



Effectiveness of Slide Show on Importance of Calcium Rich Diet during Premenopausal Stage

Rita Thapa

Assistant Professor Sumandeep Nursing College, Sumandeep Vidyapeeth, Piparia, Vadodara-391760, Gujarat, India,

ABSTRACT

Background: Calcium is an important determinant of bone density. Change to improve the calcium intake prevent significant consequences later in life. Estrogen level gradually diminishes during Pre and Post menopausal period which may lessen bone density. Therefore, an educational interventions on importance of calcium rich diet is necessary to implement a behavior

Aims and objectives: The study aimed at imparting the knowledge regarding importance of Calcium rich diet during Pre-menopausal stage among School Teachers in selected Schools at Bangalore

Material and Methods: An evaluative approach with quasi experimental one group Pre test and Post test research design was used. 50 School Teachers were selected by using Simple random sampling technique through lottery method. The tool used to collect data was Self-Administered Structured Questionnaire. Data was analyzed by both descriptive and inferential statistics.

Results: Result of study reveals that the pre test mean knowledge score was 14.12 and post test mean score was 28.06. The paired 't' test value was 28.14* which is statistically significant at 0.05 level of degree of freedom. There was statistical significant association of pretest mean knowledge level score of school teachers with their selected demographic variables such as Age, education, physical activity and type of family.

Conclusion: It is concluded that the slide show was significantly effective in improving the knowledge of the School Teachers regarding importance of Calcium rich diet during Pre-menopausal stage

KEYWORDS

School teachers, knowledge, Calcium rich diet, Slide Show, Premenopausal stage

INTRODUCTION

"Focus on women's health and diet, from bony baby to child, teenager and women; through menarche, child bearing, breast feeding, Pre-menopause and Menopause a woman goes through a lot of phases in one's lifetime. Each phase is unique with a slight change in nutritional needs, helping the women to sail gracefully from childhood to womanhood and stay strong, hearty and happy through the graying years"¹.

Health depends on various factors such as balanced and nutritious diet. Calcium is one of the essential components to be included in balance diet for the maintenance of good health².

Calcium is one of the major mineral elements of the body's growth and function. It is an integral part of bones structure, providing rigid frame that holds the body upright and serve as attachment points for muscles, making motion possible³

Calcium is essentially important at menopausal transition period (Pre-menopause) it is the phase before menopause actually takes place, when ovarian hormone production is declining and fluctuating causing changes in their menstrual cycle. When estrogen levels begins to drop, the follicular phase of the cycle may be shortened, and these can shortened the total cycle to 26 to 24 days resulting in more frequent periods. Additionally this fluctuating estrogen level can produce symptoms like hot flashes, breast tenderness and many other complications. This is the time when Calcium absorptions slows down with the decline in estrogen level leaving bones without the protective bone building properties of this hormones. In turn, the susceptibility to thinning of bones increases and one becomes susceptible for Osteoporosis⁴.

Osteoporosis is an increasing public health problem worldwide. It is characterized by low bone mass and micro architectural deterioration of bone tissue, leading to enhanced bone fragility and consequent increase in risk for Fracture. It has been estimated that in 1990, 1.7 million people globally suffered from Osteoporosis hip fractures. The number might in-

crease to 6.3 million by 2050. The Indian statistics reveal that 6.1 crores people in India are osteoporotic, of these 50 lakhs will have Osteoporotic fracture⁵.

Osteoporosis is preventable and treatable, yet, due to lack of awareness even among educated people the cases remain undiagnosed and untreated. So, there is urgency of protecting one self and has to be learned through education because body sends no signals saying bones loss is occurring as blood Calcium remains normal no matter what the bone content may be⁶.

STATEMENT OF THE PROBLEM

"A study to assess the Effectiveness of Slide Show on Importance of Calcium rich diet during Pre-menopausal Stage among School Teachers in selected Schools at Bangalore".

OBJECTIVES OF THE STUDY

- To assess the Pre test knowledge level on importance of Calcium rich diet during Pre menopausal stage among School Teachers.
- To assess the Post test knowledge level on Calcium rich diet during Pre-menopausal stage among School Teachers.
- To evaluate the effectiveness of Slide Show by comparing Pre and Post test Mean knowledge scores.
- To associate the Pre test knowledge level scores of School Teachers with their selected Socio-demographic variables.

HYPOTHESES

RH1- There is a significant difference between the Pre and Post test knowledge scores on Importance of Calcium rich diet during Pre-menopausal stage among School Teachers.

RH2- There is a significant association in Pre test knowledge level scores on importance of Calcium rich diet during Pre-menopausal stage among School Teachers with selected Sociodemographic variables

MATERIALS AND METHODS

Research Approach: Evaluative research approach was used.

Research Design: A one group pre-test post-test quasi experimental research design was adopted

Setting of the Study: The study was conducted in five selected schools of Bangalore.

Target Population: The target population for this study consisted of School Teachers between the age group of 38-45 years

Sample: The sample for the present study comprises of 50 School Teachers in selected schools of Bangalore.

Sampling technique: Probability Simple random sampling technique was used.

Development of tool for data collection: It consists of 2 Sections:-

Section A:- The demographic variables are age, Marital status, educational level, physical activity, age at menarche, interval of menstrual cycle, type of menstrual flow, religion, food habit, no of children, family income/month, type of family and source of information.

Section B:- It consists of 35 items on importance of Calcium rich diet during Pre-menopausal stage. The questionnaires consist of total 6 sections this are:-

- ASPECT I: Consist of knowledge related to general information about Pre-menopause and Menopause. (8 statements).
- ASPECT II: Consists of knowledge related to Physiological changes during Pre-menopause and Menopause (5 statements)
- ASPECT III: Consists of knowledge on Importance of Calcium rich diet during Pre- Menopausal stage (12 statements)
- ASPECT IV: Consists of knowledge on Sources and Practices required to retain the Calcium in food (10 statements).

Validity of instrument: Prepared tool along with the objective of the study, criterion rating scale and the blue print were submitted to 11 experts for content validity. Eight experts were from the field of Obstetrics and Gynecology nursing, one from the Consultant Obstetrician & Gynecologist, one from the field of Nutrition and one from the field of statistics.

Reliability: The reliability of the tool was computed by using Split half technique employing Spearman Brown's Prophecy formula. The computed reliability coefficient of the knowledge tool was found to be $(r_{11}) = 0.9494$ and further, the statistical validity coefficient was found to be 0.9754. It was statistically significant and thus, the tool was found reliable.

Data collection procedure: The data collection was carried out from 17.09.2010. to 18.10. 2010. The purpose of the study was explained to the sample and informed consent was taken before starting the study. A Pre test was conducted by self administered structured knowledge questionnaire to each sample. Duration of 30-40 minutes was given for each sample to complete the tool. On the same day, the Slide Show on Importance of Calcium rich diet during Pre- menopausal stage was administered for 45 minutes. Post test was conducted by using the same self administered structured knowledge questionnaire after 5 days of the Slide Show on Importance of Calcium rich diet during Pre- menopausal stage. All School Teachers co-operated well with the investigator in both Pre and Post test. It was found that the School Teachers appreciated the Slide Show. The data collection procedure was terminated by thanking the School Teachers

Analysis of data

Both descriptive and inferential statistics analyzed on the basis of the objectives and hypotheses of the study. The Knowledge

scores of the School Teachers before and after the Slide Show were analyzed in terms of frequency, percentage, mean, and mean percentage and standard deviation. The comparison of Pre and Post test level score were determined by paired 't' test, further, chi square was employed to measure the association between knowledge level and selected demographic variables. The test results were subjected for testing at 0.05% level of probability. The outcome of the result interpreted using diagrams and graphs.

RESULTS

The findings discussed under the following headings based on objectives of the study.

- **Section I:** - Description of demographic data of the samples.
- **Section II:** - Evaluation of the Effectiveness of Slide Show by comparing Pre and Post test mean knowledge scores on importance of Calcium rich diet during Pre-menopausal stage among Samples
- **Section III:** - Association of the Pre test knowledge level Scores with selected Socio-demographic variables of Samples

SECTION I: - DESCRIPTION OF DEMOGRAPHIC DATA OF THE SAMPLE

Sl. No	Socio demographic variables	Category	Frequency (f)	Percentage (%)
1	Age Group (years)	38-39	19	38.0
		40-41	17	34.0
		42-43	14	28.0
2	Marital status	Married	50	100.0
		Unmarried	0	0.0
3	Educational level	Graduate	28	56.0
		Graduate with B.Ed.	11	22.0
		Post graduate	11	22.0
4	Physical activity	Exercise	25	50.0
		Yoga	14	28.0
		No	11	22.0
5	Age at Menarche	11-12 years	17	34.0
		13 years	21	42.0
		14-15 years	12	24.0
6	Interval of Menstrual cycle	25-27 days	11	22.0
		28-30 days	30	60.0
		31-33 days	9	18.0
7	Type of Menstrual flow	Regular	34	68.0
		Irregular	16	32.0
8	Religion	Hindu	43	86.0
		Christian	7	14.0
9	Food Habit	Vegetarian	25	50.0
		Non vegetarian	15	30.0
		Mixed	10	20.0
10	Number of Children	None	5	10.0
		One	22	44.0
		Two	23	46.0
11	Family Income/month	< Rs. 10,000	14	28.0
		Rs. 10,001-20,000	25	50.0
		>Rs. 20,000	11	22.0

Age wise distribution of school Teachers reveals that majority of the 19 (38.0%) of the respondents were found in the age group of 38-39 years followed by 17 (34.0%) School Teachers

were in the age group of 40-41 years and 14 (28.0 %) of the School Teachers were in the age group of 42-43years.

Regarding Physical activity, 25 (50 %) of them have the habit of performing exercises, 14 (28%) of them perform Yoga and 11 (22%) do not perform any specific physical activity. In the studied sample, 17 (42%) School Teachers attained menarche at the age of 13 years, followed by 17 (34%) School Teachers who had attained menarche at the age of 11-12 years and 12 (24%) attained menarche at the age of 14-15 years.

With regard to interval of menstrual cycle, 34 (68%) of the School Teachers have menstrual cycle between 28-30 days interval whereas, 11 (22%) of them have between the interval of 25-27 days and 9 (18.0%) have between 31-33 daysinterval

Majority of the School Teachers, 34 (68%) were having regular menstrual flow and16 (32%) School Teachers were having irregular menstrual flow.

The majority of the School Teachers 43 (86%) were Hindus and the remaining7 (14.0%) were Christians.

Regarding Food habit, it is found that majority 25 (50.0%) School Teachers were having vegetarian dietary habit whereas, 15 (30.0%) School Teachers and 10 (20.0%) School Teachers were having non vegetarian and mixed type of dietary habits respectively.

In the studied sample, 23 (46.0%) School Teachers have two children, 22 (44.0 %) School Teachers have one child and 5 (10.0%) School Teachers have no children

Family income shows that 25 (50.0%) School Teachers possessed income between Rs.10, 000- Rs.20, 000, 14 (28.0%) School Teachers had less than Rs 10,000 and 11 (22.0%)

School Teachers had income of more than Rs 20,000.

Majority of the studied sample 40 (80.0%) were from nuclear family and the remaining 10 (20.0%) School Teachers were from joint family.

Regarding Source of information, 20 School Teachers (40.0%) got information from the health personnel and 16 School Teachers (32.0%) through their family members and relatives, 13 (26.0%) School Teachers through Print media, 8 (16.0%) through electronic media and 4 (8.0%) through friends or neighbor.

SECTION II: - EVALUATING THE EFFECTIVENESS OF SLIDE SHOW BY COMPARING PRE AND POST TEST MEAN KNOWLEDGE SCORE ON IMPORTANCE OF CALCIUM RICH DIET AMONG SCHOOL TEACHERS

The pretest and posttest scoring interpretation of the respondents reveals that 32 (64%) of the School Teachers had inadequate knowledge level in Pre test as compared to none found inadequate knowledge level in the Post test, followed by 18 (36%) of the School Teachers had moderate knowledge level in Pre test as compared to 16 (32%) moderate knowledge level in the Post test. Further, none of the School Teachers had adequate knowledge level in Pre test as compared to 34 (68%) adequate knowledge level in the Post test on importance of Calcium rich diet during Pre-menopausal stage among School Teachers. The data subjected for chi-square test reveals that the knowledge level from Pre test from Post test found significant among School Teachers on importance of Calcium rich diet during Pre-menopausal stage ($\chi^2= 66.12^*$, $P< 0.05$). So it indicates that there is increased the level of knowledge of School Teachers in posttest compare to the pretest after administration of the Slide Show so it proves that my slide show is effective for respondents.

TABLE I:COMPARISON BETWEEN PRE AND POST TEST KNOWLEDGE LEVELS OF SCHOOL TEACHERS ON IMPORTANCE OF CALCIUM RICH DIET DURING PRE-MENOPAUSAL STAGE. N=50

Knowledge Level	Range of Score	Pre test		Post test	
		Frequency (f)	Percentage (%)	frequency(f)	Percentage (%)
Inadequate	≤ 50 % Score	32	64.0	0	0.0
Moderate	51-75% Score	18	36.0	16	32.0
Adequate	> 75 % Score	0	0.0	34	68.0
Total		50	100.0	50	100.0
χ^2 Value		66.12*			

* Significant at 5 % Level, χ^2 (0.05, 2 df) = 5.991

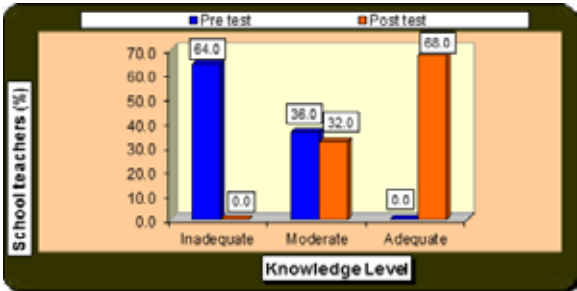


Figure 1: Comparison between Pre and Post test knowledge levels of School Teachers on Importance of Calcium rich diet during Pre-menopausal stage

SECTION II: COMPARISON BETWEEN ASPECT WISE PRE AND POST TEST MEAN KNOWLEDGE LEVEL SCORES OF SCHOOL TEACHERS ON IMPORTANCE OF CALCIUM RICH DIET DURING PRE-MENOPAUSAL STAGE.

In the Pre test, knowledge scores were considerably less compared to Post test performance in all the aspects of knowledge under study. The findings showed that the maximum mean score 45.8 % found in the aspect of General Information on Pre-menopause and Menopause in the Pre test and that in Post test was 92.5% with a 't' value of 20.06*. The mean score in Pre test was 40.8% whereas, that in Post test was 74.0% in the aspect of Physiological changes during menopause and Pre-menopause with a't' value of 11.29*, The mean score found in the aspect of Importance of Calcium rich diet in Pre test knowledge was 32.0% and that in Post test was 73.3% with a 't' value of 16.38*. Regarding Sources & Practices to retain Calcium in food, the mean score obtained in Pre test was 44.6% whereas, that in Post test was 81.6% with a 't' value of 16.25*. Hence, the statistical paired 't' test value 28.14* reflects the significant enhancement of mean knowledge score for all the selected knowledge aspects at 0.05 level of significance which indicates the effectiveness of Slide Show on knowledge regarding importance of Calcium rich diet during Pre-menopausal stage among School Teachers.

TABLE II: COMPARISON BETWEEN ASPECT WISE PRE AND POST TEST MEAN KNOWLEDGE LEVEL SCORES OF SCHOOL TEACHERS ON IMPORTANCE OF CALCIUM RICH DIET DURING PRE-MENOPAUSAL STAGE. N=50

Sl. No	Aspect wise	Pre test		Post test		Enhancement		Paired 't' test
		Mean \bar{x}	SD (σ)	Mean \bar{x}	SD (σ)	Mean \bar{x}	SD (σ)	
I	General Information	45.8	15.7	92.5	10.1	46.8	16.5	20.06*
II	Physiological changes	40.8	19.4	74.0	17.7	33.2	20.8	11.29*
III	Importance of Calcium rich diet	32.0	15.0	73.3	12.0	40.3	17.4	16.38*
IV	Sources & Practices to retain Calcium in foods	44.6	15.9	81.6	10.8	37.0	16.1	16.25*
	Overall Knowledge	40.3	10.5	80.2	6.2	39.8	10.0	28.14*

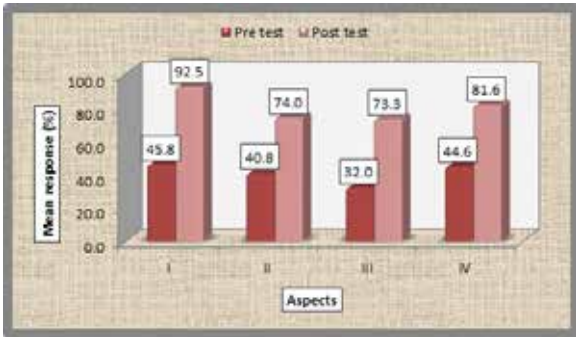


Fig 2Comparison between aspect wise Pre and Post test Mean Knowledge level scores of School Teachers on Importance of Calcium rich diet during Pre-menopausal stage.

SECTION III: ASSOCIATION OF THE PRE TEST KNOWLEDGE LEVEL SCORES WITH SELECTED SOCIODEMOGRAPHIC VARIABLES OF SCHOOL TEACHERS.

The association of Age and knowledge level reveals that 78.6% belongs to the age group of 43-45 years who had inadequate knowledge level, followed by 76.5% of 40-41 years and 42.1% School Teachers in the age group of 38-39 years. It is interesting to note that there is significant association between age and knowledge level of School Teachers ($\chi^2=6.39^*$) at $p<0.05$ (Figure- 9).

The association between the Educational level and knowledge level of the Pre test indicates that 78.6% graduate School Teachers have inadequate knowledge followed by 54.5% graduate with B.Ed and 36.4% Post graduate School Teachers. There is significant association between the Educational level and knowledge level of School teachers ($\chi^2 = 6.65^*$) at $p<0.05$ (Figure –10).

The association between the physical activity and knowledge level of the Pre test shows that 85.7 % of the School Teachers who performs Yoga had inadequate knowledge, followed by 64.0% School Teachers who perform exercise and the remaining 36.4% School Teachers who do not perform any forms of physical activity had inadequate knowledge. It is found that there is significant association between the Physical activity and knowledge level of School Teachers ($\chi^2 = 6.51^*$) at $p<0.05$ (Figure – 11).

The association between the type of family and the knowledge level depicts that majority of 72.5% belonging to nuclear family had inadequate knowledge level and the remaining 30% belonging to joint family had inadequate knowledge. Further, it is found that there is significant association between the type of family and knowledge level of School Teachers ($\chi^2 = 6.27^*$) at $p<0.05$ (Figure – 12).

There is no statistical significant association in knowledge level of School Teachers with other selected variables such as Age at menarche, interval of menstrual cycle, type of menstrual flow, Religion, food habits, number of children and family income per month respectively in the Pre test.

TABLE III: ASSOCIATION OF PRE TEST KNOWLEDGE LEVEL SCORES WITH SELECTED SOCIODEMOGRAPHIC VARIABLES OF SCHOOL TEACHERS ON IMPORTANCE OF CALCIUM RICH DIET DURING PRE-MENOPAUSAL STAGE N=50

Sociodemographic Variables	Category	n	Level of Knowledge				χ^2 value	χ^2 table Value
			Inadequate		Moderate			
			f	%	f	%		
Age Group (years)	38-39	19	8	42.1	11	57.9	6.39*	5.991 (2)
	40-41	17	13	76.5	4	23.5		
	42-43	14	11	78.6	3	21.4		
Educational level	Graduate	28	22	78.6	6	21.4	6.65*	5.991 (2)
	Graduate with B.Ed.	11	6	54.5	5	45.5		
	Post graduate	11	4	36.4	7	63.6		
Physical activity	Exercise	25	16	64.0	9	36.0	6.51*	5.991 (2)
	Yoga	14	12	85.7	2	14.3		
	No	11	4	36.4	7	63.6		
Age at Menarche	11-12 years	17	11	64.7	6	35.3	1.53 NS	5.991 (2)
	13 years	21	15	71.4	6	28.6		
	14-15 years	12	6	50.0	6	50.0		
Interval of Menstrual cycle	25-27 days	11	4	36.4	7	63.6	4.81 NS	5.991 (2)
	28-30 days	30	22	73.3	8	26.7		
	31-33 days	9	6	66.7	3	33.3		
Type of Menstrual flow	Regular	34	23	67.6	11	32.4	0.61 NS	3.841 (1)
	Irregular	16	9	56.2	7	43.8		
Religion	Hindu	43	28	65.1	15	34.9	0.17* NS	3.841 (1)
	Christian	7	4	57.1	3	42.9		
Food Habit	Vegetarian	25	14	56.0	11	44.0	1.42 NS	5.991 (2)
	Non vegetarian	15	11	73.3	4	26.7		
	Mixed	10	7	70.0	3	30.0		
Number of Children	None	5	3	60.0	2	40.0	0.57 NS	5.991 (2)
	One	22	13	59.1	9	40.9		
	Two	23	16	69.6	7	30.4		

Family Income/month	< Rs.10,000	14	8	57.2	6	42.9	1.41 NS	> 0.05 (2)
	Rs.10,001-20,000	25	18	72.0	7	28.0		
	>Rs.20,000	11	6	54.5	5	45.5		
Type of family	Nuclear	40	29	72.5	11	27.5	6.27*	< 0.05 (1)
	Joint	10	3	30.0	7	70.0		
Combined		50	32	64.0	18	36.0		

* Significant at 5% Level,
NS: Non-significant

Figures in the brackets/ Parenthesis indicate degree of freedom

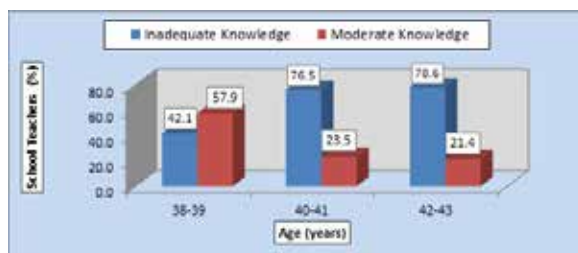


Figure 3: Association of Age with Pre test knowledge level of School Teachers on Importance of Calcium rich diet during Pre-menopausal stage

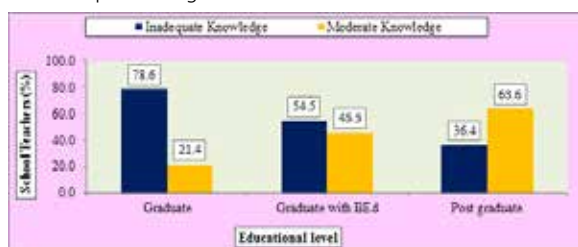


Figure 4 : Association of Education with Pre test knowledge level of School Teachers on Importance of Calcium rich diet during Pre-menopausal stage

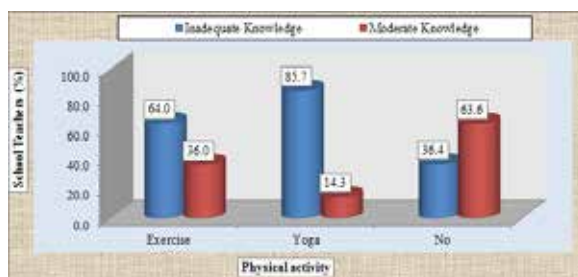


Figure 5: Association of Physical activity with Pre test knowledge level of School Teachers on Importance of Calcium rich diet during Pre-menopausal stage

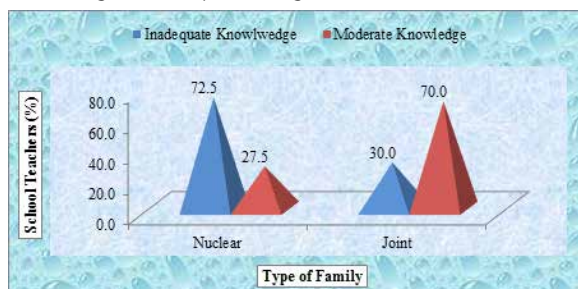


Figure6: Association of Type of Family with Pre test knowledge level of School Teachers on Importance of Calcium rich diet during Pre-menopausal stage.

DISCUSSION

The present study was conducted to determine the effectiveness of Slide Show on Importance of Calcium Rich diet dur-

ing Pre- menopausal stage among School Teachers in selected Schools at Bangalore. The findings of this study is consistent with the findings of the study conducted on "Knowledge and Effectiveness of Osteoporosis Education in the Out patientOrthopedic Setting", In this study 80 female patients ranging from 15 to 73 years of age were assessed regarding their knowledge on Osteoporosis, Calcium intake, menopausal status, exercise, smoking, and whether or not they had had a bone mineral density scan. After that an educational intervention was performed by providing the patients with an informational, significant improvements were seen in terms of patient's ability to define Osteoporosis ($p=0.004$), the ability to identify being female as a major risk factor ($p<0.001$) and the understanding that females should begin adequate Calcium intake at a young age ($p<0.001$). Significant increases in daily Calcium intake ($p<0.001$) and exercise level also occurred ($p<0.003$). The education program setting represents a prime opportunity for education regarding Osteoporosis prevention and lifestyle modification that can be performed in an inexpensive fashion and that can be easily replicated in most offices both in the community and in academic settings. Hence, Teaching programs like slide show are an effective tool for imparting knowledge.

CONCLUSION

The knowledge of School Teachers regarding the Importance of Calcium rich diet during Pre- menopausal stage among School Teachers was inadequate before the administration of the Slide Show. The mean knowledge of the Pre test was 14.12 (40.3%) whereas, the Mean knowledge of the Post test was 28.06 (80.2%) with an enhancement of Mean knowledge found to be 13.94 (39.8%) from Pre test to Post test knowledge. The statistical Paired 't' test was found to be 28.14* indicating significant difference between Pre test and Post test knowledge level scores at $p<0.05$ revealing the effectiveness of the slide show in all knowledge aspects on importance of Calcium rich diet during Pre-menopausal stage among School Teachers. Hence, the Researcher based on the findings, states that the Research hypothesis (RH1) has been accepted.

There was significant association of the knowledge level with the age, educational level, physical activity and type of family with their corresponding chi square values as 6.39*, 6.65*, 6.51* and 6.27* respectively at 0.05 level of significance. Hence, the Researcher based on the findings, states that the Research hypothesis (RH2) has been accepted. However, on the other hand, the stated Research hypothesis (RH2) is rejected with the other selected demographic variables in the Pre test viz. age at menarche, interval of menstrual cycle, type of menstrual flow, religion, food habit, number of children and family Income per month as no significant association in mean knowledge level regarding Importance of Calcium rich diet during Pre-menopausal stage among School Teachers with selected demographic variables was found.

ACKNOWLEDGEMENT

I express my gratitude and thanks towards all who have directly or indirectly helped me to complete this study and their support in each major step of the study.

LIMITATIONS OF THE STUDY

The study did not assess the attitude and practice of School Teachers regarding importance of Calcium rich diet intake during Pre-menopausal stage.

Small number of sample subjects leads in limiting the generalization of the study.

RECOMMENDATIONS

On the basis of the findings of the study following recommendations have been made are:

- A similar study can be replicated on large sample to generalize the findings.
- An experimental study can be conducted with control group for the effective comparison of the results.
- A similar study can be conducted among different occupations during pre-menopausal stage
- A study can be carried out to evaluate the efficiency of various teaching strategies like self-instructional module, pamphlets, leaflets, and computer assisted instruction on importance of Calcium rich diet during Pre-menopausal stage.
- A study can be conducted by including other additional socio- demographic variables that may influence the level of knowledge of the School teachers.
- A study can be carried out to evaluate the effectiveness of structured teaching Programme /IEC package on importance of calcium rich diet intake during Pre-menopausal stage.

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