

Knowledge about osteoporosis in a cohort of Polish females: the influence of age, level of education and personal experiences

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Received: 8 August 2003 / Accepted: 15 December 2003 / Published online: 20 January 2004
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Abstract In this study, a group of 1065 women aged 16–72 years recruited from patients attending general practitioners was studied to investigate knowledge of osteoporosis and attitude towards methods of preventing the disease. The interviews were carried out by students of the Silesian School of Medicine, using a structured questionnaire. The average number of correct answers in the whole population was 7.05, and in women with established osteoporosis 6.89. In the whole population, the majority of answers were correct and ranged from 60% to 95% in seven out of ten questions. The answers for three questions were incorrect in about half or more of the cohort: 53% of subjects considered that osteoporosis could be cured; for 50% of women osteoporosis is a minor health problem (except for the youngest women and women with university education—74% and 69% of correct answers, respectively); and 58% of women considered that those with osteoporosis should not engage in physical activity due to the risk of falling and causing a fracture. A simple chi-squared test was used to show the role of age, level of education and personal experiences with osteoporosis on answers given by the subjects studied. Age (six out of ten answers), level of education (seven out of ten answers) and personal experience (four out of ten answers) significantly affected answers given. The number of correct answers decreased with age and increased with level of

education, and there was no systematic influence of personal experience. In summary, data collected provide important information about knowledge of osteoporosis. Generally, the level of knowledge about osteoporosis was high. Higher level of education and younger age improve the knowledge of osteoporosis with no systematic influence of personal experience with the disease.

Keywords Attitudes · Knowledge · Osteoporosis · Women

Introduction

Osteoporosis is a serious health problem, especially among elderly people. It is widely known that osteoporosis is, at least partially, a preventable disease. Programs of osteoporosis prophylaxis may be effective if potential participants have sufficient knowledge about this health problem. Some studies addressing the degree of knowledge of osteoporosis in various populations [1, 2, 3, 4, 5] have been published. The role of patients' attitudes towards prevention programs and therapeutic regimes cannot be overestimated, and ought to be a matter of wide investigation. Prevention of osteoporosis plays a very important role in management of the disease [6], and may slow its rate of development or onset. The progress noted in recent years in regard to diagnostic process or therapy of osteoporosis has not necessarily caused a parallel improvement in patient awareness and knowledge of the disease.

The aim of our study was to evaluate the knowledge of osteoporosis in a large sample of the Polish female population, and to investigate their attitudes towards methods for preventing the disease.

Materials and methods

A total of 1065 women aged 16–72 years participating in the study were interviewed during their visits to General Practitioners in five

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Table 1 Level of education in age subgroups (% distribution)

	Subgroup 1 (n = 195)	Subgroup 2 (n = 203)	Subgroup 3 (n = 468)	Subgroup 4 (n = 199)
< 9 years	20	3.5	10.7	24.6
9–11 years	8.7	15.8	20.3	15.1
High school	54.3	63.5	51.9	44.2
University	17	17.2	17.1	16.1

outpatient medical care units in the Silesian conurbation. They were randomly selected from women attending these units. Among the subjects studied, there were no women who came for bone mass measurements or were referred for osteoporosis treatment. All women agreed to participate in the study.

Data were collected in the period from June 1998 to the end of 2000. The following age subgroups were interviewed: subgroup 1 [195 subjects aged 16–29 years (18.3%)], subgroup 2 [203 subjects aged 30–44 years (19.1%)], subgroup 3 [468 subjects aged 45–59 years (43.9%)], subgroup 4 [199 subjects older than 60 (18.7%)]. We also gathered data concerning level of education: 145 women had had less than 9 years of education (13.6%), 174 had had 9–11 years of education (16.35%), 566 had finished high school (12 years)—53.14% and the others had had a university education—180 (16.9%). Table 1 shows data on percentage distribution of education levels in age subgroups. Further division was performed according to personal experiences with osteoporosis: subgroup 1 (I have osteoporosis), subgroup 2 (I do not have osteoporosis but know anyone who suffers from this disease), subgroup 3 (I do not have osteoporosis and I do not know anyone with osteoporosis). The diagnosis of osteoporosis was based on previous densitometric measurements of the hip or spine.

Students of the Silesian School of Medicine carried out the interviews, using a structured questionnaire. All students were trained before the study on how to complete the questionnaire properly. The Questionnaire consisted of the following questions:

1. Do you have osteoporosis, or do you know anyone with this disease? (Yes, No, I do not know).
2. Questions concerning knowledge about osteoporosis are given in Table 2. Questions were partially based on the proposition given by Magnus et al. [1]. The questionnaire comprised ten statements considered to be most significant with regard to osteoporosis.

Statistical analysis

Statistical analysis was performed using a simple chi-squared test. Analyses were carried out in age subgroups and groups according to the level of education for purpose to reveal factors influencing knowledge about osteoporosis. $P < 0.05$ was regarded as statistically significant.

Results

In the whole group 13.7% of women had osteoporosis, in subgroup 1 no women with osteoporosis were noted, and in subgroups 2, 3 and 4, 3.5%, 15.4% and 33.7% subjects suffered from this disease, respectively. The questions asked concerning knowledge about osteoporosis and correct answers in age subgroups and in all

Table 2 Correct answers in a whole population and in age subgroups (% distribution, answer “I do not know” is automatically treated as incorrect)

	Correct answer	Subgroup 1 16–29 years (n = 195)	Subgroup 2 30–44 years (n = 203)	Subgroup 3 45–59 years (n = 468)	Subgroup 4 60–72 years (n = 199)	All women (n = 1065)	Simple chi squared test
On this card you will find some statements about osteoporosis. Please answer yes if you consider the statement correct, or no if you consider it wrong, or I do not know	–	–	–	–	–	–	Answers significantly influenced by age
Osteoporosis may sometimes cause great pain	Yes	82.6	78.3	78.6	78.4	79.2	–
Osteoporosis means increased calcium in the skeleton	No	81.6	84.7	76.5	63.8	76.6	$\chi^2 = 15.2$ $df = 1$ $P < 0.0001$
It is possible to prevent osteoporosis	Yes	94.9	90.6	90.8	88.4	91.1	$\chi^2 = 5.8$ $df = 1$ $P < 0.05$
It is important to be engaged in physical activity in order to avoid osteoporosis	Yes	79.5	74.4	82.5	83.9	80.7	–
Osteoporosis mostly affects men	No	95.4	95.6	89.5	82.4	90.4	$\chi^2 = 18.75$ $df = 1$ $P < 0.00001$
Osteoporosis may be cured	No	59.0	54.7	42.5	39.7	47.3	$\chi^2 = 22.8$ $df = 1$ $P < 0.00001$
Osteoporosis mostly affects older individuals	Yes	65.6	49.3	60.2	65.8	60.2	–
Osteoporosis increases the risk of fracturing bone	Yes	94.0	95.5	95.7	93.0	94.9	–
Osteoporosis is a minor health problem	No	74.4	53.2	44.2	37.7	50.2	$\chi^2 = 45.2$ $df = 1$ $P < 0.00001$
Those with osteoporosis should not engage in physical activity due to the risk of falling causing a fracture	No	39.5	43.3	31.6	28.1	42.3	$\chi^2 = 5.8$ $df = 1$ $P < 0.05$

Table 3 Correct answers according to the level of education (% distribution, answer “I do not know” is treated automatically as incorrect). Rows total to 100% when adding those not answering for a question

	Education <9 years <i>n</i> = 145	Education 9–11 years <i>n</i> = 174	High school <i>n</i> = 566	University <i>n</i> = 180	Answers significantly influenced by level of education (simple chi squared test)
Pain	85.5	74.7	80.2	75.6	–
Calcium	63.5	63.8	80.4	87.8	$\chi^2 = 42.8$ <i>df</i> = 1 $P < 0.00001$
Prevent	88.3	87.9	91.9	93.9	$\chi^2 = 5.02$ <i>df</i> = 1 $P < 0.05$
Physical activity	76.6	77.0	81.3	85.5	$\chi^2 = 4.34$ <i>df</i> = 1 $P < 0.05$
Men	84.1	81.0	93.3	95.6	$\chi^2 = 33.5$ <i>df</i> = 1 $P < 0.00001$
Be cured	47.6	42.0	49.7	45.0	–
Older	73.8	65.5	53.0	66.7	$\chi^2 = 15.7$ <i>df</i> = 1 $P < 0.0001$
Risk of fracturing	95.2	89.1	95.4	98.3	$\chi^2 = 8.29$ <i>df</i> = 1 $P < 0.01$
Minor problem	42.0	25.9	53.9	68.9	$\chi^2 = 52.68$ <i>df</i> = 1 $P < 0.00001$
Should not engage in physical activity	36.5	27.6	44.0	39.4	–

Table 4 Correct answers according to personal experience with osteoporosis: subgroup 1 (I have osteoporosis), subgroup 2 (I do not have osteoporosis but know anyone who suffers from this disease), subgroup 3 (I do not have osteoporosis and I do not know anyone with osteoporosis). Rows total to 100% when adding those not answering for a question

	Subgroup 1 <i>n</i> = 146	Subgroup 2 <i>n</i> = 293	Subgroup 3 <i>n</i> = 626	Answers significantly influenced by personal experience (simple chi square test)
Pain	86.3	81.6	76.5	$\chi^2 = 4.27$ <i>df</i> = 1 $P < 0.05$
Calcium	62.3	84.3	76.4	$\chi^2 = 41.14$ <i>df</i> = 1 $P < 0.00001$
Prevent	89.0	90.1	92.0	–
Physical activity	84.2	76.8	81.6	–
Men	82.2	92.8	91.2	$\chi^2 = 18.98$ <i>df</i> = 1 $P < 0.00001$
Be cured	52.1	54.6	42.8	–
Older	58.9	53.9	63.4	–
Risk of fracturing	95.9	95.2	94.4	–
Minor problem	33.5	59.0	50.0	$\chi^2 = 23.92$ <i>df</i> = 1 $P < 0.00001$
Should not engage in physical activity	45.2	45.7	40.0	–

women are presented in Table 2. All answers were considered in further analyses, and the answer “I do not know” was automatically treated as incorrect. In Table 3, answers according to the level of education are given, and Table 4 presents answers given according to personal experience with osteoporosis. It could be expected that personal experience with osteoporosis might influence the number of correct answers, but the average number of correct answers in women with established osteoporosis was not significantly different from the whole population (6.89 versus 7.05). Generally, in the whole population the majority of answers were correct and ranged from 60% to 95% in seven out of ten questions. However, the answers for three questions were incorrect in about half or more of the cohort: 53% of subjects consider that osteoporosis could be cured; for 50% of women osteoporosis was a minor health problem (except for the youngest women and women with university education—74% and 69% of correct answers, respectively); and 58% of women considered that those with osteoporosis should not engage in physical activity due to the risk of falling causing a fracture.

A simple chi-squared test was used to show the role of age, level of education and personal experience with osteoporosis on answers given by the subjects studied. These data are presented in Tables 2, 3 and 4, respectively. Age (six out of ten answers), level of education

(seven out of ten answers) and personal experience (four out of ten answers) significantly affected answers given. The number of correct answers decreased with age and increased with level of education, and there was no systematic influence of personal experiences.

Discussion

Our study is the first performed in a large sample of Polish females in order to obtain data concerning knowledge about osteoporosis. In our questionnaire, we used some examples of questions proposed by Magnus et al. [1]. In the first five questions concerning knowledge of osteoporosis, Polish females gave more correct answers than Norwegian females. A similar ratio was obtained for the question about risk of fracture (in both studies about 95% of correct answers). Our women clearly more frequently considered that osteoporosis may be cured (about 53% versus 14% in the Norwegian study). This difference may probably be explained by common use of new drugs (mainly bisphosphonates) in recent years, and the Norwegian study was conducted in 1994 before the era of bisphosphonates in osteoporosis treatment. The correct response at the time of our study for a cure of osteoporosis is “no”; however, for most of the women studied, osteoporosis could certainly be re-

versed to a large degree by treatment. The answers to the questionnaire were collected in the years 1998–2000. Therefore, information on new anabolic drugs such as parathyroid hormone could not interfere with the results of study. Also, differences in correct answers concerning the question whether osteoporosis is a minor health problem (about 50% versus 65% in the Norwegian study) probably might be partly explained by progress in osteoporosis management. Only about 60% of all women connect osteoporosis with advanced age, while in the study of Magnus et al. [1], 85% of females answered positively to this question. It is difficult to explain this distinct difference; however, it could be speculated that wide use of densitometry in recent years may provide many results below the normal range in bone mass in younger individuals. This may mean that women consider osteoporosis as a disease occurring not only in the elderly. The most surprising answers concern questions about physical activity in individuals with established osteoporosis. About 58% of women thought that those with osteoporosis should not engage in physical activity due to the risk of falling and causing a fracture. In the Norwegian study, only 26% women held this opinion. This probably means that the women interviewed have a good understanding of the role of physical activity (81% of correct answers) and believe that it is possible to prevent osteoporosis (91% of correct answers), but consider that prevention in persons with established osteoporosis is not so important or may even be dangerous due to risk of falling causing subsequent fracture. In a study by Juby and Davies [5], only 62% of subjects believed that osteoporosis is a preventable disease, a much poorer result than in the current study.

Age or level of education significantly affected six and seven out of ten answers, respectively (Tables 2 and 3, respectively). Younger or better-educated women knew more about osteoporosis. In the study by Philipov et al. [4], women aged 45–54 years were 1.9 times more likely to answer correctly than any other age group. In the same study, women with a higher level of education gave more correct answers. In the current study, age or level of education affected answers given to only some of the questions. Unexpected results showed the simple chi squared test in relationship to personal experiences with osteoporosis, knowing somebody with this disease or not knowing, presented in Table 4. One could suspect that these factors ought to play an important role, but answers for only four questions were significantly influenced by personal experiences.

A high level of education and having osteoporosis or knowing somebody with osteoporosis were the strongest

predictive factors for knowledge about this disease in the Norwegian study [1]. These authors, however, analyzed all answers together, and our analyses were performed separately for each question, so a direct comparison is not possible. Also in the current study, women with a higher level of education or younger women gave more correct answers. Women with established osteoporosis did not have a better correct response to questions than the whole population, which was an unexpected result. The average number of correct answers to the questions about osteoporosis was lower than the same result in the Norwegian study, which reported a value of 7.52.

The current study has several limitations: we evaluated only females; all subjects were recruited from an urban, industrial region and comparison with a rural population is not possible; the type of selection based on patients who have come to general practitioners may differ from a randomly drawn population. However, our sample was sufficiently large for statistically significant considerations and consisted of women with a wide spectrum of age and educational level.

In summary, data collected provide important information about knowledge of osteoporosis. Generally, the level of knowledge about osteoporosis is high. Higher level of education or younger age improve the knowledge of osteoporosis, with no systematic influence of personal experience with the disease.

Acknowledgements The authors wish to thank Kalina Góra, ukasz Talarek and Andrzej Kupilas, students of the School of Medicine in Katowice, for help in collecting the data.

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