Explore the Knowledge on Osteoporosis among Working and Non Working Premenopausal Women

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Abstract: *Osteoporosis is a non communicable global health problems and its prevalence is rapidly increasing worldwide. This study was aimed to assess knowledge on osteoporosis among working and nonworking premenopausal women. A descriptive cross sectional study was carried out with 250 study population in two groups. Data was collected from a semi structured questionnaire. This study shows the mean score of Osteoporosis knowledge test score (OKTS) was significantly higher among working women (10.24) as against their non-working counterparts (8.97). Difference between knowledge scores of working (8.9) and non working (10.24) was slightly variable. It urges to educate on osteoporosis all women.*

Keywords: osteoporosis; premenopausal women; knowledge; cross sectional study

1. Introduction

World Health Organization (WHO) operationally defines osteoporosis as a bone density that falls 2.5 standard deviation (S.D.) below the mean for young health adult of the same sex, also referred to as a T-score of -2.5. [1] Women who fell at the lower end of the young normal range (at score <-1.0) are defined as having low boned density leads to none fragility and increased risk of fracture. Osteoporosis is a socio-economic burden in developed and developing countries [3] In Indian scenario women are roots of the family they usually care takers of the family when care taker is bed ridden entire family existence will be altered intern results in reduced functional independence and quality of the life which makes osteoporosis as a public health concern [4] Osteoporosis is also one among disease of aging the treatment costs are more expensive after diabetes, hyperlipedemia, hypertension and heart disease [5] The incidence is increasing in developing countries like India as the life expectancy increasing in these countries [6]. Osteoporosis is estimated to affect 200 million women worldwide, 1 out of 3 females in India suffer from osteoporosis in making India and one of the largest affected countries in the world [7]. So osteoporosis is a major challenge in India. Indians are more at risk of developing the disease due to low peak bone may poor calcium and vitamin D [8] It is fallacy to think that age is the only risk causing osteoporosis. It is not at all an old age disorder[9] If women do not take adequate calcium packed diet including dairy products and vitamin D supplements osteoporosis occurs quite early [10] By assessing knowledge there is a possibility to plan prevention programmes at early age. With this background this study aimed to explore the knowledge on prevention of osteoporosis among working and nonworking premenopausal women

2. Methods and materials

Cross sectional descriptive research design is adopted in this research work as it deals mainly in understanding the differentials in socio-demographic and economic characteristics, besides to assess the extent of Osteoporosis knowledge test (OKT) among working and non-working women. However, at the later stage analytical design is also adopted since this research work also aims in comparison, explanation and application of multivariate analysis with suitable statistical tools for testing hypotheses. The study was conducted in five streets gollavanigunta, indiranagar, nehrunagar, singalagunta, madhavnagar (or cluster of houses) positioned in 5 wards of Tirupati municipal corporation, which is located in Chittoor District, of Andhra Pradesh state, India. As the major interest of this research work is to examine the net effect of work status of women on their knowledge related to osteoporosis, the sample size was 250. The data were collected from 500 respondents, 250 working and 250 non-working women by providing a due representation to different wards consent was taken from the participent. A Semi-structured questioner was used to collect information on socio-demographic and economic characteristics of the respondents as well as selected aspects related to osteoporosis [11] A little modification was made to original one, so as to include 17 statements instead of 22 statements. This scale was measured based on the 'true' or 'false' responses for 17 statements stated above. The data was analysed making use of frequency tables and independent sample t-test of significance across the working and non-working status. All these data were analysed with the help of MS excel and online software's.

3. Results

Socio-demographic profile of women
Majority of working women were younger in age (25-35 years) as against than their non-working counterparts (48% *vs.* 39%) and the percentage differentials across their age groups by their work status were found to be moderately significant (p<0.05) (Table.1 supplementary material). While about 46 per cent of the working women were educated up to high school / intermediate and above (60%), only 14 percent of the non-working had such levels of education and these percentage differentials were turned out as highly significant (p<0.001).

A huge majority of the working women (33%) as against 19per cent of the non-working women were belonged to higher monthly family income category (Rs. 16,000/- and

above) and these percentage differentials were turned out as highly significant (p<0.001). The percentage of women who were fully non-vegetarian was higher among working (58%) than among non-working women (48%) and these percentages varied to a moderately significant extent (p<0.05). A large percentage of working women as against non-working women (30% *vs.* 18%) got married relatively at higher ages (21 years & above) and these percentages varied statistically highly significant (p<0.001). A considerable percentages of the working women as against non-working women had exposure to sunlight (35% vs. 24%) and these percentages varied to a highly significant extent (p<0.001). A substantial percentage of the working women as against non-working women reported to be had family history of osteoporosis (36% vs. 28%) and these percentages were turned out as moderately significant (p<0.05). About three-tenths of the working women as against 22.0 percent of non-working women had ever suffered from bone related problems and these percentage differentials were turned out as moderately significant (p<0.05). While about 15.0 percent of the working women were diagnosed with bone density, the corresponding percentage among non-working was 8.0 percent only and these percentages varied to a highly significant extent (p<0.01).

Osteoporosis Knowledge Test Scale (OKTS) and its Differentials & Determinants

As per the Table.2, among the total sample respondents, more than half of them (56.6 percent) gave correct answers to the statements. When the responses for individual statements were examined, it was conspicuous to note that nearly three-fifths (ranging between 62.0 percent to 59.0 percent stated the correct answers to the following six statements 'Osteoporosis is equal among men and women', 'Thin women get osteoporosis than others', Spinach is rich source of calcium', Risk of Osteoporosis is more likely after the age of 65 years', and 'Osteoporosis fractures may occur by falling down on the carpet' in that order. Conversely, around half of them (ranging between 50.0 percent and 52.0 percent) stated correct answers to the following three statements on osteoporosis: 'If is necessary to drink 5 cups of milk for the supply of calcium needs during pregnancy', Skeleton reaches its maximum strength at 30 years of age' and 'Yogurt is important food in preventing Osteoporosis. Similarly, more than half (ranging between 54.0 percent and 58.0 percent) of them stated the correct answers to the remaining eight statements. While examining the answers about various statements pertaining to osteoporosis knowledge across the respondents' work status, one can found that the overall percentage of respondents who stated correct was fairly higher among working women (62.0 percent) than their non-working counterparts (52.0 percent). Further, these percentage differentials were also turned out to be significant at a moderate extent (p<0.05). Further, it was also pertinent to note that percentages of all those respondents who stated true were noted to be higher for all the knowledge statements, except in the case of statement number 8 – *Spinach is rich source of calcium* – for which the percentage was marginally higher than those of working (60.4 percent *vs.* 59.6 percent). Besides this, it can be seen that the percentage differences between the correct responses for each statement(s) between working and non-working respondents were strikingly higher for the statements viz.,

Vitamin B12 prevents osteoporosis', 'Dried fish is rich source of calcium', 'Arthrosis is another name of osteoporosis' and 'Sunlight reduces the risk of getting osteoporosis' (ranging in between 10.4 percent and 13.2 percent), whereas similar percentage differences were comparatively much lower in the case of statements such as 'There is no way to prevent osteoporosis' (2.8%) and 'Thin women get osteoporosis than others' (3.6%), whereas similar differences for the remaining statements (nos. 1, 5, 7, 10, 11, 12, 13, 14, 16 and 15) were moderately higher (ranging between 5.2 percent and 9.6 percent) and thereby, fall in between these two extremes. All these figures (Table.2) evidently suggested that on the one side the overall knowledge about various aspects related to osteoporosis was higher among working than non-working women and on the other side such pattern was almost uniform in the case of all the statements related to osteoporosis knowledge. Further the mean score of OKTS was significantly (p<0.001) higher among working women (10.24) as against their non-working counterparts (8.97) Table.3. and independent sample test value of 32.146.

4. Discussion

As per the data collected and compared in Table.4, the knowledge on osteoporosis in our study shows that the Possibility of Osteoporosis is equal in men and women (F) 311 (62.2%) is low compared with [12], 321 (80.7%), similarly Yogurt is an important food in preventing Osteoporosis (T) is 274 (54.8%) than 288 (72.4%), Chewing Tobacco increases the risk of Osteoporosis (T) 297 (59.4%) than 277 (69.0%), Sunlight reduce the risk of getting Osteoporosis (T) 277 (55.4%) than 331(83.2, For supplying calcium needs during pregnancy, it is necessary to drink 5 cups of milk in a day (T) 254 (50.2%)than 203 (51.0%), there is no way to prevent Osteoporosis (F) 291 (58.2%) than 309 (77.6) and Osteoporosis related fracture may occur by falling down on the carpet (T) 295 (59.0%) than 351 (88.2%) all are low when compared with Safizadeh et al 2015. Where as in case of vitamin B12 prevents Osteoporosis (F) is 58.4% (292) than 143 (35.9) is significantly high. and also thin women get Osteoporosis than others (T) stated that 61.8% (309) compared with 215 (54.0), arthrosis is another name of Osteoporosis (F) 271 (54.2%) than 178 (44.7), Spinach is rich source of calcium (T) 300 (60.0%) than 118 (29.6%), the blood test should be done for the diagnosis of Osteoporosis (F) 270 (54.0%) than 163 (41.0), risk of getting Osteoporosis is more likely after the age of 65 years (T) 294 (58.8%) than 159 (39.9%), shortening of height after the age is one of the signs of Osteoporosis (T) 268 (53.6%) than 167 (42.0%), and milk and Yogurt contain the same amount of Calcium (T) 259 (51.8%) than 158 (39.75) were high in Safizadeh et al 2015 study. But Dried fig is a rich source of Calcium (T) 288 (57.6%) and 288 (57.3%), Skelton reaches its maximum strength at 30 years of age 255 (51.0%) than 203 (51.0%) are almost equal in Safizadeh et al 2015 study also. Even though the overall score of OKS is almost equal that is 56.6% in our study and 56.05% in Safizadeh et al 2015 study.

5. Conclusion

Demography and OK of working and Non-working women were collected using the OKST test tool. Our main objective was that, to know the Knowledge on osteoporosis in premenopausal women. As per the OKST the overall knowledge on osteoporosis both in working and non working women is 56.6%, but in working women knowledge score is slightly more 60.4% than non-working women 52.8%, still there is immense need to educate all young women on osteoporosis. This study says that there is a need to explore knowledge in the society.

6. Acknowledgements

7. Implications of the Study

The outcome of this research work is firstly helpful in understanding the extent of knowledge and health beliefs of osteoporosis on a comparative basis among working and non-working women. This research work is likely to be useful in designing the curricula for imparting education among younger generation. In general girls have to take suitable preventive steps towards the occurrence of osteoporosis. Findings of this study would be immensely valuable to administrators and policy makers to formulate strategies and programmes to prevent and/or control osteoporosis. On research front, further studies may be carried out on large scale basis among different sections of the society to understand the knowledge related to osteoporosis on a broader perspective.

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Table 1: Percentage Distribution of Respondents by their age across Working and Non-working Status

	Non-Working		Working		Total	
	%	**No.**	**%**	**No.**	**%**	**No.**
Age*						
25-30	14.4	36	20	50	17.2	86
31-35	24.8	62	28	70	26.4	132
36-40	32.6	82	34.8	87	33.8	169
41 and above	28	70	17.2	43	22.6	113
Education of the Respondents						
Illiterates	44.4	111	4.8	12	24	123
Up to Middle School	40.4	101	34.8	87	37.6	188
High School & Intermediate	13.6	34	45.6	114	29.6	148
Graduate & Above	1.6	4	14.8	37	8.2	41
Family Monthly Income of the Respondents						
8000 and less	24.2	63	10.4	26	17.8	89
8001 – 12000	28.4	71	18.4	46	23.4	117
12001 – 16000	28	70	38.4	96	33.2	166
16001 and Above	19.4	46	32.8	82	25.5	128
Type of food*						
Non-vegetarian	48.4	121	58	145	51.2	256
Vegetarian and egg	38	95	34.4	86	36.8	181
Vegetarian	13.6	34	7.6	19	12	53
Age at Marriage						
17 and less	48.6	106	35.3	77	42	183
18-20	33.5	73	34.4	75	33.9	148
21 and above	17.9	39	30.3	66	24.1	105
Exposure to sunlight						
No	76	190	65.2	163	70.6	353

Yes	24	60	34.6	87	29.4	147
Family history of osteoporosis*						
No	72	180	64.4	161	68.2	341
Yes	28	70	35.6	89	31.8	159
Suffering Bone related problems*						
No	78.4	196	70.4	176	74.4	372
Yes	21.6	54	29.6	74	25.6	128
Diagnosed with bone density						
No	92	230	85.2	213	88.6	443
Yes	8	20	14.8	37	11.4	57
p<0.001						
*p<0.05						

Table 2: Percentage Distribution of the Respondents by their Responses to the Knowledge on Osteoporosis across their Non-working and Working Status

Statements related to Knowledge on Osteoporosis	Non-working (N=250)		Working (N = 250)		Total (N=500)	
	%	No.	%	No.	%	No.
1. Possibility of Osteoporosis is equal in men and women (F)	58.8	147	65.6	164	62.2	311
2. Vitamin B12 prevents Osteoporosis (F)	53.2	133	63.6	159	58.4	292
3. Thin women get Osteoporosis than others (T)	60	150	63.6	159	61.8	309
4. Dried fig is a rich source of Calcium (T)	51.6	129	63.6	159	57.6	288
5. Yogurt is an important food in preventing Osteoporosis (T)	52	130	57.6	144	54.8	274
6. Arthrosis is another name of Osteoporosis (F)	47.6	119	60.8	152	54.2	271
7. Chewing Tobacco increases the risk of Osteoporosis (T)	55.6	139	63.2	158	59.4	297
8. Spinach is rich source of calcium (T)	60.4	151	59.6	148	60	300
9. Sunlight reduce the risk of getting Osteoporosis (T)	49.2	123	61.6	154	55.4	277
10. The blood test should be done for the diagnosis of Osteoporosis (F)	49.2	123	58.8	147	54	270
11. Skelton reaches its maximum strength at 30 years of age(F)	47.2	118	54.8	137	51	255
12. Risk of getting Osteoporosis is more likely after the age of 65 years (T)	54.8	137	62.8	157	58.8	294
13. Shortening of height after the age is one of the signs of Osteoporosis (T)	49.6	124	57.6	144	53.6	268
14. Milk and Yogurt contain the same amount of Calcium (T)	49.2	123	54.4	136	51.8	259
15. Osteoporosis related fracture may occur by falling down on the carpet (T)	54.8	137	63.2	158	59	295
16. For supplying calcium needs during pregnancy, it is necessary to drink 5 cups of milk in a day (T)	47.2	118	53.2	133	50.2	254
17. There is no way to prevent Osteoporosis (F)	56.8	142	59.6	149	58.2	291
Total (Correct Answers)	52.8	132	60.4	151	56.6	383

Table 3: Mean Score of the Respondents' Osteoporosis Knowledge Test their Work   Status

Work Status of the Respondents	Mean Score of the Osteoporosis Knowledge Test Scale2		
	Mean Score	S. D.	No.
Non-working	8.97	2.174	250
Working	10.24	2.775	250
Total	9.60	2.57	500
Independent Sample t-test Value = 32.146; p<0.001			

Table 4: Over all comparison of OKS with safizadeh et al., 2015

Statements related to Knowledge on Osteoporosis	Total (N=500)		Safizadeh et al (N=400)	
	%	**No.**	**% No**	
1. Possibility of Osteoporosis is equal in men and women (F)	62.2	311	80.7	321
2. Vitamin B12 prevents Osteoporosis (F)	58.4	292	35.9	143
3. Thin women get Osteoporosis than others (T)	61.8	309	54	215
4. Dried fig is a rich source of Calcium (T)	57.6	288	57.3	228
5. Yogurt is an important food in preventing Osteoporosis (T)	54.8	274	72.4	288
6. Arthrosis is another name of Osteoporosis (F)	54.2	271	44.7	178
7. Chewing Tobacco increases the risk of Osteoporosis (T)	59.4	297	69.6	277
8. Spinach is rich source of calcium (T)	60	300	29.6	118
9. Sunlight reduce the risk of getting Osteoporosis (T)	55.4	277	83.2	331
10. The blood test should be done for the diagnosis of Osteoporosis (F)	54	270	41	163
11. Skelton reaches its maximum strength at 30 years of age (F)	51	255	51	203
12. Risk of getting Osteoporosis is more likely after the age of 65 years (T)	58.8	294	39.9	159
13. Shortening of height after the age is one of the signs of Osteoporosis (T)	53.6	268	42	167
14. Milk and Yogurt contain the same amount of Calcium (T)	51.8	259	39.7	158
15. Osteoporosis related fracture may occur by falling down on the carpet (T)	59	295	88.2	351
16. For supplying calcium needs during pregnancy, it is necessary to drink 5 cups of milk in a day (T)	50.2	254	51.00%	203
17. There is no way to prevent Osteoporosis (F)	58.2	291	77.6	309
Total (Correct Answers)	56.6	383	56.05	224.23