, and various methods of use provide advantageous options for management of cancer survivors in not only relieving pain but also in improving quality of life.

Keywords: Chinese herbal medicine; Herbal nutrition; Clinical nutrition; Cancer nutrition.

This letter to editor congratulates the International Journal of Nutrition and Food Sciences on its maiden scientific journey of publishing evidence. This article is aimed to raise the question of usefulness of Chinese herbal medicine for treating people with cancer pain.

Xu *et al* reviewed literature on Chinese herbal medicine for cancer pain by searching CBM, CMCC, Wanfang, and Weipuin Chinese and PubMed and EMBASEin English. The authors found 115 articles that were on various methods of administration (external application, oral administration, intravenous infusion, and other applications such as inhalation and clysmata); and 41 were randomized controlled clinical trials.The summative findings from those trials suggested that "(1) Chinese medicine may be effective for cancer pain, and its effects are similar to those of Western analgesics; (2) Chinese medicine may reduce the side effects of conventional analgesics, thus enhancing cancer patients' quality of life; and (3) the various methods of application—topical, oral, and intravenous—are suitable to treat a range of pain conditions found in cancer patients."[1]

Wu *et al* investigated the effect of a 1-week Taiwanese traditional herbal diet (TTHD) on pain in 2,466 terminal cancer patients who were randomly divided into three groups: the TTHD group (n=1044; 42.3%) were given the TTHD consisting of analgesic herbs (paeony root: licorice root=1:1) and a Taiwanese tonic vegetable soup (Liliibulbus, Nelumbo seed, and Jujube fruit). The remaining patients were divided into a reference group, given the regular hospital diet, (n=909, 36.9%) and a control group, given the Taiwanese tonic vegetable soup without analgesic herbs, (n=513, 20.8%). The TTHD group reported enhanced pain relief compared to the reference and control groups.[2]

Yu *et al* developed a topical herbal formula XiaotanTongluo analgesic gel (XTTL gel) and explored the mechanisms of XTTL gel in a rat model of bone cancer pain (Walker-256 rat carcinoma cells directly into the right tibial medullary cavity of Wistar rats). The rats were

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randomly assigned to three groups- (1) sham bone cancer control (sham group): vehicle (PBS) inoculation without carcinoma cells plus topical administration of blank gel; (2) Sham treatment control (vehicle group): Walker-256 cell inoculation plus topical administration of blank gel; (3) XTTL gel treatment (treatment group): Walker-256 cell inoculation plus topical administration of XTTL gel. Topical use of XTTL gel may have an analgesic effect on bone cancer pain, an effect mediated by lowering of type I collagen carboxy-terminal telopeptide (ICTP) levels and inhibiting bone resorption by increasingbone-specific alkaline phosphatase (BAP) levels.[3]

Only three studies were found in PubMed, and Chinese herbal medicine had the potential to be an effective therapeutic adjunct to medical analgesic management, by reducing their adverse effects, and various methods of use provide advantageous options for management of cancer survivors in not only relieving pain but also in improving quality of life.

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The methods section should include only information that was available at the time the plan or protocol for the study was written such as study approach, design, type of sample, sample size, sampling technique, setting of the study, description of data collection tools and methods; all information obtained during the conduct of the study belongs in the Results section.

Reports of randomized clinical trials should be based on the CONSORT Statement (http://www. consort-statement. org). When reporting experiments on human subjects, indicate whether the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional or regional) and with the Helsinki Declaration of 1975, as revised in 2000 (available at http://www.wma.net/e/policy/l 7-c_e.html).

Results

Present your results in logical sequence in the text, tables, and illustrations, giving the main or most important findings first. Do not repeat in the text all the data in the tables or illustrations; emphasize or summarize only important observations. Extra or supplementary materials and technical details can be placed in an appendix where it will be accessible but will not interrupt the flow of the text; alternatively, it can be published only in the electronic version of the journal.

Discussion

Include summary of key findings (primary outcome measures, secondary outcome measures, results as they relate to a prior hypothesis); Strengths and limitations of the study (study question, study design, data collection, analysis and interpretation); Interpretation and implications in the context of the totality of evidence (is there a systematic review to refer to, if not, could one be reasonably done here and now?, what this study adds to the available evidence, effects on patient care and health policy, possible mechanisms); Controversies raised by this study; and Future research directions (for this particular research collaboration, underlying mechanisms, clinical research). Do not repeat in detail data or other material given in the Introduction or the Results section.

References

List references in alphabetical order. Each listed reference should be cited in text (not in alphabetic order), and each text citation should be listed in the References section. Identify references in text, tables, and legends by Arabic numerals in square bracket (e.g. [10]). Please refer to ICMJE Guidelines (http://www.nlm.nih.gov/bsd/uniform_requirements.html) for more examples.

Standard journal article

[1] Flink H, Tegelberg Å, Thörn M, Lagerlöf F. Effect of oral iron supplementation on unstimulated salivary flow rate: A randomized, double-blind, placebo-controlled trial. J Oral Pathol Med 2006;35:540-7.

[2] Twetman S, Axelsson S, Dahlgren H, Holm AK, Källestål C, Lagerlöf F, et al. Caries-preventive effect of fluoride toothpaste: A systematic review. Acta Odontol Scand 2003;61:347-55.

Article in supplement or special issue

[3] Fleischer W, Reimer K. Povidone iodine antisepsis. State of the art. Dermatology 1997;195 Suppl 2:3-9.

Corporate (collective) author

[4] American Academy of Periodontology. Sonic and ultrasonic scalers in periodontics. J Periodontol 2000;71:1792-801.

Unpublished article

[5] Garoushi S, Lassila LV, Tezvergil A, Vallittu PK. Static and fatigue compression test for particulate filler composite resin with fiber-reinforced composite substructure. Dent Mater 2006.

Personal author(s)

[6] Hosmer D, Lemeshow S. Applied logistic regression, 2nd edn. New York: Wiley-Interscience; 2000.

Chapter in book

[7] Nauntofte B, Tenovuo J, Lagerlöf F. Secretion and composition of saliva. In: Fejerskov O, Kidd EAM, editors. Dental caries: The disease and its clinical management. Oxford: Blackwell Munksgaard; 2003. p. 7-27.

No author given

[8] World Health Organization. Oral health surveys - basic methods, 4th edn. Geneva: World Health Organization; 1997.

Reference from electronic media

[9] National Statistics Online—Trends in suicide by method in England and Wales, 1979-2001. www.statistics.gov.uk/downloads/theme_health/HSQ 20.pdf (accessed Jan 24, 2005): 7-18. Only verified references against the original documents should be cited. Authors are responsible for the accuracy and completeness of their references and for correct text citation. The number of reference should be kept limited to 20 in case of major communications and 10 for short communications.

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Number tables, in Arabic numerals, consecutively in the order of their first citation in the text and supply a brief title for each.

Explain in footnotes all non-standard abbreviations that are used in each table.

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