

**A study to assess the effectiveness of information booklet regarding knowledge on Type -1 Osteoporosis among post-menopausal women (45 years and above) in selected areas of West Jaintia Hills District, Meghalaya**

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**Abstract**

**Background:** Bone is a living tissue that is constantly being broken down and replaced. The inside of a bone consists of a honeycomb like structured spaces. Osteoporosis increases the size of these spaces making the bone weak and fragile. Osteoporosis is a condition that occurs due to the gradual loss of bone mineral density (BMD) leading to porous bone, fragile and increase susceptibility of the bone to fractures. Osteoporosis can affect people of all age groups but it is most common in post-menopausal women this is known as Type-1 osteoporosis. Type-1 osteoporosis affects the post-menopausal women due to decrease in the estrogen levels in their circulation.

**Methods:** This is a one group pre-test post-test research study in which a structured knowledge questionnaire through interview method was used to assess the knowledge of post-menopausal women regarding Type-1 osteoporosis.

**Results:** Out of 100 participants, in the pre-test, 69 participants had Poor knowledge and 31 participants had

Average knowledge on Type-1 Osteoporosis. In the post-test done after the Information Booklet was given, 82 participants had good knowledge and 18 participants had average knowledge on Type-1 Osteoporosis. The Pre-test mean knowledge score is  $6.54 \pm 2.52$  which was less than the Post-test Mean knowledge score  $13.50 \pm 1.54$ . The difference in the pre-test and post-test knowledge score was found to be statistically significant at t-value 39.216, degree of freedom 99 at  $<0.001$  level of significance.

**Conclusion:** Based on the findings the study concluded that the Information booklet is effective in improving the knowledge of post-menopausal women regarding Type-1 Osteoporosis

**Keywords:** Assess, effectiveness, knowledge, post-menopausal women, Type-1 osteoporosis.

**Introduction**

Osteoporosis is one of the major public health burden affecting millions of people around the World. Osteoporosis results in porous bone causing reduction in bone density and strength increasing the risk of fractures.<sup>[1]</sup>Type-1 Osteoporosis occurs after menopause

due to an abrupt decline in the estrogen production and is characterized by accelerated and disproportionate bone loss and is associated with fractures of the spine, hip and wrist.<sup>[2]</sup> World-wide, Osteoporosis causes more than 8.9 million fractures annually, resulting in an osteoporotic fracture every 3 seconds.<sup>[3]</sup> Osteoporosis ranks as one of the common health problems of aging after diabetes, hypertension, hyperlipidaemia and heart disease<sup>[4]</sup>. According to World Health Organization (WHO) Osteoporosis is second only to cardiovascular disease and studies show 50-year-old women have a similar risk of dying from hip fractures as from breast cancer, since Osteoporosis affects the elderly population and menopausal women which is growing. World Wide Statistics reveal that 200 million people are affected with Osteoporosis and 80% of them are women.<sup>[5]</sup> With rapid ageing and increasing life expectancy of the Asian population, Osteoporosis has become one of the most prevalent and costly health problems in the region, by 2050 one out of every two hip fractures worldwide will occur in Asia.<sup>[6]</sup> 1 out of 8 males and 1 out of 3 females in India suffer from Osteoporosis making India one of the largest affected countries in the world, and the majority of those affected are postmenopausal women<sup>[7]</sup>. Menopause increases a woman's risk of developing osteoporosis because of the drop in estrogen levels resulting in increased bone loss. It is estimated that a woman loses up to 10% of bone mass in the first five years after menopause<sup>[8]</sup>

### Objectives

- To assess the effectiveness of information booklet regarding knowledge on Type-1 Osteoporosis and its prevention among postmenopausal women (45 years and above)
- To find out the association between knowledge on Type-1 Osteoporosis and its prevention with the selected demographic variables

### Hypothesis

H<sub>1</sub>: There will be a significant difference in the pre-test and post-test knowledge score on Type-1 Osteoporosis among postmenopausal women 45 years and above

H<sub>2</sub>: There will be significant association between knowledge on Type-1 Osteoporosis with the selected demographic variable at  $\leq 0.05$  level of significance.

### Material and Methods

**Research Approach:** Quantitative approach

**Research Design:** One group pre-test post-test research design

**Settings:** Areas under Loomkyrwiang UPHC, Jowai, West Jaintia Hills District

**Sampling Technique:** Multistage sampling technique

**Sample size:** 100

**Period of data collection:** 4 weeks

### Criteria for sample collection

#### Inclusion criteria

- Postmenopausal women (45 years and above)
- Women who are able to give consent

#### Exclusion criteria

- Women who are not available at the time of data collection

### Data collection tools and techniques

For assessing the knowledge on Type-1 osteoporosis among postmenopausal women a structured knowledge questionnaire was used. The tool used for the study consists of two parts:

Part A: Demographic characteristics of the participants

Part B: Knowledge on Type-1 Osteoporosis

### Method of study

The study commenced after obtaining ethical clearance from the Institute Ethical Committee. Based on the inclusion and exclusion criteria's, the samples were selected for the study. These samples were given prior explanation regarding the study that was to be conducted.

Informed consent or assent was then obtained. Interview schedule was carried out for each sample for a maximum duration of 10-15 minutes.

Their knowledge score on Type-1 Osteoporosis was classified into Poor, Average, and Good.

Analysis of the data was based on the objectives of the study using descriptive statistics (frequency, percentage, mean and standard deviation) and inferential statistics (Fischer’s Exact Test) using Statistical Package for Social Sciences (SPSS) version 25.0 (SPSS Inc, Chicago, IL).

**Results**

Table 1: Frequency and percentage distribution of participants according to demographic characteristics

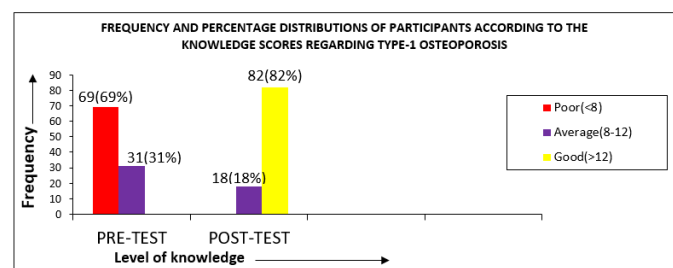
Demographic variable	Frequency (f)	Percentage (%)
Age (in years)		
45-54	61	61%
55-64	34	34%
65-74	05	5%
Age of attaining menopause		
45	08	8%
46	45	45%
47	26	26%
48	13	13%
49 and above	08	8%
Educational status		
Secondary	33	33%
Higher secondary	34	34%
Graduate	21	21%
Postgraduate	12	12%
Occupational status		
Housewife	45	45%
Government	18	18%
Self Employed	15	15%
Retired	11	11%
Others	11	11%
Awareness of osteoporosis		
Yes	38	38%
No	62	62%

The data in Table 1 reveals the demographic characteristics of the post-menopausal women 45 years

and above. Out of 100 participants, 61 (61%) are in the age group between 45-54 years, 45 (45%) attain their menopause at the age of 46 years old. Most of the participants, 34 (34%) completed their Higher Secondary Education, 45 (45%) are Housewife and 62 (62%) are not aware of Type-1 Osteoporosis.

Figure no. 1: Frequency and percentage distributions of participants according to the knowledge scores regarding type-1osteoporosis

N=100



Maximum score possible =16

The above Figure shows that, in the pre-test, 69 participants had Poor knowledge and 31 participants had Average knowledge on Type-1 Osteoporosis. In the post-test done after the Information Booklet was given, 82 participants had good knowledge and 18 participants had average knowledge on Type-1 Osteoporosis.

Table 2: Paired t-test value showing mean and standard deviation of pre-test and post-test knowledge score of the participants regarding type-1 osteoporosis.

N 100

Knowledge score	Max score	Mean	(%)	SD	Paired t test 't-value'	p-value	df
Pre-test	16	6.54	41%	2.52	39.216	<0.001*	99
Post-test	16	13.50	84%	1.54			
Enhancement	16	6.96	43.5%	0.98			

Significant at ≤0.05 level of significance

The data presented in the above table shows that, Mean ±SD is 6.54± 2.52 in pre-test and 13.50± 1.54 for post-test. The difference in the pre-test and post-test knowledge score was found to be statistically significant with the t-test value of 39.216 and degree of freedom of

99 at <0.001 level of significance using paired t-test. This shows that there is an Effectiveness of the Information booklet regarding knowledge on Type-1 Osteoporosis with the Information booklet. Hence, we reject the null

hypothesis and accept the research hypothesis as there is a significant difference in the knowledge scores with the information booklet.

Table 3: Association between knowledge on type-1 osteoporosis with the selected demographic variables

Demographic variables	Level of knowledge				Fischer Exact Test p-value
	Poor		Average		
	f	%	f	%	
Age in years					
45-54	38	38	23	23	0.05*
55-64	29	29	05	5	
65-74	04	4	01	1	
Level of education					
Secondary	32	32	01	1	<0.001*
Higher secondary	28	28	06	6	
Graduate	07	7	14	14	
Postgraduate	04	4	08	8	
Occupational status					
Housewife	40	40	05	5	<0.001*
Government employed	06	6	12	12	
Self Employed	10	10	05	5	
Retired	09	9	02	2	
Others	06	6	05	5	
Awareness of type-1 osteoporosis					
Yes	17	17	21	21	<0.001*
No	54	54	08	8	

\*Significant (P≤ 0.05)

### Discussion

Table 4 shows the association between level of knowledge on Type-1 Osteoporosis with the selected demographic variables. The data were computed with the help of IBM SPSS 22 using Fischer Exact test. The data reveals that there is significant association between age, educational status, occupation, and awareness of Type-1 Osteoporosis at p<0.05 level of significance. Hence, we reject the null hypothesis and accept the research hypothesis as there is a significant difference between knowledge with the selected demographic variables.

The findings in the present study reveals the mean age of attaining menopause is 46 years. This is consistent with the study done by Ahuja et al., (2021) in which the average age of menopause is 46.2 years. In the present study shows that out of 100 participants 62 (62%) are not aware of Type-1 osteoporosis. This was similar to a study conducted by Manic K et al., (2021) done among 302 post-menopausal women, 181.2 (60%) lack awareness about osteoporosis.

In the present study reveal a significant increase in the knowledge scores after the administration of information booklet ( $t=39.21$ ,  $p=0.00$ ). This finding was consistent with another study conducted by Abhushaikha L et al., (2020), in which pre-test and post-test analysis found out a significant overall increase in the knowledge scores after the information booklet ( $t=9.6$ ,  $p=0.00$ ) In the present study shows that there is a significant association between knowledge on osteoporosis with the selected demographic variables at  $\leq 0.05$  level of significance. A study conducted by Dr Kotak PR and Dr Saktisin V (2019) found out that there is a significant association between knowledge with the demographic variables (age, Education status, income, awareness) at  $\leq 0.05$  level of significance.

### Conclusion

This study concludes that out of 100 participants, in the pre-test, 69 participants had Poor knowledge and 31 participants had Average knowledge on Type-1 Osteoporosis. In the post-test done after the Information Booklet was given, 82 participants had good knowledge and 18 participants had average knowledge on Type-1 Osteoporosis. The mean knowledge score in the pre-test was ( $6.54 \pm 2.52$ ) which was less than the post-test means knowledge score ( $13.50 \pm 1.54$ ). The difference in the pre-test and post-test knowledge score was found to be statistically significant at t-value 39.216, degree of freedom 99 at 0.00 level of significance. Hence based on the above cited findings it was concluded undoubtedly that the written prepared material by the investigator in the form of an Information booklet help the women to improve their knowledge on Type-1 osteoporosis.

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