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HEALTH PROMOTION AND HEALTH EDUCATION WITH PARTICULAR EMPHASIS ON BONE DISEASES AMONG RURAL POPULATION IN POLAND

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Abstract: Osteoporosis and osteoarthrosis are the most common diseases of bone tissue affecting both rural and urban populations. The aim of the study was to investigate the level of education and requirement for health promotion within the scope of common diseases of the skeletal system among rural population in Poland. This was an exploratory study with a cross-sectional design performed between May 2004–September 2005 in rural areas of 16 Voivodeships (main provinces) of Poland. The study population comprised of 404 (62.9%) rural women and 238 (37.1%) rural men (total 642). All subjects were randomly sampled and recruited by personal contact in primary health care centres. Study data were obtained using a specially prepared questionnaire. The most commonly reported diseases were: arterial hypertension (26.1%), joint degenerative disease (24.6%) and osteoarthritis (14.7%). The occurrence of osteoarthritis and joint degenerative disease increased with age and was highest in the group aged over 50 (21% and 38.7% respectively). Osteoarthitis was more frequent in women compared to men (16% and 12.2% respectively). In most cases, the basic information about methods of prevention and treatment given by a General Practitioner or a specialist was characterized as "satisfactory" (73.6% and 62.9% respectively). The most popular prophylactic action performed in local communities was bone densitometry (14.1%), and the most important source of knowledge - TV and radio (65%). Populations living in rural areas have limited access to health education and health prophylaxis actions, irrespective of the geographical region of Poland. Inhabitants with secondary or higher education, as well as those with a higher household income, have better knowledge about skeletal system diseases compared to those with a lower educational level. The practical implications of this study suggest the necessity for paying more attention to etiology, symptoms and methods of prevention and treatment of bone diseases when attending to patients in specialist practice.

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INTRODUCTION

Osteoporosis and osteoarthrosis are the most common diseases of bone tissue affecting both rural and urban populations. These diseases are costly, debilitating, and associated with significant morbidity and mortality. In Poland, the prevalence of osteoporosis in women above the age of 55 is 18.5%, and osteopenia - 40.7%, both irrespective of place of residence (urban or rural area) [6]. A 50-year women has an almost 40% chance of experiencing a fragility fracture (hip, vertebrae, proximal femur, distal radius, humerus, tibia) due to low bone

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mineral density during her remaining lifetime [13]. Moreover, after hip fracture, 50% experience long term disability, and nearly 20% die within 1 year after fracture occurrence [2, 5]. Osteoporosis is a significant burden on the health care system, and the risk of death from osteoporosis-related fracture may exceed the rates of mortality from breast and ovarian cancer combined [4]. Menopause, either natural or surgical, and ageing, are considered the most important risk factors of osteoporosis. However, several other risk factors have been identified, including Caucasian or Asiatic race, family history of osteoporosis or fragility fractures, low BMI (Body Mass Index), low dietary calcium and vitamin D intake, poor intestinal absorption of calcium, sedentary life style, smoking, excessive alcohol and caffeine consumption, treatment with thyroid hormones, glucocorticoids, aluminium antiacids, anticonvulsants and anticoagulants. In various epidemiological and clinical studies, bone quality, bone mineral density, as well as the risk of falling, have been associated with lifestyle; therefore, the most important preventive strategies are: diet and/or supplementation of an appropriate amount of vitamin D and calcium, moderate alcohol and coffee consumption, weight-bearing exercise, minimum 30 min daily (e.g. walking, jogging, stairs), avoiding situations or activities increasing risk of falling [1].

Rheumatoid arthritis and gouty arthritis are the most frequent inflammatory afflictions of joints, and common in general practice. Previous studies have shown that arthritis-related pain and fear of increasingly reduced mobility represent the most important burden for arthritis patients. Moreover, there is a large general need for information among patients concerning, for instance, lifestyle, individual options to influence the course of disease, as well as motivation for physical activity [3].

The most commonly recognised affliction of the skeletal system is joint degenerative disease (Osteoarthrosis). The major clinical features are pain and stiffness, usually leading to a decline in physical function which may ultimately require joint replacement surgery. Current medical recommendations focus mainly on symptomatic treatment because no causal cure is imminent. Therefore, preventable risk factors for the onset and progression of the disease are of great interest for both physicians and patients. Obesity, modifiable by consequent weight loss, is considered a very important factor in reducing the incidence of OA, and decreasing severity during the course of the disease [14].

Bearing in mind the lack of reliable epidemiological data, our aim was to investigate the level of education and requirement for health promotion within the scope of common diseases of the skeletal system among rural population in Poland.

MATERIALS AND METHODS

Study design. This was an exploratory study with a cross-sectional design performed between May 2004–September 2005 in rural areas of 16 Voivodeships (main provinces) of Poland. The study population comprised of 404 (62.9%) rural women and 238 (37.1%) rural men (total 642). All subjects were randomly sampled and recruited by personal contact in primary health care centres. The analysed population was selected according to 2 main criteria: age between 20–80, free will and ability to give honest answers. According to Polish regulations, it is not necessary to obtain proper informed consent from the individuals interviewed.

Data collection. All study data were obtained using a specially prepared questionnaire. The questionnaires were completed at the time of interview, which was performed by a member of the staff of a primary health care centre (usually a nurse). Prior training in interview techniques was undertaken for the survey. Each person engaged in the interviewing process subsequently participated in the practice session performed by a member of the research team from the study centre - Department of Public Health of the Institute of Agricultural Medicine in Lublin, Poland. The practical training sessions focused on evaluation of components to confirm accurate transcription of responses, and comparison and adjustment to ensure good inter-interviewer concordance. The questionnaire incorporated a personal interview guide comprising 2 sections, validated through a prior pilot study performed in 50 participants. 53 questions were used to assess outcomes of interest:

- Demographic information - information was assessed by items regarding age, sex, education level, average household income, type of food production in homestead, distance to the nearest agglomeration.
- Medical history of diseases (with special attention to osteoporosis, joint degenerative disease, rheumatoid arthritis).
- History of occupational injuries, occupational diseases and disability.
- Present complaints and perceived susceptibility to most common diseases (including osteoporosis, joint degenerative disease, rheumatoid arthritis).
- Level of knowledge and beliefs about most common diseases and methods of prevention (with special attention to osteoporosis, joint degenerative disease, rheumatoid arthritis) - measured by use of a series of questions reflecting personal knowledge of participants about these diseases.
- Demands of health education in the field of bone diseases.
- Opinions about information on diseases of the skeletal system given by medical staff (general practitioners, specialists, nurses).
- Opinions about preventive actions provided in Poland.
- Sources of information (education) about possibilities of prevention of diseases of the skeletal system.

Each subject's responses to the questions were analysed by a member of the research team from the study centre -

Figure 1. Number of study participants in each of the voivodeships of Poland.

Department of Public Health of the Institute of Agricultural Medicine in Lublin, before being entered in the database.

Statistical analysis. Statistical analysis included descriptive statistics. The baseline performance of the 2 groups was compared with use of the chi-squared test (Pearson analysis). A p-level of less than 0.05 was considered statistically significant. All statistical calculations were performed using SPSS 12.0 PL software.

RESULTS

Characteristics of interviewed population. The characteristics of the study participants are shown in Table 1. The number of participants in each of the 16 Voivodeships is shown in Figure 1. Frequency of study participants with only a primary education increased with age and conversely, the frequency of those with higher education decreased with age. The majority of the studied population had primary (20.3%) or vocational (33.2) education, only 8.3% had received higher education. The size of farms and rate of production, as well as production machinery supplies, generally decreased from western to eastern Poland (data not shown). Most of the study population were located close to cities (less than 50 km).

Characteristics of diseases and symptoms. The most common diseases reported were: arterial hypertension (26.1%), joint degenerative disease (24.6%) and osteoarthritis (14.7%) (Tab. 2). It is noteworthy that among the occupational diseases the most frequently reported was also joint degenerative disease (66.6%) (Tab. 2). There was only 1 case of osteoporosis reported during the study. Occurrence of osteoarthritis as well as joint degenerative disease increased with age and was highest in the group

Table 1. Characteristics of studied random sample of rural population in Poland.

Age [mean (SD)]			
Total (N=647)	<34 (n=132)	35–49 (n=254)	50< (n=261)
45.89 (13.23)	27.53 (4.51)	42.74 (4.13)	58.90 (7.77)

Sex [n (%)]	
Male	Female
238 (36.6)	409 (63.4)

Educational level [n (%)]			
Primary	Vocational	Secondary	High
130 (20.3)	213 (33.2)	245 (38.2)	53 (8.3)

Distance to nearest city [n (%)]		
<50 km	26–50 km	50–100
470 (72.8)	135 (20.9)	41 (6.3)

Type of farm [n (%)]			
Specialized (e.g. dairy, horticulture)	Non-specialized	Total percent of farm owners	Total percent of hired hand workers
32 (22.3)	230 (87.7)	262 (40.5)	385 (59.5)

Production machinery supplies (self-assessment) [n (%)]			
Very good	Good	Average	Poor
18 (6.8)	61 (23.2)	115 (43.9)	68 (25.9)

Table 2. Most common diseases and symptoms in random sample of rural population in Poland (self-assessment).

Diseases (N=647)	n	%
Arterial hypertension	169	26.1
Joint degenerative disease	159	24.6
Osteoarthritis (incl. Rheumatoid arthritis)	95	14.7
Coronary disease	94	14.5
Chronic peptic and duodenal ulcer disease	56	8.7
Diabetes type II	40	6.2
Cholelithiasis	38	5.9
Nephrolithiasis	27	4.2
Organic heart disease	23	3.6
Epilepsy	8	1.2
Occupational diseases (joint degenerative disease – occupational etiology)	50 (33)	7.7 (5.1)
Symptoms (N=647)	**n**	**%**
Arthralgia	249	38.5
Sleeplessness	179	27.7
Myalgia	148	22.9
Intermittent chest pain	119	18.4
Abdominal pain	56	8.7
Breathlessness	53	8.2
Productive cough	45	7.0

aged over 50 (21% and 38.7% respectively). Osteoarthritis was more frequent in women compared to men (16% and 12.2% respectively); however, joint degenerative disease was more common in men compared to women (28.2% and 22.5% respectively) (data not shown). Among the most common symptoms reported were arthralgia (38.5) and myalgia (27.7%) (Tab. 2).

Information about etiology and symptoms of diseases given by medical staff. In the basic information about etiology and symptoms of skeletal diseases provided by a General Practitioner (GP) – 72.8% of respondents characterized it as "satisfactory" and 23.3 % as "unsatisfactory". The same information given by specialists was defined by 63.3% as "satisfactory" and by 32.5% as "unsatisfactory" ($p<0.05$) (Tab. 3). In the basic information about methods of prevention and treatment of skeletal diseases given by a GP - 73.6% of respondents characterized it as "satisfactory", 21.43% as "unsatisfactory"; whereas the same information given by a specialist was defined in 62.9% as "satisfactory" and in 31.7% as "unsatisfactory" ($p<0.05$) (Tab. 4). The older the respondents, the higher the percentage of those having discussed etiology, symptoms, as well as methods of prevention and treatment of diseases, with both a GP and a specialist (data not shown).

Participation in health prophylaxis actions. The most popular prophylactic actions performed in local societies were: densitometric examination (14.1%), ophthalmological examination (12.7%) and mammography (10.7%) (Tab. 5). Among the interviewed males, the most popular was urologic (prostate) examination (9.2%), among women - densitometric examination (22.2%) The older the respondents, the higher the rate of participation in all types of prophylactic actions (data not shown).

Demands for knowledge in the field of health education. The most frequent answers containing demands for knowledge in the field of health education concerned arterial hypertension and coronary disease (32.9% and 26.9% respectively) (data not shown). For bone diseases, the most frequent were demands for knowledge about joint degenerative disease (28.2%), Osteoarthritis (incl. Rheumatoid arthritis, 16.4%) and Osteoporosis 15.0% (Tab. 6). In the field of occupational diseases, the lack of knowledge about joint degenerative disease was most frequent (25%) (Tab. 7). The percentage of adequate knowledge was highest among participants with Rheumatoid arthritis (~100%), and the lowest in those with joint degenerative disease (30%) (data not shown).

Opinions about health education and prophylaxis. Most of the study participants appreciated the importance of health education and promotion. To the question "Does health education and prophylaxis influence the general health status?", 36.2% of respondents replied that they "strongly agreed" that it did, 39.1% "agreed", 3.8% "disagreed", 20.5% were "not sure". However, to the

Table 3. Evaluation of basic information about etiology and symptoms of diseases of the skeletal system given by medical staff to patients during routine visits.

N=647	Satisfactory ($p<0.05$)	Unsatisfactory ($p<0.05$)	Lack of information
General Practitioners	466 (72.8%)	149 (23.3%)	25 (3.9%)
Specialists	392 (63.3%)	201 (32.5%)	26 (4.2%)

Table 4. Evaluation of basic information about methods of prevention and treatment of diseases of the skeletal system given by medical staff to patients during routine visits.

N=647	Satisfactory ($p<0.05$)	Unsatisfactory ($p<0.05$)	Lack of information
General Practitioners	474 (73.6%)	136 (21.4%)	25 (3.9%)
Specialists	389 (62.9%)	196 (31.7%)	33 (5.3%)

Table 5. Participation in health prophylaxis actions among rural population in Poland (self-assessment).

N=647	Attendance	
	n	%
Densitometry	91	14.1
Mammography	69	10.7
Urological (prostate) examination	22	3.4
Ophthalmologic examination	82	12.7
Spirometry	11	1.7
Lipid profile	5	0.8
Glucose tolerance test	7	1.1
Audiometry	9	1.4
Cytological examination (gynecological)	8	1.2
Other	46	7.1
Total	350	54%

Table 6. Demands of health education in the field of bone diseases among rural population in Poland (self-assessment).

N=647	Reported demand	
	n	%
Osteoarthritis (incl. Rheumatoid arthritis)	106	16.4
Osteoporosis	97	15.0
Joint degenerative disease	182	28.1
Total	385	59.5

Table 7. Demands of health education in the field of occupational diseases among rural population in Poland (self-assessment).

N=647	Reported demand	
	n	%
Joint degenerative disease	162	25
Alveolitis allergica	48	7.4
Other	2	0.3

Table 8. Summary of answers concerning health promotion and education in the field of skeletal system diseases in a random sample of rural population in Poland.

Where do you search for information about course of disease and methods of prevention/treatment?

N=647	No		Yes	
	n	%	n	%
Television, radio	230	35.5	417	64.5
Newspapers, magazines	374	57.8	273	42.2
Books	567	87.6	80	12.4
Brochures, leaflets	377	58.3	270	41.7
Interview with medical staff during routine visits	404	62.4	243	37.6
Specially organized lectures	625	96.6	22	3.4
Other sources	644	99.5	3	0.5

Do you need more knowledge?

N	No		Yes		Not sure	
	n	%	n	%	n	%
647	197	30.4	433	66.9	17	2.6

Does health education and prophylaxis influence general health status?

N	Strongly agree		Agree		Not sure		Disagree	
	n	%	n	%	n	%	n	%
647	226	36.2	244	39.1	128	20.5	24	3.8

Was the quality of health education and prophylaxis provided up till now in your local society satisfactory?

N	No		Yes		Not sure	
	n	%	n	%	n	%
647	278	44.5	118	18.9	229	36.6

Is there a need for more activity in health education and prophylaxis in local society?

N	No		Yes		Not sure	
	n	%	n	%	n	%
629	16	2.5	517	82.2	96	15.3

question “Was the quality of health education and prophylaxis provided up till now in local society satisfactory?”, most of the responders answered “no” (44.5%), only 18.9% answered “yes”, while 36.6 answered “not sure” (Tab. 8). The most common reasons were: restricted accessibility to prophylaxis actions (e.g. age limits, 26.4%), lack of time (16.1%) and unsatisfactory quality of the information provided (13.1%) (data not shown). Nearly 65% of participants surveyed replied that information about the course of a disease and methods of prevention/treatment was usually drawn from television and radio. However, other important sources of knowledge were newspapers/ magazines (42.2%), interview with medical staff during routine visits (37.6%), brochures/leaflets and books (41.7% and 12.4 respectively) and lectures (3.4%). Over 80% of participants responded that there is a need for more health education and prophylaxis in their local community (Tab. 8).

DISCUSSION

The results of cross-sectional studies indicate that knowledge about osteoporosis is poor or limited among American, Taiwanese and Salvadoran inhabitants, irrespective of age. Therefore, health educational programmes and health services regarding osteoporosis are necessary [11, 16, 18]. Joint degenerative disease is one of the most common diseases, the level of knowledge about which among different populations has not yet been comprehensively studied [10]. There is no need to educate the general population about rheumatoid arthritis due to, e.g., lack of modifiable risk factors of the disease. However, among many educational-behavioural programmes, the level of knowledge about rheumatoid arthritis among patients is relatively high [9].

The present results indicate that Polish males and females with secondary or higher education and living in rural areas have better knowledge about joint degenerative disease, osteoarthitis and osteoporosis, regardless of age, which is consistent with other studies [15]. Our multivaried analysis indicates that the most effective predictors of osteoporosis and joint degenerative disease related knowledge were educational level, size of farm together with machinery supplies, household income and gender. These factors may affect the level of knowledge through the distribution of magazines, leaflets and brochures at supermarkets and shopping centres by some pharmaceutical companies, dairy producers and non-governmental organizations. Not surprisingly, our analyses indicate that the most accessible source of information about health education and prophylaxis is television and radio, which is also consistent with studies on many other diseases [12]. Our country is not the only case, since South American women also received more osteoporosis information from the mass communication media than from the health education activities of public health care institutions [17].

According to our previous studies conducted among rural women [6, 7, 8], total knowledge about skeletal system diseases (including osteoporosis, joint degenerative disease and osteoarthritis), may not lead to an improvement in a healthy lifestyle. The reason for knowledge not correlating with risk-reducing life habits is that the information provided was either not fully understood or poorly analyzed, and this type of knowledge is not the basis for changing life style and unhealthy habits [16]. In the present study, respondents judged it necessary to know more about certain specific aspects, such as risk factors and methods of prevention and treatment; however, the information given by specialists was evaluated as unsatisfactory by more than 30% of

respondents. Very few of the participants interviewed for the present study stated that they had no demands concerning health education. Among many different choices, however, knowledge about skeletal system diseases was most welcome.

CONCLUSIONS

The present study shows that populations living in rural areas have limited access to health education and health prophylaxis actions, irrespective of the geographical region of Poland. Inhabitants with secondary or higher education, as well as those with a higher household income, have better knowledge about skeletal system diseases compared to those with a lower educational level. The practical implications of this study suggest the necessity for paying more attention to etiology, symptoms and methods of prevention and treatment of bone diseases when attending to patients in specialist practice.

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