

Lack of Knowledge of Osteoporosis: A Multi-Centre, Observational Study

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ABSTRACT**Background and Aim**

Osteoporosis poses a significant health problem. As the population ages, its incidence increases. Effective prevention requires good awareness of the disease among the general public. The aim of this study was to assess the level and source of osteoporosis knowledge in a group of patients attending for Dual Emission X-ray Absorptometry (DEXA) scanning.

Methods

A questionnaire was devised to assess knowledge of the osteoporosis risk factors, risk-reducing measures and signs/symptoms. Questionnaires were completed by 176 patients in two centres; Glasgow Royal Infirmary, UK (120 patients), and Christchurch Public Hosp, New Zealand (56 patients).

Results

Overall knowledge of osteoporosis was poor. In terms of risk factors 31.8% (n=56/176) knew no risk factors at all, 19.3% (n=34/176) knew no risk reducing measures and 39.2% (n=69/176) knew no signs or symptoms of osteoporosis.

Conclusion

Knowledge of osteoporosis, despite this cohort being a group of patients attending for DEXA scanning, was poor. There is a need for the public to be made more aware of osteoporosis, thereby enabling them to be more actively involved in preventive measures. National campaigns are required to increase awareness. Furthermore, increasing health professionals' awareness of the considerable limitations which exist in public knowledge of the disease, leading to a new realisation of the need for them to discuss osteoporosis with their patients, could provide a highly effective means of increasing awareness of the disease.

Background

By the age of 50, the estimated lifetime risk among Caucasian women of sustaining a fracture due to osteoporosis, is 40%. In the UK, the total number of fractures attributable to osteoporosis each year is estimated at 250,000,¹ with osteoporosis costing the National Health Service £1.7 billion per year.² Overall, the increase in life expectancy alone is predicted to at least double the number of hip fractures over the next 50 years.¹ Osteoporosis is therefore a large and expanding problem.

Osteoporosis is a silent disease. Often individuals are unaware they are at increased risk until they sustain a

fracture, by which stage the opportunity for early preventive measures have been missed. To be actively involved in prevention, the public needs to be aware of the disease, its risk factors and recommended risk reducing measures. Therefore, it is relevant to ask, how much do the public actually know about osteoporosis and what are the most effective methods of increasing awareness?

Knowledge of the disease was assessed in a group of patients referred for Dual Emission X-ray Absorptometry (DEXA) bone scanning for osteoporosis. For the purposes of this study, this provided a group which could be classed as potentially being at increased risk of osteoporosis.

Aim

The aim of the study is to assess the extent of knowledge of osteoporosis in patients attending for DEXA scanning, and to enquire as to their sources of knowledge about the disease.

Methods

An anonymous, voluntary questionnaire was designed and issued to 176 patients attending for DEXA bone scanning. Patients were asked to list as many as they could of the following; (1) "Risk factors (anything that might cause or increase the chance of developing osteoporosis)" (2) "Risk reducing measures (anything one can do or take to strengthen their bones)" (3) "Signs or symptoms, (anything that might make you think you or someone else has osteoporosis)". Respondents were also asked to indicate, from a list of options, what they felt were the sources of their information about osteoporosis. They were also asked if they had ever had a previous discussion with any doctor about osteoporosis.

The risk factors and risk reducing measures listed in the Scottish Intercollegiate Guidelines Network Management of Osteoporosis (SIGN Guideline 71) were taken as the

correct responses to questions 1 and 23. With regard to coding questions 1 and 2, any response considered to relate to calcium was taken to be correct, examples included 1 "Not drinking milk", "Poor calcium intake", 2 "Cheese, yoghurt", "Calcium supplementation". Examples of inappropriate responses given to 1 included; "Overweight, allergies and over-exercising". Results were coded by an independent observer from the Glasgow Royal Infirmary audit department.

The questionnaire was issued in two centres, Glasgow Royal Infirmary, United Kingdom (120 patients) and St. Georges Radiology Centre, Christchurch, New Zealand (56 patients). The patients were referred for scanning from a number of sources including; general practice, fracture clinics, orthopaedic ward admissions, endocrinology and rheumatology.

Results

One hundred and eighty five questionnaires were issued, 176 were completed fully, making a 95.1% response rate. Eighty four point six percent of respondents were female (n=149) and 14.7% were male (n=26). Gender data for one patient was missing. The age range was 22-85 years, with a mean age of 58.3 years.

(1) Risk factors

Patients were asked to list as many osteoporosis risk factors as possible. Analysis showed an average of 1.7 risk factors suggested per patient. This was achieved by dividing the total number of responses by the total number of respondents. The most commonly suggested risk factor was a lack of calcium, selected by 42.6% of patients (n=75). Thirty two point four percent (n=57) were unable to suggest any risk factors. Importantly only 7.3% (n=13) suggested a previous fracture as a risk factor, 6.8% (n=12) suggested advanced age and 1.7% (n=3) suggested being female.

(2) Risk-reducing measures

On average, patients knew 1.7 risk-reducing measures. The best-known risk reducing measure was an increase in calcium intake, which was suggested by 65.9% (n=116) patients. 19.3% (n=37) were unable to suggest any risk reducing measures.

(3) Signs/symptoms

On average, patients knew 1.07 signs/symptoms of osteoporosis. The most commonly suggested was sustaining a fracture, given by 43.2% (n=76). 39.2%

Table I Osteoporosis risk factors correctly suggested unprompted, (>4%)

OSTEOPOROSIS RISK FACTORS	Number of times suggested	% total
	N/176	
Low intake of calcium	75	42.6
Lack of exercise	37	21.0
Family history of osteoporosis	37	21.0
Smoking	27	15.3
Early Menopause/post-menopausal	25	14.2
Use of steroid medication	18	10.2
High intake of alcohol	14	8.0
Previous fracture	13	7.4
Advanced age	12	6.8
Low body weight	9	5.1
None known	57	32.4

Table II Osteoporosis risk reducing measure correctly suggested unprompted, (>4%)

OSTEOPOROSIS RISK REDUCING MEASURES	N/176	% Total
Any calcium supplementation measure	116	65.9
Regular exercise	79	44.9
Healthy balanced diet	24	13.6
Taking hormone replacement therapy	24	13.6
"Medication/Drugs" not specified	8	4.5
Taking vitamin D supplements	7	4.0
None known	34	19.3

Table III Suggested osteoporosis signs/symptoms unprompted

OSTEOPOROSIS SIGNS/SYMPTOMS	N/176	% Total
Fracture of bone	76	43.2
Humped spine	43	24.4
Aches/pains	30	17.0
Loss of height	25	14.2
None known	69	39.2

Table IV Patient information sources for osteoporosis knowledge, (>4%)

OSTEOPOROSIS INFORMATION SOURCES	N/176	% Total
Medical doctor	71	40.3
Media - Magazines	55	31.3
Media - TV	38	21.6
Relative/Friend other than mother	28	15.9
Medical pamphlets	27	15.3
Mother	15	8.5
Medical/Health books	14	8.0
Working in the medical field	11	6.3
None suggested	18	10.2

(n=69) knew no signs or symptoms.

(4) Information sources

Patients were asked to record, from a list of options, the sources of their osteoporosis information. Patients could select more than one option.

The main source of information was from medical doctors, 40.3% (n=71)

(5) Previous discussion with a doctor

86/176 (48.9%) had previously had a conversation with a doctor about osteoporosis, 88/176 (50%) had not. This data for two patients was missing.

(6) Comparison between sub-groups Male vs Female and New Zealand vs Scotland

Comparisons were made of the knowledge displayed by males vs females and separately by patients from New Zealand vs Scotland. Females displayed a statistically significant increased level of knowledge of risk factors, risk reducing measures and signs/symptoms when compared to males ($p < 0.007$) using non-parametric Mann-Whitney U testing. Interestingly, higher levels of knowledge were observed from the responses obtained in Christchurch, New Zealand when compared to Glasgow. These were statistically significant ($p < 0.001$) using Mann-Whitney U testing. It is important to note however that the participants in Christchurch, NZ live in a higher socio-economic area than those in the Glasgow Royal Infirmary's catchment area, thus making it unreliable to draw direct comparisons between the groups.

Discussion

Osteoporosis is a significant health problem, which with a growing ageing population is increasing in size. The keys to prevention are education and ensuring the the public is aware of the disease, its risk factors and recommended preventive behaviour.

This study found that knowledge of osteoporosis in patients attending for DEXA scanning was poor. 31.8% (n=56/176) of the patients in the group knew no risk factors, 19.3% (n=34/176) knew no risk reducing measures and 39.2% (n=69/176) no signs or symptoms of osteoporosis. Low calcium intake, despite being the best-known risk factor, was only suggested by 42.6% (n=75/176) of respondents. This was followed by lack of exercise and family history of the disease, both 21.0% (37/176). It is of concern that smoking, menopause and

alcohol were only suggested by 15.3%, 14.2% and 8% of respondents respectively. Measures to increase calcium levels were the best-known preventive measures with 65.9% (116/176) of replies. Unfortunately only 44.9% (79/176) suggested the second best known measure, which is regular exercise. Only 4% (7/176) suggested avoiding smoking and 2.3% (4/176) suggested avoiding excess alcohol to reduce the risk. Only 43.2% (76/176) suggested that a fracture may be a sign of osteoporosis.

Notably, 50% (n=88) of the patients attending for DEXA scanning had not discussed osteoporosis with a doctor on any previous occasion. Therefore, health care workers should not assume that patients, such as the elderly or those who have been for a DEXA scan, would necessarily have had a discussion with a medical professional regarding osteoporosis.

It is accepted that some of the apparent of lack of knowledge could be due to questionnaire design, using open questions in 1-3 which may yield a lower response rate than closed equivalents. However in this study, unprompted questions were felt to provide a more accurate representation of knowledge, avoiding subjects being led to give a response they may not otherwise have given simply because it was on the list. Furthermore, the number of open questions used was limited with the aim of increasing the response rate.

It is not clear why osteoporosis knowledge is so poor. It may be that it has not received the same degree of publicity or is not perceived by the public to be as important, as other diseases. Kasper et al have shown that younger members of the public neither perceive themselves to be susceptible to the disease nor feel osteoporosis is as serious as other diseases they may be at risk of developing.⁴ It is also worthy of note that the patients in this study had been referred for further investigation, as they were considered to be at increased risk of osteoporosis. They may have actually had a higher level of knowledge about the disease than the general public. Knowledge among males was significantly lower than among females. This may reflect the traditional view that osteoporosis was considered a female problem and therefore health promotion has focused on females.⁵ This study shows that doctors and magazines are thought by patients to provide the best sources of osteoporosis knowledge. This perhaps reflects a situation where magazines aimed at a female readership are more likely to run articles on osteoporosis than magazines aimed at a

male readership or that doctors are traditionally more likely to discuss osteoporosis with their female patients. Furthermore, many males do not perceive themselves to be at risk of osteoporosis and therefore their poor knowledge may reflect a lack of interest in the disease because of this perceived lower risk.⁶

What is clear is that awareness of osteoporosis needs to be increased. These results show that all aspects of osteoporosis education require improvement. Of concern is the lack of knowledge that factors such as such as inadequate exercise, excess alcohol, smoking and the menopause have in the genesis of osteoporosis. It has been shown that osteoporosis education programmes can be effective.^{7,8,9,10} The respondents felt that doctors provided the best source of osteoporosis information 40.0% (n=71), followed by magazines 31.3% (n=55) then the television 21.6% (n=38). This would suggest that future educational campaigns would be more effective if they were relayed either via the media or through patients' own doctors. It is hoped that by highlighting the lack of knowledge that currently exists amongst the public, health care professionals will be more aware of the need to discuss osteoporosis with their patients. All ages should be targeted because of the importance of building and maintaining an adequate bone mass in early life.^{4,10} Attempts to address this problem have been successfully commenced in Glasgow with the Fracture Liaison Service, which via osteoporosis specialist nurses aims to identify, educate and treat at risk patients >50 years of age with fractures.¹¹ Better still, increasing awareness of the disease amongst the public could in turn enable early preventive measures to be carried out before individuals sustain fractures.

Conclusion

Osteoporosis is a large and expanding disease, resulting in significant health issues and financial burden to the NHS. Its progression is often silent and it frequently presents, previously undiagnosed, following a fracture. This study has shown that knowledge of osteoporosis risk factors, preventive measures and signs or symptoms, despite the study cohort being a group of patients attending for DEXA scanning because of suspected osteoporosis, is poor. In order to address this issue, the public needs to be made more aware of osteoporosis, thereby allowing them to be actively involved in preventive measures from an early age.

National campaigns are required to increase the public's

awareness of osteoporosis. Furthermore, making individual health care professionals more aware of the sizeable limitations that currently exist in public knowledge and therefore the need to discuss osteoporosis with their patients could provide a highly effective route of increasing awareness of the disease.

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