ORIGINAL ARTICLE

Post diagnosis osteoporosis prevention

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ABSTRACT

Aim To examine the influence of knowledge, attitudes and behavior on life quality of patients with osteoporosis diagnosis, and presence of risk factors.

Methods The research was conducted amongst patients of the Osijek Health Centre between April and June 2009. Fifty female patients participated, whose densitometry showed osteoporosis. The examinees were divided into three age groups: 40-50, 51-60 consisting of 16 examinees (32%) and above 60 consisting of 18 examinees (36%). A questionnaire designed for the purpose of this study was used as a research instrument.

Results Out of 50 female examinees, 26 (52%) of them thought that they had enough knowledge, whereas 24 (48%) examinees thought they did not have enough knowledge about osteoporosis. The major information source about the disease to 28 examinees (56%) were doctors, whereas nurses were the last one for five (10%) examinees. Medical staff recommendations are accepted by 38 examinees (76%), while 11 (22%) examinees have a selective approach to health recommendations, whereas one (2%) examinee completely ignores health recommendations. A significant difference regarding information source, procedures which they consider important for osteoporosis control and examinees attitudes towards the question about daily performance of osteoporosis exercises exists between younger and older examinees (p=0.037). Younger examinees do not have noticeable symptoms, aches and fractures, so they think they can avoid recommendations without any health consequences. Only three (6%) examinees had quit smoking after the osteoporosis diagnosis.

Conclusion The oscillations in knowledge, attitudes and behavior amongst examinees from different age groups were noted.

Key words: bone degradation, quality of life, risk factors

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INTRODUCTION

Ostheoporosis is one of the largest public and health issues in the modern world and third world countries (1). The increase in standards and progress of medicine in the 20th century caused the significant increase of life expectancy. The increased life expectancy is accompanied with the frequency of diseases typical for postmenopausal and later age, including the osteoporosis (1). Osteoporosis can occur in people of both sexes, at any age, but most commonly occurs in women older than 60 (1). According to the World Health Organization (WHO) definition from 1991, osteoporosis is a systemic metabolic bone disease characterized by decreased bone mass and changes in bone microarchitecture, leading to increased bone fragility and increased risk of fractures (2). It is estimated that eight percent of the population from developed countries suffer from osteoporosis. Approximately 80% of patients with osteoporosis are women, and about 20% of them are men (1). According to the data from the Institute of Public Health in Osijek-Baranja county, an average rate of osteoporosis for the age below 64 is 7.4 to the population of 1000, and 29.2 for those over 64 years of age (3). Main osteoporosis problems are osteoporotic fractures. It is estimated that by the end of their life about 30% of women and 12% of men will get osteoporotic fracture of some bone (4). Older age is clearly associated with the increased risk of death in people with hip fracture (1). Annual costs for the treatment of osteoporosis in the USA and Europe jointly add up to 27 billion USD (5). Osteoporosis occurs as a result of increased bone degradation and slow bone construction (6). External environment factors that influence bone mass and bone fragility are as follows: female gender, older age, smoking, alcohol, black coffee, immobilization, different diseases and medication (1). Important factors that influence the formation of peak bone mass are calcium intake, sunlight exposure and physical activity (1). Calcium and vitamin D make an important part in prevention and treatment of osteoporosis (3). It is believed that daily calcium intake should be 1,200 mg for people younger than 50, from 1200 to 1500 mg for those above 50 years of age (3). The recommended daily intake of vitamin D for adults is 5 μg and for those older than 65 it is 10 μg (3). The objective of this study was to examine the presence of risk factors and the impact of knowledge, attitudes and behaviors on the quality of life of patients with osteoporosis.

EXAMINEES AND METHODS

The survey was conducted amongst patients of the Osijek Health Centre in the period from April to June during 2009.

The study was authorized by the Osijek Health Centre. All subjects were informed about the objective of this research. Written notices were sent to the respondents and the statement plus document regarding a consent to participate and the agreement of the informed subjects to voluntarily participate in it, confirmed by their signature. The study was conducted in accordance with ethical principles and human rights in biomedical research.

The study included 50 patients with osteoporosis diagnosed via densitometry. The examinees were divided into three age groups: 40-50, 51-60 which consisted of 16 examinees (32%) and above 60, which consisted of 18 examinees (36%). A questionnaire designed for the purpose of this study was used as a research instrument. Each examinee was informed about the purpose of the research and gave his/her consent for the participation. The questionnaire contained a total of 21 closed-type questions. The questionnaire contained the following information: socio-demographic (age, education), 18 questions about knowledge and attitudes towards osteoporosis, and one question regarding the health assessment (Table 2). Data were presented by absolute and relative frequencies. The differences observed between the groups were tested by χ^2-test with a significance level of 0.05.

RESULTS

The study included 50 female examinees divided into three age groups. Majority of examinees, 28 (56%) had secondary education, while nine (18%) had university degree (p=0.977) (Table 1). Only five (10%) examinees were informed about osteoporosis by nurses/technicians (p=0.037) (Table 2).

Table 1. Age related subjects attributes

	No (%) of patients in age group				p
	40 - 50	51 - 60	Older than 60	Total	
Gender					
Female	16 (100)	16 (100)	18 (100)	50 (100)	
Education					
Primary School Education	2 (12.5)	3 (18.75)	2 (11.11)	7 (14)	0.977
High School Education	9 (56.25)	9 (56.25)	10 (55.56)	28 (56)	
College Education	2 (12.5)	1 (6.25)	3 (16.67)	6 (12)	
University Education	3 (18.75)	3 (18.75)	3 (16.67)	9 (18)	
Total	16 (100)	16 (100)	18 (100)	50 (100	

All examinees was considered for regular use of recommended medications and regular check-ups as main procedures important for the control of osteoporosis, except examinees of the age group above 60, where eight (44.4%) examinees considered the exercise as the most significant prevention of progress of osteoporosis (p=0.020) (Table 2). Less than a half of examinees, ten (20%), thought that the recommended daily dose of calcium was 100 mg while 13 examinees (26%) believed that it was not necessary to take calcium when taking treatment for osteoporosis (p = 0.312) (Table 2).

Majority of examinees, nine (18.4%) subjects thought that vitamin D increased muscle strength, and five (10.2%) examinees thought that it reduced the risk of fall (p = 0.481) (Table 2). Total 12 (24%) examinees thought that daily exercise did not slow down the progress of osteoporosis (p = 0.278) (Table 2).

Examinees from the age group 51-60 mostly considered to have enough knowledge about osteoporosis, in 11 (68.8%) cases, while examinees in the other two groups mostly thought that they did not know enough about the disease (p = 0.131) (Table 3).

Most of examinees, eight (16%), thought that osteoporosis was treated only by medication, where four (25%) examinees were from the

T able 2. Knowledge about osteoporosis related to age

	No (%) of patients in age group				p
	40 - 50	**51 - 60**	**Older than 60**	**Total**	
Source of osteoporosis information					
Doctors	8 (50)	5 (31.25)	15 (83.33)	28 (56)	0.037
Medical nurses / technicians	3 (18.75)	2 (12.5)	0	5 (10)	
Other patients	3 (18.75)	5 (31.25)	0	8 (16)	
Books, TV, Internet	2 (12.5)	4 (25)	3 (16.67)	9 (18)	
Most important procedures for the osteoporosis control					
Regular medication intake, Check-ups with doctors	10 (62.5)	11 (68.75)	6 (33.33)	27 (54)	0.020
Food rich in calcium	4 (25)	5 (31.25)	3 (16.67)	12 (24)	
Vitamin D	1 (6.25)	0 (0)	1 (5.56)	2 (4)	
Exercises for the osteoporosis prevention	1 (6.25)	0 (0)	8 (44.44)	9 (18)	
Daily calcium intake					
100 mg	5 (31.25)	1 (6.25)	4 (22.22)	10 (20)	0.312
500 mg	1 (6.25)	5 (31.25)	5 (27.78)	11 (22)	
1000 mg	6 (37.5)	4 (25)	6 (33.33)	16 (32)	
If you drink medication for the osteoporosis, Calcium is not necessary	4 (25)	6 (37.5)	3 (16.67)	13 (26)	
Importance of the vitamin D					
To build Calcium in bones	9 (56.25)	12 (75)	11 (64.71)	32 (65.3)	0.481
Bigger muscle strength	0	1 (6.25)	2 (11.76)	3 (6.1)	
To increase movement and keep the balance	5 (31.25)	1 (6.25)	3 (17.65)	9 (18.4)	
To decrease risk of falling	2 (12.5)	2 (12.5)	1 (5.88)	5 (10.2)	
Regular exercise slows down the osteoporosis progress					
Yes	11 (68.8)	11 (68.8)	16 (88.9)	38 (76)	0.278
No	5 (31.3)	5 (31.3)	2 (11.1)	12 (24)	
Total	16 (100)	16 (100)	18 (100)	50 (100)	

Table 3. Age Related Self perception

	No (%) of patients in age group				p
	40 - 50	51 - 60	Older than 60	Total	
Slef perception of osteoporosis knowledge					
Yes, I know enough	6 (37.5)	11 (68.8)	7 (38.9)	24 (48)	0.131
No, I do not know enough	10 (62.5)	5 (31.3)	11 (61.1)	26 (52)	
After osteoporosis treatment					
Yes, only medication helps	4 (25)	1 (6,3)	3 (16.7)	8 (16)	0.078
Besides medication I also take food rich in calcium	4 (25)	7 (43.8)	1 (5.6)	12 (24)	
Medication + Physical activity + food rich in calcium	8 (50)	8 (50)	14 (77.8)	30 (60)	
Self perception of physical changes after osteoporosis diagnosis					
Yes, I notice changes	3 (18.8)	9 (56.3)	13 (72.2)	25 (50)	0.007
I do not notice changes	13 (81.3)	7 (43.8)	5 (27.8)	25 (50)	
Age related mobility problems					
I have mobility problems	6 (37.5)	13 (81.3)	10 (55.6)	29 (58)	0.042
I do not have mobility difficulties	10 (62.5)	3 (18.8)	8 (44.4)	21 (42)	
Total	16 (100)	16 (100)	18 (100)	50 (100)	

age group of 40-50 years (p = 0.078) (Table 3).

The largest number of examinees who had noticed changes after the diagnosis of osteoporosis was the oldest age group, those above 60 years – 13 (72.2%). The difference in the number of examinees in relation to the age groups was statistically significant (p=0.007) (Table 3).

Problems associated with mobility occurred in 29 (58%) examinees, 13 (83.3%) being from the age group 51-60 years. The distribution of examinees by age groups, according to the problems related to mobility was statistically significant (p = 0.042) (Table 3).

After the osteoporosis diagnosis, 17 (34%) examinees felt that they did not need any changes in life because medication was sufficient, only three (6%) examinees stopped smoking (p=0.431) (Table 4).

Osteoporosis exercises were usually not implemented in 34 (68%) examinees, most of them aged 40-50 years (p=0.469) (Table 4).

Only eight (44.4%) examinees older than 60 had not had fractures before, which was almost equal to number of examinees who had had fractures. In total, 24 (48%) examinees had fractures, while 26 (52%) did not have fractures (p=0.266) (Table 4).

DISCUSSION

Results of this study showed a lack of nursing education about osteoporosis prevention. The introduction of lease in family doctors' practices caused the disappearance of the group classes and health education of the population (7). Dr. Štampar's teaching, which is based on disea-

Table 4. Age related life style

	No (%) of patients in age group				p*
	40 - 50	51 - 60	Older than 60	Total	
Life style changes related to the age					
Diet	5 (31.3)	4 (25)	5 (27.8)	14 (28)	0.431
Physical activity	3 (18.8)	5 (31.3)	8 (44.4)	16 (32)	
Stopping of smoking	0 (0)	2 (12.5)	1 (5.6)	3 (6)	
No changes, I think medication is enough	8 (50)	5 (31.3)	4 (22.2)	17 (34)	
Do you exercise daily					
Yes	4 (25)	4 (25)	8 (44.4)	16 (32)	0.469
No	9 (56.3)	8 (50)	9 (50)	26 (52)	
I do not know exercises	3 (18.8)	4 (25)	1 (5.6)	8 (16)	
Bone fractures after osteoporosis diagnosis					
Yes	5 (31.3)	9 (56.3)	10 (55.6)	24 (48)	0.266
No	11 (68.8)	7 (43.8)	8 (44.4)	26 (52)	
Total	16 (100)	16 (100)	18 (100)	50 (100)	

se prevention and accepted worldwide, became a part of the past in Croatia (7). Because of the imposed additional administrative obligations imposed on nurses, communication with patients is limited to the issuance of the necessary referrals, prescriptions, and validation checks of documents (7). More than half of examinees in this study indicated doctors as a source of information about osteoporosis. Research organized by the Croatian Society for Osteoporosis has shown that 84% of respondents were not familiar with all the options for treatment of osteoporosis (8). Results of this study indicate that more than a half of examinees thought their knowledge about osteoporosis was enough; they also thought that calcium was not needed when using medication for osteoporosis. The research showed that the knowledge of patients with osteoporosis is important in achieving adequate calcium intake (9).

Vitamin D belonging in osteoporosis control procedures was included only by 4% examinees. Studies have shown that two thirds of patients with hip fractures have vitamin D deficiency (10). Results of this study showed that only 6% examinees quit smoking as medically recommended. Non-pharmacological treatment measures include lifestyle changes (quitting smoking, avoiding alcohol and encouraging physical activity) (11).

Examinees believed that the implementation of daily exercise for osteoporosis may slow its progress, but more than a half of examinees do not exercise every day. Regular physical activity and exercise affects the increase of spinal bone density and strengthens muscle mass in women that are in postmenopausal age, but there are no large studies to confirm whether this activity affects the decrease in fracture risk (12).

There is an equal number of examinees who had fractures versus those who did not have them. According to data from 2005 in Croatia there were 5489 hip fractures, 382 of them were fatal, 97.38% of the patients were older than 65, showing that older age is associated the with increased risk of death in patients with hip fractures (13). People who suffer from osteoporosis after hip fracture usually remain permanently disabled and dependent on the assistance of family and home health care, which directly affects their quality of further life.

Prevention of osteoporosis begins at birth, from the promotion of breastfeeding, through the adoption of healthy life habits. The nurse has an important role in promoting healthy lifestyles and preventing osteoporosis by health education which will improve the quality of life in the community.

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Prevencija nakon dijagnosticiranja osteoporoze

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SAŽETAK

Cilj Ispitati utjecaj znanja, stavova i ponašanja na kvalitetu života bolesnica s osteoporozom, te prisutnost rizičnih čimbenika.

Metode Istraživanje je provedeno među bolesnicima Doma zdravlja Osijek od travnja do lipnja 2009. godine. Sudjelovalo je 50 ispitanika ženskog spola kojima je denzitometrijom utvrđena osteoporoza. Ispitanice su bile podijeljene u tri dobne skupine – od 40 do 50, od 51 do 60 godine, kojih je bilo po 16 (32%), te više od 60 godina, 18 (36%). Instrument ispitivanja bio je anketni upitnik načinjen za potrebe ovog istraživanja.

Rezultati Od 50 ispitanica, 26 (52%) ih smatra da imaju dovoljno znanja, dok 24 (48%) ispitanice smatraju da nemaju dovoljno znanja o osteoporozi. Najveći izvor informacija o bolesti ispitanicama su liječnici 28 (56%), dok je medicinska sestra posljednja po edukaciji pet (10%). Preporuke zdravstvenog osoblja prihvaća 38 (76%) ispitanica, dok 11 (22%) ispitanica preporukama pristupa selektivno, a jedna (2%) se ispitanica u potpunosti ne pridržava preporuka. Uočena je značajna razlika između ispitanica mlađe i starije životne dobi prema izvoru informacija, postupcima koje smatraju bitnim za kontrolu osteoporoze, te u stavu ispitanika na pitanje o svakodnevnom provođenju vježbi za osteoporozu (p=0.037). Ispitanice mlađe dobne skupine nemaju izraženih simptoma, tegoba i prijeloma, te smatraju kako mogu izbjegavati preporuke bez posljedica za zdravlje. Samo tri (6%) ispitanice su prestale pušiti nakon dijagnosticiranja osteoporoze.

Zaključak Iz rezultata istraživanja može se zaključiti kako su ustanovljene razlike u znanju, stavovima i ponašanju ispitanica između dobnih skupina.

Ključne riječi: koštana razgradnja, kvaliteta života, čimbenici rizika.