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PREVALENCE OF OSTEOPOROSIS IN WOMEN OF RAIPUR CITY

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Abstract-There has been an increase in the number of both men and women with osteopenia and osteoporosis, i.e., reduced bone mass and architectural disruption in bones in India in the last few years. Low calcium intakes, Vitamin D deficiency, sex inequalities, longer life expectancies, lack of diagnostic facilities, early menopause, poor knowledge of bone health and genetic predispositions have contributed towards high incidence of osteoporosis in India.The present study focuses on the prevalence of osteoporosis among the women of Raipur city and the data have been compared with the studies done so far in India. Among the respondents under study 24.22% had osteopenia and 25.63% had osteoporosis.

Key words-Bone mineral density, Osteoporosis, Vitamin D

Introduction-Osteoporosis is a complex multifactorial disease characterized by compromised bone strength and micro architectural deterioration of the bone tissues, predisposing an individual to bone fragility and increased risk of fractures (NIH Consensus Development Panel on Osteoporosis, 2001). It is not a disease entity separate from ageing process but is rather a more extreme version of the normal porcess of bone loss.Osteoporosis is often refered as a silent killer as it is generally not recognized until its first manifestation in the form of low traumatic fracture. Osteoporosis is an important clinical and public health problem through its association with fragility fractures. Osteoporosis is ever been called a silent epidemic because postmenopausal bone loss itself causes hardly any symptom and becomes clinically apparent only when a fracture has occurred, by that time the disease has progressed considerably (Bathena, 2012). Further, increase in the life span has resulted into a large number ofelderly / geriatric people globally. At present the life expectancy in India is67 years which is expected to increase by 71 years by 2025 and increase further to 77 years by the year 2050(Kanis , Delmas, Burckhardt, Cooper, & Torgerson, 1997).
Several studies have reported habitual low intakes of calcium in infants, adolescents, pregnant and lactating mothers and among postmenopausal women in India(Mithal & Kaur, 2012)(Puri, et al., 2008)(Kadam N. , Chiplonkar, Khadilkar, Divate, & Khadilkar, 2010)(Tandon, et al., 2014). There is a need to build up peak bone mass during the growth years especially during puberty and increase the calcium intake during pregnancy, lactation and around pre and post- menopausal years as the situation is critical among the Indian women(Ohlsson, Bengtsson, Isaksson, Andressen, & Slootweg, 1998). Further there is sexual difference in serving milk and milk products as larger portions are served to males, especially inlower socio economic classwhich worsens the situation among the women folk(Gupta, 1987).Government programs for providing supplementation gives 500mg/d of calcium through a serving of 165gms of micronutrient fortified food per day to pregnant and lactating mothers. But there is no national program for supplementation for promotion of bone health. Despite of being a sun rich country deficiency of vitamin D is reported in all age groups amongst the Indians. Poor intake of dietary calcium , environmental pollution, avoidance of sunlight exposure, skin tanning and higher 25(OH)-D-24-hydroxlase enzyme among the Asian Indians are some of the reasons for lower levels of vitamin D(Khadilkar A. V., 2010).Food items and oily fish containing vitamin D form a very small portion of Indian diet. Edible oils have 5-15µg/100 g of oil of fortification of vitamin D,whereas fortification of other food products with vitamin D is not done commercially in India (Nutrient requirements and recommended dietary allowance for Indians: A report of expert group of the Indian council of medical research, 2009).

Another factor is that the fiber rich Indian diet contains large amounts of oxalates and phytates which retard calcium absorption(Subramanium, 1996).

2. Materials and Methods- A community based cross sectional study was conducted in order to study the prevalence of osteopenia and osteoporosis among the female counterparts. Total of 355 women above the age of 35 years attended the camps organized in various gynecological centers in Raipur. Bone mineral density was measured at the calcaneal bone of all the participants. The study was approved by the institutional ethics committee. Consent was taken from all the respondents. Information on sunlight exposure, calcium intake, exercise schedule, fear of falls and preventive behaviours were gathered . Besides this, the questionnaire included information on menstrual, obstetrics and medical history. All the women attending the camps were counseled for adoption of dietary modifications and physically active life style as first step towards prevention of falls and fractures.

3. Prevalence of Osteoporosis-Several studies done in different areas of India provides the data regarding the prevalence of osteoporosis among the Indian women.Prevalence of osteoporosis ranging from 8% to 62% has been reported so far among the Indian women of different age groups.The results of the studies done on the Indian women are listed in the following table and the prevalence of osteoporosis observed in the present study is compared with the studies done so far.

Table No. 1
Table showing the prevalence of osteoporosis in India

S. N.	Reference of study	Study location	Subject details	Prevalence	
				Osteopenia	Osteoporosis
1	Gandhi A.B. and Shukla A.K., (2005)	Mumbai	200 women>40 years	34%	8%
2	Shatrugna V., et al. (2005)	Hydrabad	289 slum dwelling women aged 30-60years	52%	29%
3	Sharma S., et al. (2006)	Jammu	158 women aged 25-65 years	36.79%	20.25%
4	Chhibber G., et al. (2007)	Delhi and rural Haryana	430 women aged 60-80 years	29%	62%
5	Babu A.S., et al. (2009)	Kerala	690 women	41%	44.1%
6	Sundravalli et al. (2010)	Bangalore	Women aged>31 years	50%	7 %
7	Unni J., Garg R. and Pawar R. (2010)	Pune	105 women >40 years	31.4%	14.3%
8	Kadam N., Chiplonkar S., Khadilkar A.,Divate U., Khadilkar V. (2010)	Pune	80 pre- and 92 post-menopausal women aged 40-75 years and	48%,62%,45.3%in post-menopausal & 44.3%,45.6% ,26.7% in premenopausal(at lumbar spine,femoral neck & total hip respectivelly)	25.8%,8.7%,2.3 % post-menopausal & 7.6% ,premenopausal(at lumbar spine, femoral neck & total hip respectivelly))

9	Aggrawal N., (2011)	Chandigarh	200 pre & post-menopausal women >45 years	53%(0steopenia and osteoporosis)	
10	Marwaha R.K. et al.(2011)	Delhi	808 females	44.9%	42.5%
11	Vaidya et al. (2012)	Pune	112 women , mean age49.5 ±7.2 years	33% at lumbar spine &11% at femur(In LSC) &12% at lumbar spine & 0% at femur (in USC)	
12	Agrawal T. & Verma A.K.(2013)		158 women >35 years	48.1±7.79%	13.3±5.29%
13	Nikose et al.(2015)	Wardha	3532 rural women >31 years	35.78 %	32.13 %
14	Sharma et al. (2016)	Rajasthan	350 women >45 years	43.6 %	21.2 %
15	Pareek and Sood(2014)	Rajasthan	510 adults	50.50 %	7.21 %
16	**Present study**	Raipur	355 women >35 years	24.22 %	25.63 %

With the increase in life expectancy an alarming rise has been observed in the number of women being diagnosed by clinical osteoporosis. Data on prevalence of osteoporosis among women in India come from various studies conducted all over areas spread across the country. The estimates suggest that out of 230 million Indiansexpected to be over the age of 50 years in 2015, 20% are osteoporotic women(Malhotra & Mithal, 2008).

Conclusion-Bone health can be optimized by creating an environment to achieve a higher peak bone mass during adolescence, by maintaining healthy bone throughout the life cycle and by prevention of bone loss during post-menopause. Among the Indian women increasing longevity, lower calcium and vitamin D intake, sex inequalities, early menopause, lack of early diagnosis, genetic predisposition and poor knowledge and awareness of osteoporosis have contributed to high prevalence of osteoporosis.Major gaps still remain in the diagnosis and management of osteoporosis therefore highlighting the need for more structured research in this field.

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