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SPECIAL ARTICLE

COVID-19 IMPACT IN EUROPE

Up to 2.2 million people experiencing disability suffer collateral damage each day of COVID-19 lockdown in Europe

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ABSTRACT

BACKGROUND: The COVID-19 pandemic is having a great impact on health services. Patients not receiving care due to closure of outpatient services suffer a collateral damage. Our aim was to provide first data on impact of COVID-19 on people experiencing disability in Europe.
METHODS: We developed an estimation from a survey and publicly available data. Thirty-eight countries have been inquired through the European Bodies of Physical and Rehabilitation Medicine — the rehabilitation medical specialty. The nine questions of the survey focused on March 31st, 2020. We used the following indicators: for inpatients, acute and rehabilitative hospital beds; for outpatients, missing uniform European data, we used information from Italy, Belgium and the UK, and estimated for Europe basing on population, number of rehabilitation physicians, physiotherapists, and people with self-reported limitations.
RESULTS: Thirty-five countries (92%) including 99% of the population (809.9 million) answered. Stop of admissions to rehabilitation, early discharge and reduction of activities involved 194,800 inpatients in 10 countries. Outpatient activities stopped for 87%, involving 318,000 patients per day in Italy, Belgium and the UK, leading to an estimate range of 1.3-2.2 million in Europe. Seven countries reported experiences on rehabilitation for acute COVID-19 patients.
CONCLUSIONS: COVID-19 emergency is having a huge impact on rehabilitation of people experiencing disability. This may lead to future cumulative effects due to reduced functional outcome and consequent increased burden of care. When the emergency will fade, rehabilitation demand will probably grow due to an expected return wave of these not well treated patients, but probably also of post-COVID-19 patients' needs.

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KEY WORDS: Surveys and questionnaires; Disabled persons; Rehabilitation; COVID-19; Coronavirus.

Introduction

Rehabilitation is a human right,[1] and has shown to be effective in reducing disability and the costs to society.[2] Rehabilitation is one of the five key health strategies, together with promotive, preventive, curative, and palliative.[3] Worldwide, rehabilitation activities interest 1 billion persons with disability[4] and 2.5 billion experiencing disability,[5] corresponding to 13% and 31% of the world population, respectively. In Europe, 37% of the EU-28 popula-

tion aged 15 or more has functional mobility limitations: 27% mild, 10% severe.[6] According to the Global Burden of Disease study, people experiencing disability worldwide generate 316.6 million years lived with disability.[7]

The COVID-19 pandemic is having a great impact on health services,[8] and obviously attention concentrates on emergency and acute care. Nevertheless, there are many patients not receiving care due to closure of outpatient services and/or impact on people of the mobility limitations imposed by countries: they are suffering collateral damages of COVID-19.[7] The impact on rehabilitation activities reflects on patients now, and on society in terms of future burden of care.[9-11] Nevertheless, currently there are very few data on how much COVID-19 has impacted on people experiencing disability. The aim of this paper is to provide a first series of data in Europe at the first stages of COVID-19 spreading.

Materials and methods

Design

Survey that provided the information for an estimation based on officially available data.

Participants

Physical and Rehabilitation Medicine (PRM) is the medical specialty dealing in Europe with medical rehabilitation in all settings:[12] in acute hospitals supporting other specialties, in post-acute rehabilitation wards/hospitals, and in outpatient and community services.[13] PRM is organized in Europe through the European PRM Bodies.[14] The three bodies representing the European Countries have been involved in this study: the European Society of PRM (ESPRM) (scientific body), that promoted this work, and the European Union of Medical Specialists (UEMS) – PRM Section (political body) and Board (educational body). The ESPRM counts 37 European countries, plus Jordan and Israel as observers, represented in its General Assembly by a total of 75 delegates. The UEMS is an official body of the European Union (EU), representing all the medical specialists in the EU, provided their specialty is present in at least 1/3 of the member states: PRM is present in all but one country. Delegates are appointed to the UEMS Sections' General Assemblies by the national medical authorities, according to nominations by the National Societies. The UEMS-PRM Section and Board collect the 27 EU member states and host 10 other European countries and Israel, with a total of 82 delegates. Since many delegates are the same in the 3 bodies, the survey was sent to all the 109 delegates of ESPRM and UEMS-PRM Section and Board, asking for at least one participant per country. These delegates represent all the PRM activities offered to a total population of 820.2 million people by 24,212 PRM physicians.[13]

Survey

The survey focused on the situation in all the PRM settings in Europe on March 31st, 2020 and was closed on April 3rd, 2020. The questionnaire included nine questions, was developed and tested by the authors, and discussed and approved by the Executive Committees of the involved European Bodies. The questions focused on the changes of medical rehabilitation activities during the COVID-19 emergency in acute wards/hospitals (other than PRM), in post-acute PRM wards/hospitals, and for outpatients. We also inquired about the interventions and requirements by governments and local authorities, as well as support granted by National Scientific Societies. Since in some countries there were huge differences among regions, it was accepted to have more than one respondent per country.

Data analysis

Two or more delegates (up to six for Italy) answered for different regions of ten countries. During the analysis, answers from countries were fused to represent the country overall situation. Not to overestimate reductions of PRM activities, we used for the whole country the most cautious answer in favor of maintenance of services. Consequently, the order of preference was: 1) continuation of all activities; 2) stop of services for COVID-19 patients; 3) stop of all activities.

The estimation of the population in need of rehabilitation activities is particularly difficult, since it includes people experiencing disability, as well as people with disability.[5] Moreover, in Europe data about many rehabilitation activities are not uniform among countries.[15] Rehabilitation is provided to acute and post-acute inpatients, as well as to outpatients.[13] We have reliable data about inpatient activities in rehabilitative wards/hospitals: these can be estimated using the data on rehabilitative beds from 25 European Countries (518 million inhabitants) members of the Organization for Economic Cooperation and Development (OECD).[15] Inpatient rehabilitation activities as a service to acute patients in wards/hospitals other than rehabilitation can also be estimated by the number of acute beds of the country.[15]

For outpatients, we found data from Italy, Belgium and the UK, but they proved to be not comparable. Data from Italy come from a population-based study performed by the Italian Statistic Institute (ISTAT):[16] in 2013, rehabilitation has been provided to 6.8% of the population, with outpatient services to 4.3% receiving 10.6 single sessions

TABLE I.—*Data used for the study.*

Country	Population (millions)	PRM physicians	Rehabilitation hospital beds (per 1000 inhabitants)	People with mobility limitations (millions)	SARS-CoV-2 diffusion (per million)					
					Recovered	Active	Critical	Total	Deaths	Virus days
Austria*	9	343	1.25	3.07	194.3	1024.7	25.2	1236	18	40
Belgium*	11.6	550	NA	2.92	215.1	1020.9	98.6	1324	87	32
Bosnia and Herzegovina	3.3	NA	NA	NA	6.1	150.6	1.2	162	5	31
Bulgaria*	6.9	450	NA	1.15	3.6	61.2	2.6	66	1	29
Croatia*	4.1	397	NA	1.37	21.5	223.4	8.3	246	2	40
Cyprus*	1.2	9	NA	0.29	23.3	265.0	9.2	295	8	27
Czech Republic*	10.7	816	0.45	2.99	6.3	350.2	6.7	360	4	35
Denmark*	5.8	NA	0.03	1.68	187.8	374.8	26.4	585	21	38
Estonia*	1.3	137	0.27	0.51	34.6	616.9	12.3	647	8	38
Finland*	5.5	240	0.08	1.88	54.5	218.0	11.8	274	3	67
France*	65.2	1927	1.58	16.43	190.6	63.3	98.1	905	83	72
Georgia	4	400	NA	NA	6.5	27.0	1.5	34	0	39
Germany*	83.8	1800	2.02	18.60	26.8	730.9	47.0	1012	13	69
Greece*	10.4	210	0.03	2.48	5.9	13.8	8.8	148	5	39
Hungary*	9.7	350	0.93	2.46	4.3	53.8	1.8	61	2	32
Iceland	0.3	NA	NA	NA	946.7	3436.7	40.0	3865	12	37
Ireland*	4.9	11	0.03	0.77	1.0	764.5	22.2	779	20	36
Israel*	8.7	150	0.25	NA	38.9	745.2	12.4	792	4	44
Italy*	60.5	3500	0.41	14.34	302.1	1372.7	67.0	1906	230	66
Latvia*	1.9	130	0.4	0.76	16.3	224.7	1.6	243	0	34
Lithuania	2.7	398	NA	0.83	2.6	234.4	4.1	238	3	37
Luxembourg*	0.6	16	0.31	0.16	133.3	3961.7	51.7	3973	48	36
Malta*	0.4	1	NA	0.05	5.0	485.0	5.0	444	0	29
Netherlands*	17.1	550	0.12	5.34	14.6	766.5	61.6	858	78	38
Norway*	5.4	261	NA	0.91	5.9	951.1	17.8	963	9	39
Poland*	38.1	2047	1.71	9.11	1.5	74.4	1.3	78	2	32
Portugal*	10.2	550	0.06	3.43	6.7	858.5	22.5	886	20	34
Romania*	19.2	800	NA	5.09	13.9	122.7	4.1	142	6	39
Russia*	141.2	1730	NA	NA	1.7	23.3	0.1	24	0.2	65
Serbia*	8.7	693	NA	1.17	4.8	126.2	9.3	134	4	30
Slovak Republic*	5.4	537	0.15	1.68	0.9	77.8	0.6	78	0.2	30
Slovenia*	2.1	78	0.1	0.74	33.3	385.7	14.8	431	8	32
Spain*	46.8	2000	0.04	9.64	571.4	1602.0	130.2	2397	221	65
Sweden*	10.1	260	NA	1.31	10.2	510.6	42.5	551	30	65
Switzerland*	8.7	227	0.86	2.64	461.3	1641.1	40.0	2175	62	40
Turkey*	84.6	2300	0.03	23.77	4.9	205.2	13.0	215	4	26
Ukraine*	42.2	0	NA	NA	0.5	20.3	0.0	21	0.5	33
UK*	67.9	159	NA	11.52	2.0	451.6	2.4	497	43	65
Total	820.2	24212	0.81	149.10	88	450.8	32	664.9	46.8	72
35 responders	809.9	23403	0.81	121.86	88.7	453.7	32.4	670.3	47.4	72
4 non-responders	10.3	809	NA	27.24	32.7	220.3	3.2	240.1	2.7	40
World	7775	NA	NA	NA	27.4	96.4	4.8	1303	6.8	85

NA: not available.
*Countries that responded to the survey.

each. For the UK and Belgium, we do not know the number of people, but only the sessions of outpatient rehabilitation. Data from English National Health Service (NHS) Hospitals and NHS commissioned activity in the independent sector in 2018-9[17] report a total number of attendances of 6.6 million. Official data from Belgium consider all PRM and physiotherapy sessions in 2018[18] with a total of 48.9 million. Total outpatients in all studied countries have been estimated proportionally to Italy, Belgium and the UK total population,[15] people with self-reported long-standing limitations of activities,[5] and number of PRM physicians[13] and physiotherapists.[15]

We performed classical descriptive statistical analysis, and we used the ANOVA to check if there were differences among countries' answers according to virus diffusion on April 3rd, 2020 (Table I).[19] Data have been collected using Google Forms. Data management has been performed with Excel, and statistical analysis with STATA 15.

Results

We received 55 answers from 35 countries (response rate 90%), with a population of 809.9 million (99%) served by 23,403 PRM physicians (97%). The impact of COVID-19 on European rehabilitation activities is shown in Table II. At March 31st, 194,800 inpatients (48%) were involved in 10 countries (29%) due to stop of admissions and early discharge to rehabilitation beds, and reduction of activities. Outpatient services have been completely stopped in 83% of the countries, including 87% of the population. In Italy, Belgium and UK, patients not receiving treatments daily were a total of 318,000, leading to an estimated range between 1.3 and 2.2 million per day in the Europe.

Seven countries (Belgium, Denmark, Italy, Romania, Spain, Switzerland, and Turkey) reported experiences on providing rehabilitation interventions to COVID-19 patients in acute wards. Protection material was not adequately available to rehabilitation health professionals in 17 (49%) countries. Guidance from government, but also National Scientific Societies, was missing in 71% and 43% of the countries, respectively. Virus diffusion did not influence the results.

Discussion

This study clearly shows a huge impact on people experiencing disability due to a reduction of all rehabilitation activities in Europe in all settings: acute, post-acute and outpatient. In Europe, we can estimate that more than 1 million people per day are being denied rehabilitation care. Beyond current immediate effects,[4] this may lead to future cumulative effects due to reduced functional outcome and consequent increased burden of care.[2]

COVID-19 caused a tremendous impact on national health services in Europe, particularly at the level of Intensive Care Units (ICUs), pneumology and internal medicine.[8] The field of PRM was confronted with a slight delay, but we can see a huge impact already on March 31st, 2020.[9, 20] Rehabilitation focuses on functioning and quality of life,[12] and a reduction of activities in favor of lifesaving actions and needs has to be accepted for a short period of time. Nevertheless, as soon as the emergency will gradually start fading, rehabilitation demand will probably grow due to an expected return wave of these not well treated patients, but probably also because of a huge demand from post-COVID-19 patients, whose needs are supposed even if not yet really known.[21, 22]

Through "Rehabilitation 2030: a call for action," the World Health Organization is urging since 2017 to increase rehabilitation services in front of the worldwide changing needs of populations.[23] It is possible that one of the results of COVID-19 will be an increase of resources to the health sector: in this case, we cannot leave behind people experiencing disability.[4] Even the fact that it is not possible to retrieve coherent data in Europe about their health manage-

TABLE II.—*Impact of current situation of Physical and Rehabilitation Medicine services on the considered indicators. Indicators are different according to the rehabilitation activities considered.*

Rehabilitation activities	Countries	Population involved (millions)		Health sector (thousands)	
		Total	Activity limitations	PRM physicians	Hospital beds*
Acute					
Stopped					
Totally	0 (0%)	0 (0%)		0 (0%)	0 (0%)
COVID	20 (57%)	297 (37%)		10.1 (47%)	1391 (70%)
Continued	14 (43%)	427.5 (63%)		11.4 (53%)	593 (30%)
Post-acute					
Stopped					
Completely	10 (29%)	377 (47%)		8.8 (41%)	194.8 (48%)
COVID	18 (51%)	123 (15%)		6.1 (28%)	75.3 (18%)
Continued	7 (20%)	310 (38%)		6.6 (31%)	137.3 (34%)
Outpatients					
Totally stopped	26 (83%)	707.5 (87%)	141.5 (95%)	19.7 (92%)	
Continued	6 (17%)	102 (13%)	7.5 (5%)	1.8 (8%)	

COVID: activities stopped only for COVID-19 patients.
*Hospital beds considered include: for acute rehabilitation activities: acute hospital beds; for post-acute rehabilitation activities: PRM hospital beds.

ment confirms the need to better focus their needs in the next future.

The main limitations of this study include its observational nature, being based on a questionnaire and the absence of reliable and coherent data from European countries about rehabilitation and health management of people experiencing disability.

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