A Prevalence Assessment of Fragility Fractures in the Philippines

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OBJECTIVES

The cross sectional study evaluates the occurrence of three groups of injuries in patients 50 years and above, namely; fractures of proximal femur, distal radius and vertebra. The objectives are; (i) to determine age group and gender specific fracture prevalence involving the proximal femur, vertebra and distal radius, in patients 50 years and above, (ii) to estimate prevalence proportion relative to female population, male population and combined male and female aged 50 and above.

Keywords: *Prevalence, PhilHealth, Fragility Fractures.*

MATERIALS AND METHODS

A purposive sampling of Philippine Health Insurance Corporation (PhilHealth) members and dependents with insurance claims for fracture of proximal femur, vertebra and distal radius in 2004 was done. ealth InsuranceHhHh

The authors were given accessed on data on PhilHealth members with recorded reimbursement claims in 2004. Patients 50 years and above, with fractures of proximal femur, vertebra and distal radius were compiled together in the study database. The referenced ICD 10 Codes S72, S52 and S22, representing the three groups of injuries, were included.

All data entries underwent range and consistency checks. Of approximately 1.94 million patients data examined, about 3937 entries were labeled as unclassified and were not included in the final analysis. Their frequency distribution to specific age bracket is not established.

The PhilHealth ICD 10 data system is one of the largest and organized health care data systems in the country. The population characteristics of its members and affiliates are comparable to that of the Philippine population (see Fig. 1). In 2004, PhilHealth members 50 years old and above represent about 16% of the Philippine population of similar age group.

DATA ANALYSIS

All individual data collected on PhilHealth patients in 2004 were put together and the occurrence of fractures were evaluated. Patients 50 years and above with fractures of proximal femur, vertebra and distal radius were used as surrogate variable for prevalence reporting of fragility fractures. Distribution of patients by type of fracture and gender is illustrated (see table 1). The prevalence proportions were then calculated relative to combined male and female population, female population and male population (Tables 2,3,4).

The three groups of injuries namely; fractures of proximal femur, vertebra and distal radius were selected because they are the most frequent fragility fractures reported in patients 50 years and above. And being so makes them an appropriate substitute variable representing a consequence of bone fragility.

Certain key assumptions were made in the analysis. The diagnosis is presumptive, based on an independent risk factor which is age. Information on other risk factors is not available. The mechanisms of injury are not known. It is also assumed that health claims were made by all those who suffer the referenced injuries.

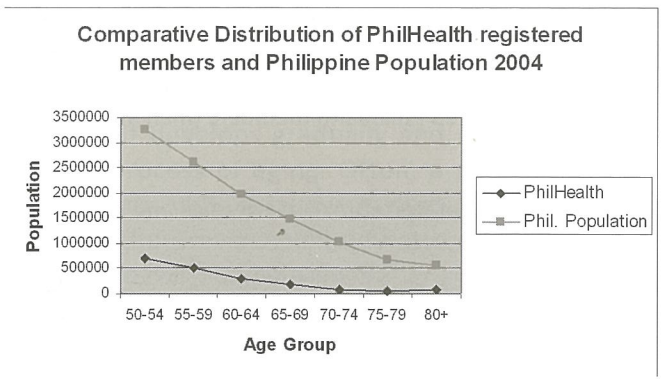

Figure 1. *Comparative Age distribution of PhilHealth members and Philippine population*

RESULTS

The estimates that follow are based on the information obtained from the 2004 Philippine Health Insurance Corporation (PhilHealth) database system. Summary statistics include count and percentage, prevalence proportion, standard error (SE) and 95% confidence limits.

A total of 4670 records of patients of all age groups with reported vertebral fractures (11.7%; 545 of 4670), distal radius (48.8%; 2280 of 4670) and proximal femur (39.5%; 1845 of 4670) are considered in the estimation of fragility fracture prevalence in 2004. More than half of the reported injuries occur in patients 50 years and above (54%).

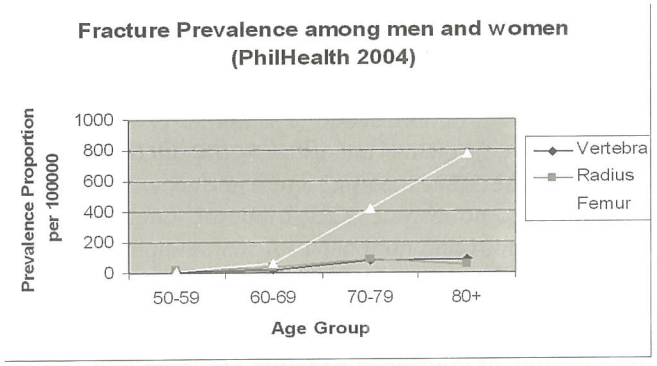

Figure 2. *Fracture Prevalence, Combined Men and Women 50 and above*

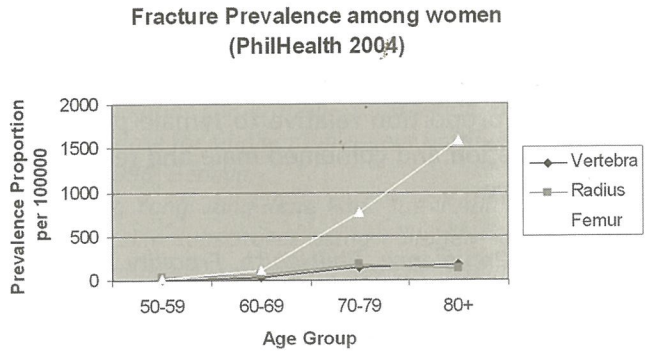

Figure 3. *Fracture Prevalence, Women 50 years and above*

Table 1. *Distribution of patients at least 50 years by type of fracture, PhilHealth*2004*

Type of Fracture	Female	Male	Total
Vertebra	237	113	350
Distal radius	427	119	546
Proximal Femur	1253	379	1632
Total	1917	611	2528

**Philippine Health Insurance Corporation*

Table 2. *Fractures of Vertebra, Distal Radius and Proximal Femur among Men and Women Aged 50 and above, Philhealth* 2004*

Age Group	Population**	Reported Fractures			Prevalence proportion (per 100000 population)		
		Vertebra	Radius	Femur	Vertebra	Radius	Femur
50-59	1226937	62	204	100	5.05	16.63	8.15
60-69	490493	100	182	311	20.39	37.11	63.41
70-79	144046	116	119	602	80.53	82.61	417.92
80+	80265	72	41	619	89.7	51.08	771.2
Total 50 – 80+	1941741	350	546	1632	18.03	28.12	84.05

*Philippine Health Insurance Corporation

**Estimated Philhealth members (men and women 50+) as of Dec 2004

Table 3. **Fractures of Vertebra, Distal Radius and Proximal Femur Among Women Aged 50 and above, Philhealth* 2004**

Age Group	Population**	Reported Fractures			Prevalence proportion (per 100000 population)		
		Vertebra	Radius	Femur	Vertebra	Radius	Femur
50-59	540535	27	141	47	5	26.09	8.7
60-69	218455	62	142	229	28.38	65	104.83
70-79	62005	91	106	474	146.76	170.95	764.46
80+	31665	57	38	503	180.01	120.01	1588.5
Total 50 – 80+	852660	237	427	1253	27.8	50.08	146.95

*Philippine Health Insurance Corporation

**Estimated Philhealth members (women 50+) as of Dec 2004

Table 4. Fractures of Vertebra, Distal Radius and Proximal Femur Among Men Aged 50 and above, Philhealth* 2004

Age Group	Population**	Reported Fractures			Prevalence proportion (per 100000 population)		
		Vertebra	Radius	Femur	Vertebra	Radius	Femur
50-59	686402	35	63	53	5.1	9.18	7.72
60-69	272038	38	40	82	13.97	14.7	30.14
70-79	82041	25	13	128	30.47	15.85	156.02
80+	48600	15	3	116	30.86	6.17	238.68
Total 50 – 80+	1089081	113	119	379	10.38	10.93	34.8

*Philippine Health Insurance Corporation
**Estimated Philhealth members (men 50+) 2004

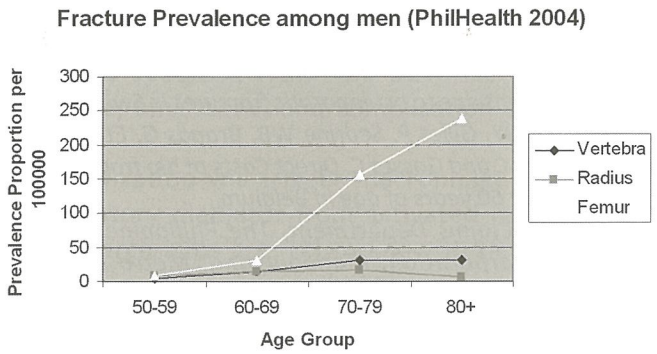

Figure 4. *Fracture Prevalence, Men 50 years and above*

The PhilHealth data described prevalence of fractures of vertebra, distal radius and proximal femur in men and women 50 years and above. The three groups of fractures studied showed different prevalent behavior and can best be described by the following statements.

FRACTURES OF PROXIMAL FEMUR

Fractures of proximal femur are most prevalent in females in the 8th decade, with a prevalence proportion of 160 fractures per 10000. It is seven times more common in females than males of the same age group. The occurrence progresses steadily from the sixth to eight decade in both sexes, but the relationship is more linear in females.

Fractures of proximal femur are considered the most serious of the fragility fractures and results in more deaths, disability and health care costs.

FRACTURES OF DISTAL RADIUS

Fractures of distal radius have peak prevalence on seventh decade. The prevalence proportion is 17 fractures per 10000 in the female population. The pattern is the same for the male population with a slightly lower prevalence at 16/10000 at seventh decade. The prevalence plummeted on the eight decade.

Fractures of the distal radius comprised almost half of total number of the fractures, of all ages, reviewed (2280/4670). For 50 years and above, it comprised 21% (546/2528).

Distal forearm fractures are less serious than proximal femur or vertebral fractures, though they cause significant pain and long term complications

FRACTURES OF VERTEBRA

The peak prevalence of vertebral fracture is noted on the eight decade at 18 fractures per 10000 female population. The male prevalence is about half at 9/ 10000 male population.

The frequency is low in the fifth and sixth decade, with a sudden rise in the seventh and eight decade. Compared with other fragility fractures, vertebral fractures are less well characterized. The reason for this is that many of these fractures do not come to clinical attention and a population based radiographic surveys are required to characterize occurrence.

DISCUSSIONS

No one can say how many people have osteoporosis, because it develops gradually and merges with the natural process of aging. Often, a person can have osteoporosis but not be aware of it until she fractures a bone. The prevalence study attempts to measure the number of people affected by a condition at any given time. One year prevalence gives an approximate value to the number of people who would have to deal with the condition in any given year. There are different methods of gathering prevalence data, ranging from phone surveys to research studies. Prevalence figures can be computed through various methods. Some estimates attempt to quantify the number of diagnosed people. Other prevalence

estimates attempt to include undiagnosed people who unknowingly have the condition. For these reasons, using prevalence data can incur the old "apples and oranges" comparison problem due differing data arising from design and methodology differences.

Fragility fractures are defined as fractures resulting from a fall from a standing height, ground level or presenting in the absence of obvious trauma. Such fractures occur most commonly in the proximal femur, vertebra and distal forearm. The study reported a fracture prevalence in patients 50 years and above among PhilHealth members with a pattern of distribution peculiar to specific age group and sex. The remarkable similarity of population characteristics of the Philippines and PhilHealth members of same age bracket offers a close estimate of the fragility fracture prevalence in the country.

CONCLUSION

Fractures of proximal femur were the most prevalent fractures in the population studied. It is a considerable public health problem because it is associated with more deaths, disabilities and bigger costs burden. A better understanding of risk factors can help explain variations in occurrence of these fractures and a comprehensive case finding strategies can help develop nationwide prevention programs.

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