INTRODUCTION

Attitude about physical restriction has been changing throughout history. It has always been multidimensional including ethic, medical and judicial aspect.

Asklepiad, in the first century has advocated that the attitude toward mentally ill patients should change and that human methods should be employed [1, 2]. During that time three mental illnesses were recognized: mania, melancholy and febrile delirium, also known as phrenitis. In the 2nd century Galen and his contemporary, Areatus, engaged in questions of the mind trying to give those illnesses a scientific dimension too [3, 4].

The name Paracelzus is significant for the history of psychiatry and for the topic presented in this paper; he was the last remarkable medieval doctor and the first modern doctor (16th century) who has claimed that mental illnesses are “natural illnesses” and that they do not have anything to do with devils, but that they are a consequence of chemical disorders [5]. The end of the 18th century brought a modern era that starts with humane reform of Philippe Pinel, who in 1793 freed all mentally ill patients of chains in which they were bound in the Bicetre hospital [6]. Some of them were bound up to 30 years. Fricke in Germany and William Tuke in England followed his example. At that time, in 1801 it was recognized that a mental illness involved a number of factors, from hereditary, social to biological.

The period of abolishment of bounding is connected with the work of Gardener Hill, whose involvement contributes to mechanical restriction became rarely employed, but this does not mean that the patients were completely freed of every mechanical restriction [7]. In Broiler’s time physical restriction was done using wet sheets and it was limited to half an hour [8].

Physical restriction exists today in modern urgent psychiatry, but this topic is intentionally or unintentionally avoided at scientific meetings and discussions. In the attempt to find the literature or any other document that could explain this practice we can only come across negative connotations and attempts claiming that this act falls under the doctor’s own will.

SUMMARY

Introduction Attitude about physical restriction has been changing through history. It has always been multidimensional approach, including ethic, medical and judicial aspect.

Objective The main aim was establishing distribution of physical restrictions of patients for the following years: 2006/07, 2007/08, 2008/09, 2009/10 and 2010/11.

Methods The research included patients that were hospitalized in the Special Hospital for Psychiatric Disorders “Dr. Lazarević” in Belgrade from June 1, 2006 to June 1, 2011. Retrospective review of illness history of hospitalized female patients was done (350 in total) and records were formed containing data on physically restrained patients.

Results The largest number of referral diagnoses belonged to groups F20, F23 and F29; it was established that the number of physical restrictions was associated with referral diagnoses on the level of highly statistically significant difference (p<0.001). The average number of restraitees per hospitalized patient which was growing in the studied period, which was also shown by the trend line (y=0.5x+1.06; R2=0.7242).

Conclusion Physical restrictions of psychiatric patients must backed up by benevolence, and it is not by any means the doctor’s arbitrariness, which is strongly criticized and represents breach of ethical norms, human rights and the rights of the patient as guaranteed by law. This topic, which, indeed, refers to modern psychiatry, deserves more attention by public discussions, as well as by legislative regulations.

Keywords: physical restriction; psychiatric patients; ethical norms

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tection of person with mental disabilities [9]. This paper is an attempt to enlighten this topic and to show that physical restrictions do exist in urgent psychiatry.

Physical restriction and any manual method involves the use of physical or mechanical resources, materials or equipment which paralyses or lessens patients’ ability to freely move their arms, legs, or whole body [10].

In some countries physical restriction is seen as a part of treatment, but modern psychiatry considers that it is certainly not so. This is an intervention in behaviour control when the patient is in immediate danger of harming himself and others [11, 12, 13].

At the plenary meeting of the United Nations held in 1991 the Principle 11 was adopted stating that the physical restriction or enclosure of patients is not allowed to be used unless in accordance with formally established procedures of mental institutions and just if it is the only available way to prevent an immediate or subsequent damage to the patient or others. These measures ought not to be prolonged after the period that is strictly necessary for this purpose.

All the cases of physical restriction or involuntary enclosure, reasons for that and their nature and extent must be recorded into the patient’s medical records. The patient who is physically restrained or enclosed must be kept under human conditions and under the care of regular supervision of qualified members of staff. Personal representative if he exists and if relevant, should be urgently informed on any restrain or enclosure of the patient [14].

With reference to this declaration we can see that this treatment is officially regulated. In the Helsinki declaration from 1964 it is stated that doctors must have freedom in using diagnostic and therapeutic measures only if, to their opinion, this could provide hope for survival, cure or alleviation of pain, as well as that every treatment must be done for the sake of the patient [15].

Physical restriction can be instructed only by a doctor; some of the most common indications are: 1) endangering the person's or other persons' lives; 2) minimization of agitation until the first effects of applied therapy can be seen; 3) resistance to psychopharmaceuticals combined with creating problems for themselves or the environment; 4) serious cognitive deficit (dementia); 5) prevention of fall; 6) applying i.v. therapy in extremely agitated patients; and 7) unresponsive to verbal warning and inability to account for or change the existing therapy for whatever reason.

Physical restriction in urgent psychiatry is limited to two hours in continuity. After that period there must be at least 15 minutes during which the patient has to be free. During the period of restriction vital signs need to be checked every 15 minutes, and if required by the condition of the patient, even more often. It is necessary to take care of physiological needs of the patient, as well as a special physical state that this kind of treatment can cause. If the treatment is incorrectly conducted there are consequences that may arise [16].

**OBJECTIVE**

The aims of the study were: 1) establishing distribution of physical restrictions of patients for the years 2006/07, 2007/08, 2008/09, 2009/10 and 2010/11, and 2) establishing whether there is a connection between the number of physical restrictions of patients and number of hospitalizations, referral diagnosis, discharge diagnosis and patients’ age.

**METHODS**

The research included patients hospitalized at the Special Hospital for Mental Disorders “Dr. Laza Lazarević” in Belgrade from June 1, 2006 to June 1, 2011. Retrospective review of illness history of the hospitalized female patients was done (350 in total) and data were recorded about physically restrained or involuntary enclosed patients, for the years 2006/07, 2007/08, 2008/09 and 2009/10. The average age of the patients was uniform, total average age being 40 years and 5 months. The number of hospitalizations observed according to ages was quite uniform (except in 2007/08 when the smallest was 293, and in 2009/10 when the largest was 330); the absolute number of physical restrains in the observed age groups increased in the first year of

<table>
<thead>
<tr>
<th>Years of observation</th>
<th>Number of patients</th>
<th>Average age (years)</th>
<th>SE</th>
<th>Physical restraint (n)</th>
<th>Average of physical restraint per patient</th>
<th>Hospitalization (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006/07</td>
<td>88</td>
<td>42.20</td>
<td>1.48</td>
<td>153 (18.0%)</td>
<td>1.7</td>
<td>305 (19.7%)</td>
</tr>
<tr>
<td>2007/08</td>
<td>57</td>
<td>39.09</td>
<td>1.57</td>
<td>133 (15.7%)</td>
<td>2.4</td>
<td>293 (18.9%)</td>
</tr>
<tr>
<td>2008/09</td>
<td>78</td>
<td>41.38</td>
<td>1.33</td>
<td>155 (18.2%)</td>
<td>2.0</td>
<td>302 (19.5%)</td>
</tr>
<tr>
<td>2009/10</td>
<td>78</td>
<td>40.76</td>
<td>1.47</td>
<td>205 (24.2%)</td>
<td>2.6</td>
<td>330 (21.3%)</td>
</tr>
<tr>
<td>2010/11</td>
<td>49</td>
<td>39.14</td>
<td>1.77</td>
<td>203 (23.9%)</td>
<td>4.1</td>
<td>318 (20.6%)</td>
</tr>
<tr>
<td>Total</td>
<td>350</td>
<td>40.51</td>
<td>1.52</td>
<td>849 (100.0%)</td>
<td>2.4</td>
<td>1548 (100.0%)</td>
</tr>
</tbody>
</table>

SE – standard error; n – number of patients

Refer to Table 1. Sample distribution by years, physical restraint and hospitalization.
observation, as well as the average of physical restrictions per patient (from 1.7 in the first year of observation to 4.1 in the last year of observation), which can be related to better records, i.e. when every order for physical restriction was disrupted after 15 minutes, and repeated restrain was recorded as the next started physical restriction (Table 1).

On Graph 1 shows the distribution of hospitalizations and physical restrictions (in percentages), as well as the average number of retrainees per hospitalized patient which was increasing in the studied periods, as also shown by trend line \( y=0.5x+1.06; R^2=0.7242 \).

Graph 2 also shows the distribution of hospitalizations and physical restrictions, but in absolute numbers, were the trend line of trend of physical restrictions \( y=17.2x+118.2; R^2=0.7049 \) also shows also the increasing number of physical restrictions.

The most common referral diagnoses in physically restricted patients, observed by years are schizophrenia, acute and transitory psychotic disorder, unspecified nonorganic psychoses and bypolar disorder; other diagnoses are represented by lower percentages. Graphs 3-7 show referral diagnoses according to years, and diagnoses represented by lower percentage.

In order to determine in which cases there is a statistically significant deviation of frequency distribution that we expect, referral diagnoses, discharge diagnoses and age for every year of observation was recorded.

**Year 2006/07**

The number of hospitalizations: association was not acquired, in other words the number of restrictions does not correlate with the number of hospitalizations, therefore does not have statistical significance \( \chi^2=14.8; \text{df}=18; p=0.677 \).

Referral diagnoses (the largest number of referral diagnoses belongs to groups F20, F23 and F29); it was established that the number of physical restrictions was associated with referral diagnoses on the level of highly statistically significant difference \( \chi^2=117.5; \text{df}=66; p<0.001; p<0.001 \); or since value of the coefficient of correlation

**Graph 1.** Distribution of hospitalizations and physical restraint (%) and average of physical restraint per patient

**Graph 2.** Distribution of hospitalizations and physical restraint (absolute numbers)
is very high (p=0.751; p=0.000) it can be concluded that there is a very close dependence between the linear form of physical restrictions of patients and referral diagnosis.

Discharge diagnoses (the largest number of discharged diagnoses belongs to groups F20, F23, F29) are also associated with the number of physical restrictions on the level of highly statistically significant difference (χ²=119.3; df=78; p=0.000; p<0.001).

Age: there was no established association, i.e. there is no statistical significance (χ²=214.4; df=240; p=0.882; p>0.05).

**Year 2007/08**

The number of hospitalizations: there was no established association, i.e. the number of physical restrictions association was not acquired, in other words the number of restrictions did not correlate with the number of hospitalizations, therefore does not have a statistical significance (χ²=20.7; df=18; p=0.296).

Referral diagnoses (the largest number of referral diagnoses belongs to groups F20, F23 and F29); it was established that the number of physical restrictions was associated with referral diagnoses on the level of highly statistically significant difference (χ²=120.5; df=86; p=0.000; p<0.001); or since the value of the coefficient of correlation is very high (p=0.436; p=0.001) it can be concluded that there is a very close dependence between the linear form of the physical restrictions of patients and referral diagnosis.

Discharge diagnoses (the largest number of discharged diagnoses belongs to groups F20, F23, F29) are also associated with the number of physical restrictions on the level of highly statistically significant difference (χ²=115.3; df=78; p=0.000; p<0.001).

Age: there was no established association, i.e. there is no statistical significance (χ²=201.4; df=198; p=0.418; p>0.05).

**Year 2008/09**

The number of hospitalizations: association was not acquired, i.e. the number of restrictions does not correlate with the number of hospitalizations, therefore does not have a statistical significance (χ²=17.7; df=18; p=0.477).

Referral diagnoses (the largest number of referral diagnoses belongs to groups F23, F29 and F31); it was established that the number of physical restrictions was associated with referral diagnoses on the level of highly statistically significant difference (χ²=39.9; df=60; p=0.978; p>0.05); or since the value of the coefficient of correlation is very high (p=0.022; p=0.852) it can be concluded that there is a very close dependence between the linear form of physical restrictions of patients and referral diagnosis.

**Graph 3. Distribution of diagnosis – year 2006/07 (%)**

**Graph 4. Distribution of diagnosis – year 2007/08 (%)**

**Graph 5. Distribution of diagnosis – year 2008/09 (%)**
Discharge diagnoses (the largest number of discharged diagnoses belongs to groups F20, F23, F31) are also associated with the number of physical restrictions on the level of highly statistically significant difference ($\chi^2=70.5$; df=78; p=0.713; p>0.05).

Age: there was no established association, i.e. there is no statistical significance ($\chi^2=239.3$; df=216; p=0.132; p>0.05).

**Year 2009/10**

Then number of hospitalizations: association was not acquired, i.e. the number of restrictions does not correlate with the number of hospitalizations, therefore does not have statistical significance ($\chi^2=20.4$; df=24; p=0.674).

Referral diagnoses (the largest number of referral diagnoses belongs to groups F20, F23 and F29): it was established that the number of physical restrictions is associated with referral diagnoses on the level of highly statistically significant difference ($\chi^2=181.2$; df=128; p=0.000; p<0.001); or since value of the coefficient of correlation is very high (p=0.375; p=0.001) it can be concluded that there is a very close dependence between the linear form of physical restrictions of patients and referral diagnosis.

Discharge diagnoses (the largest number of discharged diagnoses belongs to groups F20, F22, F29) are also associated with the number of physical restrictions on the level of highly statistically significant difference ($\chi^2=185.1$; df=136; p=0.003; p<0.01).

Age: there was no established association, i.e. there is no statistical significance ($\chi^2=382.2$; df=312; p=0.004; p<0.01).

**Year 2010/11**

The number of hospitalizations: association was not acquired, i.e. the number of restrictions does not correlate with the number of hospitalizations, therefore it does not have statistical significance ($\chi^2=27.8$; df=27; p=0.420).

Referral diagnoses (the largest number of referral diagnoses belongs to groups F20, F23 and F29): it was established that the number of physical restrictions is associated with referral diagnoses on the level of highly statistically significant difference ($\chi^2=89.5$; df=81; p=0.242; p>0.05); or since value of the coefficient of correlation is very high (p=0.174; p=0.233) it can be concluded that there is a very close dependence between the linear form of physical restrictions of patients and referral diagnosis.

Discharge diagnoses (the largest number of discharged diagnoses belongs to groups F20, F22, F31) are also associated with the number of physical restrictions on the level of highly statistically significant difference ($\chi^2=120.2$; df=99; p=0.072; p<0.05).

Age: there was no established association, in other words there is no statistical significance ($\chi^2=238.6$; df=279; p=0.962; p>0.05).

* * *

Generally observing the number of physical restrictions is in correlation with referral and discharge diagnoses, while the correlation between the number of restrictions and the number of hospitalizations, as well as the number of restrictions and the age of patients, does not exist. The correlation with diagnoses is significant because the most common diagnostic categories are only those in which difficult behavioural control is expected. This is assumed to be the reason why a statistically significant difference was not established in the year in which there was the bipolar disorder instead of schizophrenia (difficult behavioural control is rare in depressive phase of bipolar disorder).
DISCUSSION

The main objective of this study was to determine the distribution of physical restraint of patients during the five-year period, 2006-2011. Secondary, we tried to determine whether there was a correlation between the number of physical restraint of patients and the number of hospitalizations, referral diagnosis, discharge diagnosis and age. In some countries, physical restraint is seen as a sole treatment, but the trends in modern psychiatry indicate that it is only one aspect of psychiatric treatment; the interventions to control behaviour when the patient is in immediate danger hurting himself and others [11, 12, 13]. According to our sources, there are no published papers on the subject of physical restraint either in our country or worldwide. For this reason as a source of data in the context of comparison and expectations of specific results, we used textbooks that are available to the general psychiatry [1, 18, 19]. We are witnesses that only the negative connotations of physical restraint can be found, and attempts to bring such action in connection with the demonstration of force and arbitrary power [20, 21]. Our results regarding the frequency of certain diagnostic categories distinguished group spectrum of psychosis (60%), and the spectrum being predominated by acute psychotic reaction (19%), schizophrenia (16%) and unspecified psychosis (24%). According to the literature, these results are consistent with expectations [16-19, 22, 23, 24]. In the third year of observation 2008/2009 the most prominent diagnosis was bipolar disorder and there was no statistical significance compared to the number of physical restraint that can be explained by the emergence of depressive episode within the same which was not associated with psychomotor agitation. In the fourth year of observation 2009/2010 the most prominent diagnosis is unspecified psychosis rating 35% and the difference in comparison to other diagnosis was statistically significant (p<0.05). A possible explanation of this result lies in the fact that psychiatrists are more likely to opt for a more general type of diagnosis, according to the official doctrine of the treatment protocol. Certainly, it is necessary to distance oneself from the generalized interpretation of the results, and future research would be valuable in the context of testing the hypothesis that this finding could affect the diagnosis of the problem of stigmatization that F20 can carry with it. The results of treating the average number of physical restraint of the patient increased (from 1.7 to 4.1), and one of the hypothetical explanation would be that these findings related to federal regulations, better defined and more frequent reference to the rights of patients who were confirmed by law [23, 24]. Either the age of the patient or the number of hospitaliza-

tions did not correlate with parameters of the number of physical restraint which may explain the clinical picture that is not defined by these parameters [1, 18, 19, 22, 23].

We believe that the potential contribution of this research represents the fact that there was no original works on this subject. Given the differences in the frequency of the diagnosis if the observation period we believe that future studies encompassing a larger number of participants and a longer observation period will give consistent data that could contribute to better understanding of this important, but in the scientific literature the under-exploited problem.

Since the association between physical restrictions and diagnosis is proven, it could be said that this kind of treatment is unavoidable in situations where the threatened and immediate danger on harming of health and life of the patient, health worker or a third person, or integrity of material world has to be prevented. Physical restrictions of psychiatric patients must have benevolence in the background, by no means arbitrariness of the doctor, which is strongly criticized and represents contravention of ethical norms as well as the human rights and the rights of the patient which are guaranteed by law. Regarding the muniment mentioned above which dates from 1991, it seems that this topic has not been thoroughly studied. What can modern psychiatry do to improve the position of patients in which physical restriction is needed? Creation of a Clinical Guide on physical restriction, where indications would be defined, as well as the duration, method and ways of recording, as well as the conditions.

CONCLUSION

Subsequently, providing care and support to mentally ill persons is extremely stressful [17]; thus it is suggested: better coverage by staff (one nurse per one or two physically restricted patients aimed at better care); education of staff on correct implementation of physical restriction; gentle conduct while performing restriction (empathic approach); and always having in mind that physical restriction can cause humiliation and mental pain in an individual.

Wishes promote many questions about economic aspects and standards of the society, politics, scientific achievements, attitude of community and individuals connected to this topic, nevertheless one thing is certain: every physical restriction of the patient must have benevolence inwrought in the procedure itself. This topic, which indeed concerns modern psychiatry deserves more space in public discussions, and therefore in the law.
Најчешће дијагнозе код којих је потребно физичко спутавање болесника са психијатријским поремећајима – хуманост на провери

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**КРАТКА САДРЖАЈ**
Увод Став о физичком спутавању болесника са психијатријским поремећајима менао се кроз историју. Ипак, узнемирен је то био вишедимензионални приступ који обухвата етичке, медицинске и судске аспекте.

Циљ рада Циљ рада био је да се утврди распрострање физичког спутавања болесника са психијатријским поремећајима за године 2006/07, 2008/09, 2009/10 и 2010/11.

Методе рада Истраживање је обухватало 350 особа које су били билансирани у специјалној болници за психијатријске болести „Др Лаза Лазаревић” у Београду између 1. јуна 2006. и 1. јуна 2011. године. Уређен је ретроспективни увид у историје болести ових испитаника, након чега су начињене бешике с подацима о њиховом физичком спутавању током боравка на клиници.

Резултати Највећи број дијагноза под којима су болесници упућени на лечење припадао је групама F20, F23 и F29. Установљено је да је број физика-физика ограничења повезан са унутрашњим дијагнозама на нивоу високо статистички значајне разлике (p<0,001). Процес спутавања по болеснику по-већао се током године, што је показало и линија тренда (p=0,5x+1,06; R²=0,724).

Закључак Физичко спутавање особа обележених од психијатријским поремећајима мора у својој основи бити добровољно, али и своєврено лекара, што се оштро критикује и сматра кршењем етичких норма, људских и права пацијената која су гарантована законом. Ова тема, коју прорачува савремена психијатрија, заслужује више простора у јавним дискусијама, као и у законским регулацијама.

Кључне речи: физичко спутавање; психијатријски болесници; етички норме