

OUTPATIENT REHABILITATION OF ADULT PEOPLE IN KAUNAS SILAINIAI OUTPATIENT CLINIC SINCE 2003 TILL 2008 (EVALUATION OF ADULT PATIENTS' SAMPLE OF OUTPATIENT REHABILITATION)

SUAUGUSIŲ PACIENTŲ AMBULATORINĖ REABILITACIJA VŠĮ KAUNO ŠILAINIŲ POLIKLINIKOJE 2003–2008 METAIS (SUAUGUSIŲJŲ AMBULATORINĖS REABILITACIJOS PACIENTŲ IMTIES VERTINIMAS)

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ABSTRACT

Key words: outpatient rehabilitation, adults, therapeutic modalities, diseases, cost-analysis.

Objectives. To evaluate the sample of patients of outpatient rehabilitation according to the diseases, sex, age, social status, and applied means of treatment, also to make a cost-analysis of applied treatment.

Material and methods. The sample made of 676 adult patients of ambulatory rehabilitation from Kaunas Silainiai outpatient clinic was investigated. Data were obtained from the medical records. Assessment of applied therapeutic modalities and economical evaluation of treatment was provided according to the valid orders of Ministry of Health of Lithuanian Republic. Statistical analysis was performed using the statistical software package “SPSS 11.0 for Windows”.

Results. Women presented majority of investigated sample (71%). The mean age of patients involved in the sample was 50.92±12.44 years. Neurological (G12.2–G57.3 and I63.3), musculoskeletal (M05.0–M75.8) and traumatic disorders (S14.3–S93.2 and T02.0–T02.8) made 54.2%, 30.6%, and 15.2%, respectively of all investigated diseases. G55.1 was identified in 36.7% of men and in 25.2% of women involved in the sample. Musculoskeletal diseases were established in 17.9% of females and 82.1% of males, (p=0,003). M17 was obtained in 48.2% of women, and M51.1 – in 24.3% of men with the musculoskeletal diseases. Injuries were observed in 60.2% of females, and 38.8% of males, (p=0.034). S52.5 was identified in 17.7% of women; however S43.0 was obtained in 12.2% of men. To the working social status were ranked 66.7% of women and 82.7% of men. Kinesiotherapy was attended by 96.6 % of patients, physiotherapy – 99.7% and massage – 99%, respectively. Physiotherapy and massage were applied almost twofold more frequently than was recommended by the order of Ministry of Health. Costs for the course of outpatient rehabilitation were almost twofold higher compared to the costs of each single therapeutic modality applied to the patients during outpatient rehabilitation.

Conclusions. Women were in majority of exploratory sample, however men were younger. Neurological diseases and G55.1 were the most predominant among all the identified diseases of exploratory sample. Musculoskeletal diseases were more predominant among women, M17 was the most common disorder among females; however M51.1 – among males. Traumatic disorders were established more often in females. The most common injury among women was S52.5. The majority of patients of investigated sample were working people. The modalities used most frequently were physiotherapy, kinesiotherapy and massage; however-psychological consultations and consultations of social worker were used less frequently.

SANTRAUKA

Reikšminiai žodžiai: ambulatorinė rehabilitacija, suaugę pacientai, gydymo metodai, ligos, ekonominė analizė.

Tikslai. Įvertinti suaugusių pacientų, kuriems suteiktos ambulatorinės rehabilitacijos paslaugos, imtį, atsižvelgiant į ligų struktūrą, amžių, lytį, socialinę padėtį, paskirtus terapijos būdus, ir atlikti gydymo ekonominę analizę.

Darbo metodika. Į duomenų analizę įtraukti 676 pacientai, kuriems 2003–2008 m. buvo suteiktos ambulatorinės rehabilitacijos paslaugos VšĮ Kauno Šilainių poliklinikoje. Duomenys paimti iš asmens ambulatorinio gydymo kortelių (F-025/a). Imties vertinimas pagal paskirtus terapijos būdus ir ekonominę gydymo analizę atlikti pagal galiojančius LR Sveikatos apsaugos ministerijos įsakymus. Statistinė analizė atlikta naudojant programos paketą „SPSS 11.0“.

Rezultatai. Didžiąją tiriamųjų dalį sudarė moterys (71 proc.). Visų pacientų amžiaus vidurkis buvo 50,92±12,44 metų.

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Neurologinės (G12.2–G57.3 ir I63.3), jungiamojo audinio ir skeleto–raumenų (M05.0–M75.8) bei trauminės ligos (S14.3–S93.2 ir T02.0–T02.8) sudarė atitinkamai 54,2 proc., 30,6 proc. ir 15,2 proc. visų ligų. G55.1 diagnozė nustatyta 36,7 proc. vyrų ir 25,2 proc. moterų, ($p < 0,005$). Jungiamojo audinio ir skeleto–raumenų ligos (M05.0–M75.8) nustatytos 17,9 proc. vyrų ir 82,1 proc. moterų ($p = 0,003$). M17 diagnozuota 48,2 proc. moterų, o M51.1 – 24,3 proc. vyrų. Trauminės ligos (S14.3–S93.2 ir T02.0–T02.8) nustatytos 39,8 proc. vyrų ir 60,2 proc. moterų ($p = 0,034$). S43.0 diagnozuota 12,2 proc. vyrų, o S52.5 – 17,7 proc. moterų. 66,7 proc. moterų ir 82,7 proc. vyrų buvo dirbantys asmenys. Kineziterapijos procedūromis gydyta 96,6 proc. visų pacientų, fizioterapija – 99,7 proc., o masažu – 99 proc. Fizioterapijos ir masažo procedūros buvo skiriamos beveik 2 kartus dažniau, negu rekomenduoja LR SAM įsakymas. Ambulatorinės reabilitacijos kursas buvo dvigubai brangesnis, palyginti su kiekvienos atskiros procedūros, skirtos pacientui ambulatorinės reabilitacijos metu, įkainiu.

Išvados. Moterys sudarė didžiausią dalį tiriamosios imties, tačiau vyrai buvo jaunesni. Neurologinės ligos ir G55.1 buvo dažniausiai pasireiškianti liga tiriamojoje imtyje. Jungiamojo audinio ir skeleto–raumenų ligos dažniau pasireiškė moterims negu vyrams; dažniausiai diagnozuojama liga moterims buvo M17, o vyrams – M51.1. Traumų sukelti pažeidimai buvo dažnesni moterims negu vyrams.

Moterų traumų atvejais dažniausiai pasireiškė S52.5. Didžiausia tirtosios imties moterų ir vyrų dalis yra dirbantys asmenys. Fizioterapijos, kineziterapijos ir masažo procedūros buvo dažniausiai lankomos tirtos imties pacientų, tačiau psichologo ir socialinio darbuotojo konsultacijos buvo lankomos rečiau.

INTRODUCTION

There is a plenty of evidence-based data confirming the negative considerable impact of neurological, musculoskeletal and traumatic diseases to the individual and society as these conditions are mostly associated with impaired daily life activities, psychological distress, incapacity, productivity loss due to sick leaves and disability worldwide. Mentioned health disorders represent a particularly costly sociomedical problem for health care providers because of expenditures associated with treatment and need for social support [1–6]. Limitation of biosocial functions, disability, health care and social expenditures occurring due to neurological, musculoskeletal and traumatic diseases worry health care politicians in Lithuania as well as in developed Western counties [7, 8]. According to the data of Lithuanian Health Information centre at the Ministry of Health of Lithuanian Republic, the incidence of primary disability in 2004 per 10 000 working age population due to diseases of the nervous system and sense organs, musculoskeletal system, also due to injuries was 8.98%, 17.11% and 10.74%, respectively in 2004 [9].

Thus, medical rehabilitation has a very important role in the treatment of patients with referred diseases. The main goals of medical rehabilitation are to restore impaired biosocial functions, reduce disability, integrate disabled people to the society and warrant the primary and secondary prevention [7].

Much evidence – based trials evaluate an economic impact of multidisciplinary inpatient and outpatient rehabilitation on the individual or society, also compare their cost – effectiveness as well as the outcomes of applied treatment [10, 11]. However, measurements of health care costs are a crucial task in health economic evaluation. Despite the various guidelines with different amount of details have been set up for costing methods in economic evaluation, but they do not precisely stipulate how to value resource consumption. Most standard costs are not based on market

prices, but on administratively specified charges and rates [12]. Nevertheless, there are not enough available data evaluating the samples of people having outpatient rehabilitation as well as applied therapeutic modalities and costs in evidence-based sources.

Therefore, the purposes of our trial are to evaluate the sample of patients receiving outpatient rehabilitation services according to the diseases, sex, age, social status, and applied means of treatment, also to investigate the financial welfare directly associated with the committed finances for the outpatient rehabilitation of Kaunas Silainiai outpatient clinic.

MATERIALS AND METHODS

Since 2003-11-05 until 2008-08-20 the services of outpatient rehabilitation were provided for 699 patients (97.14% of adults), and only 20 (2.86%,) of them were children mainly with musculoskeletal disorders (75%, i.e. 15 patients), other diseases were respiratory (5%, i.e. 1 person) and traumatic disorders (10.0%, i.e. 2 people), obesity (5%, i.e. 1 person), and neurological diseases (5%, i.e. 1 person), respectively. Only 3 people of adult patients had gynecological (0.15%) and respiratory diseases (0.29%). Whereas, distribution of patients with neurological, musculoskeletal diseases and traumatic injuries was markedly higher, (53.9%), (30.49%), and (15.17%), respectively, therefore the cases of gynecological and respiratory diseases were eliminated from the evaluation of exploratory sample. Furthermore, children were also excluded from the investigating sample. Thus, a sample of 676 adult people was formed. The examined sample consisted of 196 men (29%) and 480 women (71%). Data were obtained from the medical records therefore the trial had a design of descriptive study. Diseases were classified by International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10).

Economical evaluation of outpatient rehabilitation was

made according to the valid orders of Ministry of Health of Lithuanian Republic since the 13th of November of 2003 until the 20th of August of 2008 and using the data of accounting department of Kaunas Silainiai outpatient clinic related to the financial expenditures for outpatient rehabilitation.

Statistical analysis was performed using the statistical software package "SPSS 11.0 for Windows". The analysis was performed separately for men and women. The mean value was calculated in order to evaluate quantitative variables. The differences in the distribution of qualitative variables were assessed by chi-squared test. The nonparametric Kruskal-Wallis test was used for comparison between groups. The results were considered to be significant when $p < 0.05$.

RESULTS

The mean age of patients involved to the sample was 50.92 ± 12.44 years. The established mean of age for women was 52.93 ± 11.95 years, and for men – 45.98 ± 12.28 years, respectively. The mean of age for women and men significantly differed ($p < 0.005$). Men asked for the services of outpatient rehabilitation in a younger age. The mean duration of treatment for both – men and women – was 15.93 days. Neurological diseases (G12.2–G57.3 and I63.3) were in the majority among the patients of exploratory sample. It formed a proportion of 54.2%, meanwhile musculoskeletal (M05.0–M75.8) and traumatic disorders (S14.3–S93.2 and T02.0–T02.8) composed 30.6% and 15.2%, respectively. The rate of neurological diseases was predominant in the context of all investigated diseases between men and women; however the rate of musculoskeletal diseases among men was the lowest, while the cases of traumatic

diseases were less frequent (12.9%) among women. The established rate of neurological, musculoskeletal and traumatic diseases among the females and males of exploratory sample significantly differed (Figure 1).

The most predominant disease among both sexes (36.7% of men with mean age of 46 ± 12.39 years and 25.2% of women with mean age of 50 ± 10.31 years, $p < 0.05$) was G55.1. This diagnosis has been established for 37.3% of men and 62.7% of women with neurological diseases, respectively ($p < 0.005$). A number of males and females with diseases of the musculoskeletal system and connective tissue significantly differed. These diseases were obtained in 17.9% of males and in 82.1% of females, ($p = 0.003$). M17 was the most common disorder among women (48.2%, mean age of $60 \text{ years} \pm 8.63$) and M51.1 (24.3%, mean age of $43 \text{ years} \pm 11.98$) among men. The cases of injuries were more rarely established in men than in women: 39.8% and 60.2%, ($p = 0.034$), respectively. More common injuries were S43.0 in 12.2% of men (mean age of 56 ± 10.13 years), and S52.5 was defined in 17.7% of women (mean age of 62 ± 5.99 years) among the cases of all injuries. It was also established that patients with diseases of musculoskeletal system were older than the rest patients with other diseases. The youngest men were with traumatic disorders; however the youngest women were with neurological diseases (Figure 2).

According to the social status, the biggest proportion of investigated sample was ranked to the working population, the rest people ($n = 194$) were distributed in other social states. Estimating the distribution of patients into groups of working ability, it was established that working ability of 35% was predominant: 7.7% of men and 10.2%

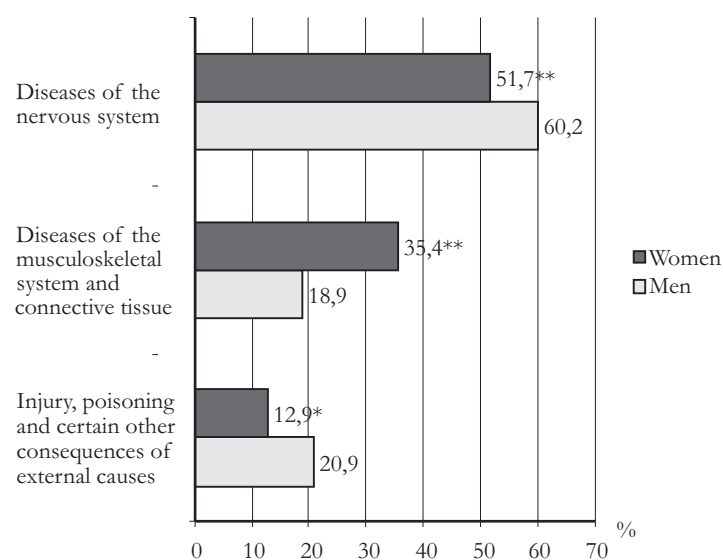


Fig. 1. The case rate (%) of neurological, musculoskeletal diseases and traumatic disorders among men and women of investigated sample

* $p < 0.05$, between men and women; ** $p < 0.001$, between men and women

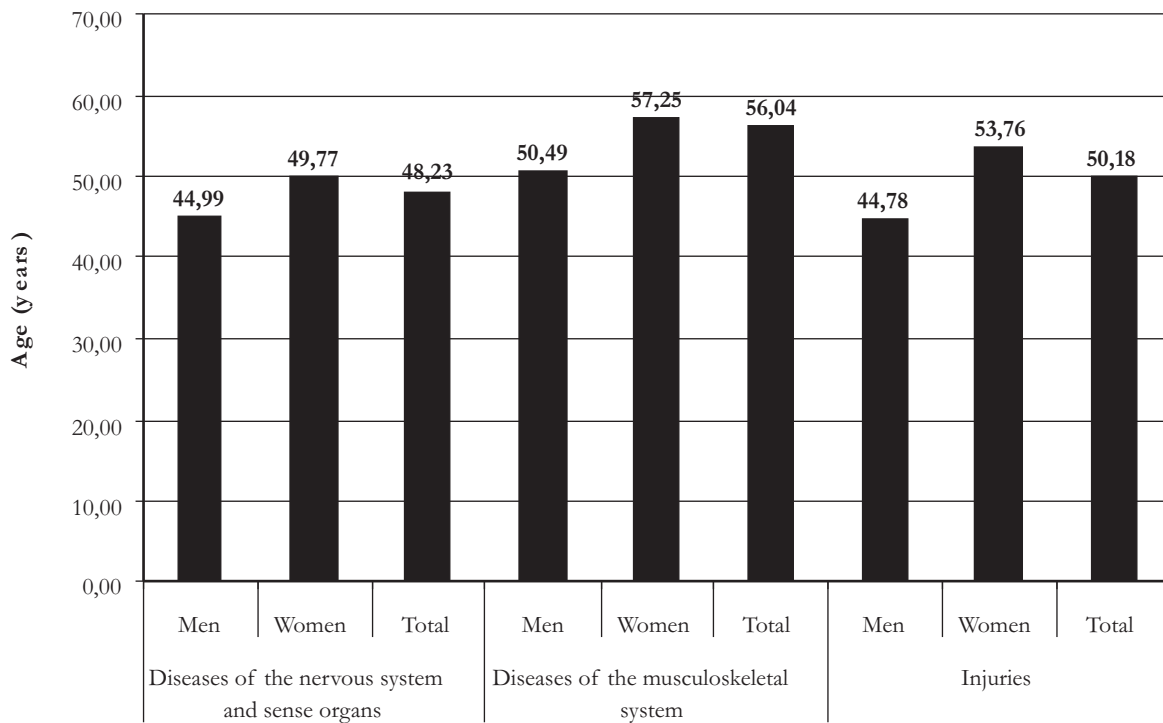


Fig. 2. The mean age of people of exploratory sample distributed according to the diseases

of women distributed in this rank, ($p < 0.002$). Outpatient rehabilitation was attended almost threefold often between retired women than men: 18.8%, and 5.6%, respectively ($p < 0.002$). The distribution of patients by the social status and sex is presented in Table 1.

Almost all patients of exploratory sample received physiotherapy, kinesiotherapy and massage. Physical modalities were accepted by 99.7% of patients; however psychological consultations were attended only by 30.3% of people. These data are presented in Figure 3.

The number means of applied therapeutic modalities for women and men was similar. Patients with neurological diseases received more therapeutic modalities such as kinesiotherapy, physiotherapy, underwater massage, vertical traction in the water and occupational therapy, 53.1%,

54%, 86.7%, 61.9%, 52.9%, respectively ($p < 0.005$) compared to the people with musculoskeletal diseases and injuries. Among patients with neurological diseases, physiotherapy was applied mostly (99.5%), kinesiotherapy – 94.8%, massage – 98.4%, however psychological consultations were attended only by 29.2% of patients. Among patients with musculoskeletal diseases, physiotherapy and massage were attended by 100%, kinesiotherapy – by 98.6% of patients, however underwater massage and psychological consultations were attended less frequently – 15% and 26.1%, respectively. Kinesiotherapy and massage were attended by 99% of patients with injuries, and physiotherapy was attended by 100% of patients; whereas underwater massage was administered less frequently – only for 3.9%. Psychological consultations were applied to 42.7%. Meanwhile, the

Table 1. Distribution of patients by sex and social status

Social status	Men		Women		Total	
	N	%	N	%	N	%
20% of working ability	0	0,0	1	0,2	1	0,1
30% of working ability	0	0,0	1	0,2	1	0,1
35% of working ability	15	7,7	49	10,2	64	9,5
40% of working ability	0	0,0	3	0,6	3	0,4
50% of working ability	6	3,0	12	2,5	18	2,7
55% of working ability	0	0,0	1	0,2	1	0,1
Working	162	82,7	320	66,7	482	71,3
Retired	11	5,6	90	18,8	101	14,9
Student	2	1,0	3	0,6	5	0,7
Total	196	100,0	480	100,0	676	100,0

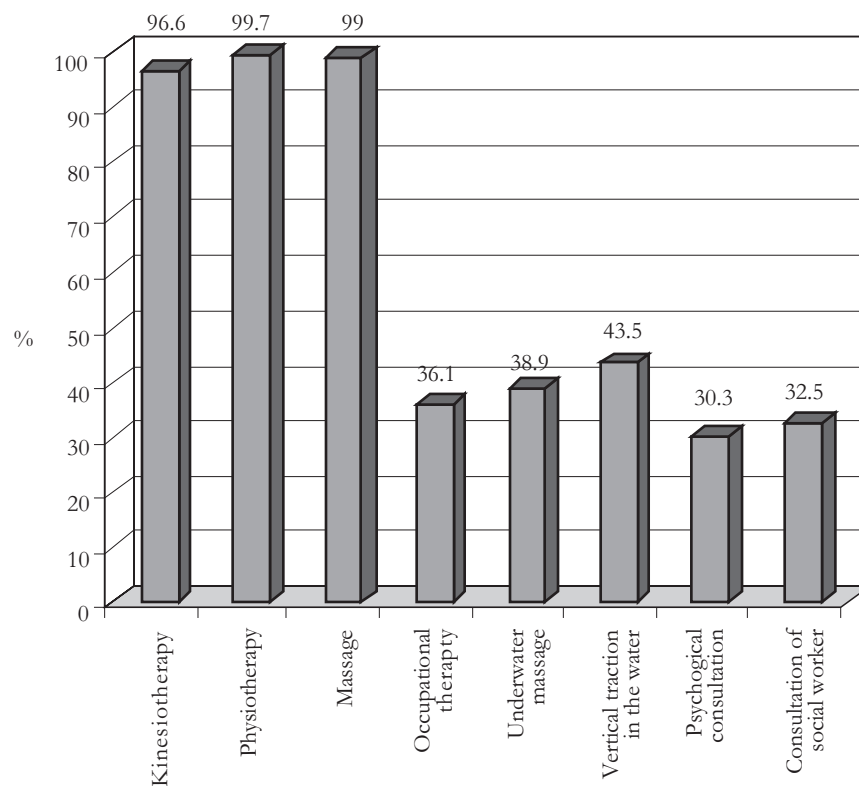


Fig. 3. Distribution of patients (%) by the applied therapeutic modalities

number of such attended therapeutic procedures as psychological consultation, social worker consultation, underwater massage and massage did not differ significantly among the patients with all diseases. Physiotherapy and massage were applied almost 1.5–2-fold more frequently than it was recommended by the Ministry of Health of Lithuanian Republic. The rise of use of physical factors was especially

observed during the last three year. However, the number of received services of social worker and psychologist were not at the variance with recommendations (Table 2).

It was noted that costs for the course of outpatient rehabilitation are almost twofold higher compared to the costs of each single therapeutic modality applied for the patients during outpatient rehabilitation (Table 3).

Table 2. The mean value of performed therapeutic modalities and duration of outpatient rehabilitation in Kaunas Silainiai outpatient clinic

Year	Duration of treatment (bed-days)	Kinesiotherapy	Physiotherapy	Massage	Under water massage	Vertical traction in the water	Psychological consultation	Consultation of social worker	Occupational therapy	
Recommended number of therapeutic modalities*	16.00	16.00	14.40	6.40	–	–	3.20	1.60	6.40	
The mean value of performed therapeutic modalities for one patient	2003	15.94	13.72	16.79	10.79	4.60	4.50	–	–	5.00
	2004	15.99	9.04	16.40	13.62	5.16	5.47	1.00	–	7.89
	2005	16.00	8.28	19.52	15.65	6.97	6.92	1.00	1.00	7.46
	2006	16.00	10.04	25.30	16.24	6.97	7.07	1.13	1.00	6.24
	2007	15.77	13.43	25.55	12.76	6.22	6.27	1.10	1.00	4.21
	2008	15.95	14.04	24.92	13.37	5.75	5.31	1.07	1.00	4.16

* – the number of therapeutic modalities is recommended by Ministry of Health of Lithuanian Republic for the determinate duration of outpatient rehabilitation (16 bed-days)

Table 3. Annual real and conditional incomes for provided outpatient rehabilitation in Kaunas Silainiai outpatient clinic

Year	Incomes for outpatient rehabilitation*	Conditional incomes of single therapeutic modality administered for a patient during the outpatient rehabilitation**
2003	15312.00	9372.10
2004	67744.00	38987.71
2005	53040.00	23078.67
2006	64908.80	27594.46
2007	132534.40	63417.86
2008	146118.40	62519.57

* – according the determined costs (LTL) by Ministry of Health of Lithuania Republic for the course of outpatient rehabilitation;

** – according the determined costs (LTL) by Ministry of Health of Lithuania Republic for the single therapeutic modality administered during of outpatient rehabilitation

DISCUSSION

Unfortunately there is a lack of information related to the evaluation of patient's samples with neurological, musculoskeletal diseases and traumatic disorders receiving treatment of outpatient rehabilitation in evidence-based data bases. Consequently, we were not fairly able to compare obtained results of our trial with the outcomes of other studies; however evidence-based data sources allowed us to look at our findings more widely and comprehensively. Thus it is supposed that women are more attentive to their health status than men and health as a value is more important for women as well [13, 14]. Therefore this could be an explainable reason why more women asked for the treatment services of outpatient rehabilitation in our clinic. It is established that more than 70% of people in developed countries will experience low back pain (LBP) at some time in their live each year. 15.0 to 45.0% of adults suffer LBP and one in 20 people appeal to a hospital with a new episode. Lifetime prevalence is estimated at 59.0% with peak prevalence between 45 and 59 years of age [15, 16, 17]. We obtained similar data.

Spanish researchers estimated that the prevalence of knee osteoarthritis (OA) in the general adult Spanish population was 10.2% mainly related to women aged over 55 years [18]. Similar findings of such investigations as the ESORDIG study. Medical Services Plan (MSP) of British Columbia and population – based study performed in Italy also confirmed that knee OA prevalence was significantly higher among women than men and increased with age [19, 20, 21]. The results of our investigation were in agreement with the outcomes of cited sources.

The incidence of distal forearm fractures in industrialized countries has been estimated at 200–300 per 100000 inhabitants and is expected to increase further as the population ages. Fractures of the distal forearm result in hospitalization rates of 23% among men and 19% among women. Distal radius fractures are typical traumatic injuries affecting primarily elderly women. A rapid rise in incidence is

noted after the menopause. The incidence then plateaus at age 65 years, but overall around 50% of forearm fractures occur in women aged ≥ 65 years. German authors established that from 2031 forearm fracture patients. 81.6% were females with an average age 67.6 years; however, according to the data of Czech researchers the average age was 59 years of 2514 patients with distal radius – 45.8 years of men and 64.7 of women [22, 23, 24]. The average age of women with injuries and consequently with the diagnosis of S52.5 in our exploratory sample was less.

Shoulder dislocation represents the most shoulder problems. The results of Malaysian retrospective study indicated the male predomination in 77% cases of 105 shoulder dislocations. The average age of men was 39.9 years [25]. However men of investigated sample with diagnosis of S52.5 had the higher average of age.

As it was mentioned above, some comparisons of our results with the outcomes of other trials are limited. It could be supposed that outpatient rehabilitation may be important for working population considering the main purpose of rehabilitation to optimize patient's biosocial functions at home, in the community and at work. It is not clear why the attendance of psychological and social worker's consultations remained low. We could hypothesize that some Lithuanian people do not realize the importance and benefit of administered therapeutic modalities for the positive results of the applied treatment. Thus, these patients do not use all opportunities of outpatient rehabilitation regulated by the Ministry of Health of Lithuania. Definitely, the further investigations which evaluate the patients' acceptance of administered therapeutic modalities of outpatient rehabilitation is necessary as well as assessment of patients' motivation to receive an appropriate services of outpatient rehabilitation.

Currently, it is quite difficult to compare the incomes for the outpatient rehabilitation with the analogous finance of outpatient clinics in different states and different systems of health care. However, it was established that a quite new

kind of rehabilitation-outpatient rehabilitation-is effective and cheaper than inpatient rehabilitation. German researchers indicated that the mean of expenditures in outpatient rehabilitation was 970 euro lower than in inpatient rehabilitation [11, 26]. The findings of our trial indicated that the separate costs for each kind of therapeutic modalities are lower than in the context of the whole course of outpatient rehabilitation. Our specialists administer such number of rehabilitation means for the patients of outpatient rehabilitation as it is considered to be optimal achieving a positive therapeutic effect. The main health indices of coming patients are examined and discussed before the initiation of outpatient rehabilitation as well as necessary pharmacological treatment. Therefore, the need of laboratory and clinic investigations, also consultations of other specialists is discussed individually according to the health status of patient, although these procedures are indicated in the appropriate order of Ministry of Health of Lithuanian Republic. However, consultations of rehabilitologist who has the main responsibility for the organization of outpatient rehabilitation and procedures of hydrotherapy are not included in the presented coverage of outpatient rehabilitation services.

CONCLUSIONS

- 1) Women were in the majority of exploratory sample; however men were younger. It might be that females are more attentive to their health and the complaints about their health occur in older age.
 - 2) Neurological diseases and G55.1 were the most predominant among all the identified diseases of exploratory sample as well as among both sexes.
 - 3) The cases of musculoskeletal diseases were more frequent among women compared to men. M17 was the most common disorder among women; however M51.1 – among men.
 - 4) Traumatic disorders were established more often in women than in men. The most common injury among females was S52.5.
 - 6) The majority of patients of investigated sample were working people.
 - 7) Such therapeutic modalities as physiotherapy, kine-siotherapy and massage were the most frequently used among the patients of investigated sample; however-psychological consultations and consultations of social worker were used less frequently.
2. The institutions rendering the services of outpatient rehabilitation should be allowed to determine the coverage of necessary therapeutic modalities, laboratory and clinic investigations as well as specialists' consultation according to the health status of every patient autonomously, so each procedure from the whole recommended coverage for outpatient rehabilitation should have an appropriate financial value.
 3. If the expected positive results are not reached restoring impaired biosocial functions of patient during the established 16 bed-days, an opportunity to extend the treatment should be provided after the common conclusion of Counseling Commission of Physicians in the institution rendering the services of outpatient rehabilitation.
 4. The sponsorship of additional bed-days of outpatient rehabilitation should be discussed taking into consideration that the highest percent of patients are working population, so the payment for the extra treatment could be delegated to the employer applying tax deduction for it.
 5. The procedures of hydrotherapy and consultations of rehabilitologist should be included in the recommended coverage of outpatient rehabilitation with an appropriate cost for them.
 6. The education of patient should be provided explaining the importance and expected benefits for his health status due to such administered therapeutic modalities as consultations of social worker and psychologist.

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