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Prevention, Diagnosis and Coping Strategies in Older Patients Suffering from COVID-19 During Its First Wave: An Overview in 6 Different Global European Initiative Countries (Hungary, Lebanon, Russian Federation, Slovenia, Tunisia and Turkey)

Şenay Günaydın[1], Adam Lelbach[2], Abdulrazzak Abyad[3], Sondos Baccar[4], Kseniia Eruslanova[5], Radhouane Gouiaa[6], Mohamed Salah Hamdi[7], Imène Ksontin[8], Gregor Veninsek[9]

[1]İstanbul University, İstanbul Faculty of Medicine, Department of Internal Medicine, Division of Geriatrics, İstanbul, Turkey
[2]Semmelweis University Faculty of Medicine, Departmental Group of Geriatrics, Division of Internal Medicine and Oncology, Budapest, Hungary
[3]Middle-East Academy for Medicine of Aging, Tripoli, Lebanon
[4]Mahmoud El Matri Hospital, Ariana, Tunisia
[5]Pirogov Russian National Research University, Russian Gerontology Research Centre, Moscow, Russia
[6]Policlinque CNSS, Sfax, Tunisia
[7]Charles Nicolle Hospital, Clinic of Internal Medicine "B", Tunis, Tunisia
[8]Private Practice, Tunis, Tunisia
[9]Peter Držaj Hospital, University Medical Centre Ljubljana, Vodnikova, Ljubljana, Slovenia

Abstract

Coronavirus disease-2019 (COVID-19) pandemic starts abruptly in March 2020 catching almost all countries unprepared. Older adults were one of the most adversely affected individuals. In 2020 EuGMS (European Geriatric Medicine Society) e-congress, a specific session was dedicated to identify and compare the approaches during the first wave of the pandemic among Global European Initiative countries, which include active members from Eastern Europe, South-Eastern Europe, the Balkans and Mediterranean countries. We aimed to outline the management actions across the six countries (i.e., Hungary, Lebanon, Russian Federation, Slovenia, Tunisia and Turkey) involved in the session. We formulated four main questions to outline interest of four areas related to COVID-19 in individual countries: (i) The diagnosis protocol of COVID-19 for older adults, (ii) The hospitalization protocol for older adults with COVID-19, (iii) The governmental and social coping strategies against the pandemic and geriatricians' roles, (iv) Protection for the nursing home residents. The main areas of interest were detailed with standardized sub-questions to have a comparable standardized data between the participant countries. Diagnostic protocols for COVID-19 in older adults showed some differences across European countries; as half of the countries applied the algorithm suggested by World Health Organization, the other half developed their own algorithms. Of note, all countries indicated that the diagnostic procedures, protocols regarding hospitalization and intensive care unit transfer of older adults generally did not differ from young age groups. Although older age was considered as a criteria for admission in half of the countries, geriatric syndromes like frailty and malnutrition were generally overlooked. The common coping strategy against pandemic was to ensure older people stay at home and limit their social contact; by few of countries applying lock-downs only for specific age groups including older adults. Although restrictions and precautions taken in nursing homes were generally similar and mostly worked in protecting residents from COVID-19, some countries have indicated their observation of restrictions causing significant psychosocial negative effects on older adults. Although management of COVID-19 in older individuals seemed to be similar between countries in the whole picture, it seems geriatric perspective still needs to be more active on the scene, to prevent this vulnerable group from once again being exposed to increased psychosocial problems, morbidities and mortalities in a future pandemic.

Keywords: COVID-19, older adults, pandemic, approach, Global European Initiative, first wave

Address for Correspondence: Şenay Günaydın, İstanbul University, İstanbul Faculty of Medicine, Department of Internal Medicine, Division of Geriatrics, İstanbul, Turkey
Phone: +90 212 414 20 00 **E-mail:** senayhacisaid@gmail.com **ORCID:** orcid.org/0000-0002-3274-4827
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Introduction

Coronavirus disease-19 (COVID-19) emerged abruptly with the report of first cases in Wuhan, China in December 2019. The increasing number of cases have been notified across the world in a short time due to its ability of rapid spreading. This quick global transmission urged the World Health Organization (WHO) to declare a pandemic on March 11, 2020 (1).

From its start, COVID-19 displayed peaks and decreases in incidence resulting in COVID waves. The first wave of the pandemic caught most of the countries unprepared to this highly demanding situation. The first wave was noted between March 2020 July/August 2020 with the ancestral variant (2-4). Until May 2020, the pandemic exerted a high negative impact on health and after that, negative effects declined from June 2020 onwards. The second wave of the pandemic begun at the end of August 2020. As a result of the rapid spread, there had been nearly 25 million confirmed cases and nearly 800,000 deaths as of 30 August 2020 (5).

Advanced age itself and underlying medical comorbidities such as morbid obesity, hypertension and cardiovascular disease are independent risk factors for severe COVID-19 (6-8). In many countries older adults were the most severely affected by the pandemic and every country developed its own strategy to fight it according to their socio-demographic characteristics, healthcare systems and resources.

From the beginning of the pandemic, EuGMS has tried to provide advice and instructions regarding adequate protection and medical care for older patients. The e-congress in 2020 has been thematically dedicated to COVID-19 and contributed to better awareness of many aspects of this disease. In this congress, a specific session was dedicated to identification of different approaches during the first wave of the pandemic (between March 2020-August 2020) (2) among Global European Initiative (GEI) countries that include active members of the EuGMS coming from Eastern Europe, South-Eastern Europe, the Balkans and Mediterranean countries (Hungary, Lebanon, Russian Federation, Slovenia, Tunisia and Turkey). The session named "Prevention and treatment - COVID-19 patients from community to hospitalization across the GEI countries" aimed to present the experiences and approaches in different countries. This comparison could provide an overview of different approaches and enable individual countries to analyse their own approaches. This might provide different perspectives to the countries and might help to reduce the adverse impact of the disease in older adults. Our objective in this paper was to outline these approaches across six GEI countries -Hungary, Lebanon, Russian Federation, Slovenia, Tunisia and Turkey- that were involved in the session.

Methods

During the EuGMS e-congress GEI-COVID meeting, a session was organized with the participation of GEI countries from various regions around the globe, including Eastern Europe, South-Eastern Europe, the Balkans, and the Mediterranean. The aim of this session was to address inquiries and provide insights in four specific areas related to COVID-19 (i) The diagnosis protocol of COVID-19 for older adults, (ii) The hospitalization protocol for older adults with COVID-19, (iii) The governmental and social coping strategies against the pandemic and geriatricians' roles, (iv) Protection for the nursing home residents.

In this comparative observational study, six GEI countries (i.e., Hungary, Lebanon, Russian Federation, Slovenia, Tunisia and Turkey) actively participated in the 2020 EuGMS e-congress with a shared eagerness to address inquiries and contribute to a deeper comprehension of pandemic hotspots, particularly with a focus on older adults.

To This End, the Following Four Questions Were Formulated:

Question 1. Which protocol was followed from the beginning of the pandemic to diagnose COVID-19 for older adults? Did this protocol differ from the one applied in younger adults?

Question 2. Which protocol was followed from the beginning of pandemic to hospitalize older adults with COVID-19? Did this protocol differ from the one applied in younger adults?

Question 3. What is the situation in your country for older adults now? What are governmental and social strategies to cope with the pandemic (the trend of the incidence, lock-down, screening.. etc.)?

Question 4. What are general governmental regulations applied to protect nursing home residents? How effective or not effective was the protection taken of older adults living in nursing homes?

Each question has been divided into specified sub-sections (Appendix 1). First, the answers of Turkey were outlined and sent to each country representative as a model, aiming to obtain a standardized way of answering to analyse similarities and differences across the involved countries. Following collection of responses to the standardized questions, table were created to present comparisons between countries. The reviewed answers were sent to the countries for their perusal and careful consideration.

The presenting members were informed to answer these questions regarding the time between March-August 2020 which represented the period of the first wave of COVID-19 pandemic (4).

While answering the questions, countries took the declarations of the Ministry of Health, Ministry of Family and Social Services, World Health Organization, Disaster Management Centers and various official social welfare centers as references.

Results

The country representatives were asked to answer the standardized questions at the beginning of October 2020 and the answers were collected until the end of November 2020.

As a general overview, the diagnostic protocols were same in many aspects. Of note, atypical symptoms suggestive COVID-19 were considered on management of older adults in all countries. While the hospitalization protocols and intensive unit care transfer criteria for older adults did not differ from those for young adults, age itself was considered as a criteria for hospitalization in most of the countries. In general terms, governmental and social coping strategies for older ages against ongoing pandemic aimed to limit their social contact. The basic suggestion was "stay at home" warning. The lock-down was applied only for some local areas or specific age groups by few countries. In a word, nursing homes restrictions and precautions stepped up to ensure residents are protected from pandemic.

The answers to the questions are outlined in Table 1, Table 2, Table 3a, Table 3b, Table 4a and Table 4b.

Discussion

We provided comparative overview of the actions against COVID-19 pandemic which were applied by six of the GEI. The six participated countries initially followed the general WHO recommendations. The rapid spread ability of the virus has increased the importance of early governmental measures in order to help to reduce the spread of the disease and negative consequences. Therefore, it is very understandable that these six countries rapidly have implemented their own protocols. They were asked 4 main questions and lots of sub questions about the precautions and steps they took against the virus especially regarding the older adults. Generally, the answers to many of the questions were similar, however, it differed in some points depending on national health system, social-economic conditions and governmental planning.

Applied diagnostic protocol and indications for COVID-19 testing: The diagnostic algorithm for detection of acute COVID-19 based on clinical experiences and laboratories was provided by the WHO (9). This algorithm has been updated from the beginning of the pandemic periodically. Symptoms of

Table 1. The answers to the Question 1: "Which protocol was followed from the beginning of pandemic to diagnose COVID-19 for older adults? Did this protocol differ from the younger adults?"

	Q1(i)	Q1(ii)	Q1(iii)
Hungary	*	No	No†
Lebanon	*	No	No†
Russia	*	Yes	No†
Slovenia	*	Yes	No†
Tunisia	*	No	No†
Turkey	*	No	No†

*Answer to the Q1(i) includes diagnostic flow diagram for detection of acute SARS-CoV-2 infection in suspected cases and are given in Appendix 2
Q1(i): Diagnostic flow diagram for detection of acute SARS-CoV-2 infection in individuals with clinical suspicion for COVID-19.
Q1(ii): Is it different from the WHO's diagnostic flow diagram for the detection of acute SARS-CoV-2 infection? In what way?
Q1(iii): Did this protocol differ from the younger adults? In what way?
†All countries declared that the atypical presentation symptoms of infections in older adults, i.e., delirium, functional deterioration, recent fall, hypothermia were regarded among symptoms suggestive of COVID-19 in the centres that are familiar to the management of older adults.
SARS-CoV-2: Severe acute respiratory syndrome-coronavirus-2, COVID-19: Coronavirus disease-2019, WHO: World Health Organization

Table 2. The answers to the Question 2: "Which protocol was followed from the beginning of pandemic to hospitalize older adults with COVID-19? Did this protocol differ from the younger adults?"

	Q2(i)	Q2(ii)	Q2(iii)	Q2(iv)	Q2(v)	Q2(vi)
Hungary	*	Unchanged	No	No	No	No
Lebanon	*	N/A	No	No	No	No
Russia	*	Unchanged	No	No	No	No
Slovenia	*	Unchanged	No	No	No	Yes
Tunisia	*	No	Yes†	Yes‡	No	No
Turkey	*	Changed γ	No	No	No	No

*Answer to the Q2(i) includes indications for hospitalization at the beginning and are given in Appendix 4.
Q2(i) What was the indication for hospitalization at the beginning?
Q2(ii) What is the last version for hospitalization protocol/diagram by August 2020?
Q2(iii) Did this protocol differ from the younger adults?
Q2(iv) Is frailty screened for older adults if needed hospitalization
Q2(v) Are there differences in terms of ICU transfer in older adults? (at the beginning and currently)
Q2(vi) Have the older adults with serious disease been directed for palliative care transfer rather than ICU? (at the beginning and currently).
γ Any suggestive symptoms of COVID-19 and additionally one of "Shortness of breath or difficulty in breathing or malnutrition and impairment of oral food intake, †clinical symptoms suggestive of COVID-19 in older adults also included: delirium, sudden loss of autonomy, recent fall, hypothermia, ICU: Intensive care unit, COVID-19: Coronavirus disease-2019

Table 3a. The answers to the Question 3: "What is the situation in your country for older adults now? What are governmental and social strategies to cope with the ongoing pandemic (the trend of the incidence, lock down, screening.. etc.)? Do you offer some actions to improve these strategies as a geriatrician in your country? If so, please give detail."

	Q3(i)	Q3(ii)	Q3(iiia)	Q3(iiib)	Q3(iva)	Q3(ivb)	Q3(va)	Q3(vb)	Q3(vi)	Q3 (vii)
Hungary	58	N/A	Increased	Decreased	Yes	No	No	No	*	Yes
Lebanon	281	N/A	Slightly Inc	Rapid Inc	On-off	No	On-off	No	*	Yes
Russia	6000	N/A	Increased	Increased	Yes	Yes	No	YesΨ	*	No
Slovenia	139	22.3%	Increased	Increased	Yes	No	No	No	*	N/A
Tunisia	N/A	N/A	N/A	N/A	Yes	No	No	Yesλ	*	Yes
Turkey	131	ˆ	Increased	Decreased	Noϕ	Yes	No	No	*	Yes

*Answer to the Q3(vi) includes various coping strategies and are given in Appendix 5
Q3(i) The COVID-19 incidence in total population (per 100,000) between March 31 and August 31
Q3(ii) The COVID-19 incidence of affected older adults %
Q3(iiia) Trend of incidence between March and April 2020
Q3(iiib) Trend of incidence between June and August 2020
Q3(iva) Was there a general population lock-down? (March-April 2020)
Q3(ivb) Was there an older people-specific lock-down? (March-April 2020)
Q3(va) Is there a general population lock-down? (June-August 2020)
Q3(vb) Is there an older people-specific lock-down? (June-August 2020)
Q3(vi) Please indicate if the following coping strategies are performed by the government? Please indicate if some of the below coping strategies are being performed by non-governmental organizations and if so, write their names (such as National Geriatrics Society, National Alzheimer Society…etc.)
Q3(vii) Specific geriatricians' suggestion
ϕ: Only on weekends
Ψ: Region based
λ: In case of frailty and chronic disease
ˆ: Death rate between March-August for older men aged 65-79: 16.6%
Death rate between March-August for older women aged 65-79: 8.84%
Death rate between March-August for older men over 80 years of age: 31.8%
Death rate between March-August for older women over 80 years of age: 22.69%
COVID-19: Coronavirus disease-2019

Table 3b. The answers to the Question 3(vii) geriatricians' suggestion: "Do you offer some actions to improve these strategies as a geriatrician in your country? If so, please give detail."

Country	Geriatrician' specific suggestion
Hungary	The members of the Hungarian Association of Gerontology and Geriatrics were experts of the College of Medical Societies (advisory board for the Government)
Lebanon	1. Through outreach teams or community volunteers, organise safe and accessible distributions of food packages/items, protective and hygiene materials as well as medicine to older people who cannot afford or face challenges in accessing sufficient food, health services and necessary medications. 2. Working with media service providers and/or national TV stations, develop COVID-19 information and prevention practices messages to broadcast on television to reach older people through their preferred method of communication. Ensure that information is also shared in other accessible ways for those who have different communication challenges considering the high number of older men and women with hearing and visual impairments. 3. Ensure that analysis of the pandemic's secondary impacts is inclusive of older people, including older people with disabilities and the specific risks they face are integrated into the Lebanon's humanitarian response plan and its socio-economic recovery plans. 4. Identify and train outreach teams and/or community volunteers on how to provide safe psychosocial support to older women and men, including older people with disabilities, so that they can manage their worry and anxiety (e.g., support via regular phone calls, mobilise neighbours to check on them, befriending, sharing information and details of other support available etc.) 5. Identify older people who can provide peer support safely to other older people who feel neglected and isolated and unable to cope. Also, engage with younger volunteers to befriend and safely support those struggling to cope, helping to reconnect them with their community. 6. Use and share with other service providers the Humanitarian inclusion standards for older people and people with disabilities and IASC Guidelines, Inclusion of Persons with Disabilities in Humanitarian Action to fully design inclusive activities that respond to the needs and rights of older people, including those with disabilities.
Russia	No special suggestion
Slovenia	N/A
Tunisia	Clinical practice guidelines for the management of older people were elaborated in collaboration with INEAS (Instance Nationale de l'Evaluation et de l'Acréditation en Santé)
Turkey	Academic Geriatrics Society published a booklet named "expert opinion on COVID-19" which includes twenty-eight answered questions about COVID-19. An exercises booklet and a video presentation were prepared by a skilled physiotherapist under the leadership of the Geriatrics Society

COVID-19: Coronavirus disease-2019

COVID-19 infection got a strong focus in diagnosis (fever, dry cough, anosmia and dysgeusia) and consideration of physical examination (bronchitis, pneumonia) had an important place. Hungary, Lebanon and Tunisia have followed very similar paths WHO's diagnostic flow diagram for detection of acute severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2) infection in the patients with clinical suspicion for COVID-19. The diagnostic flow diagrams were created by all countries and had very similarities (Appendix 2).

Table 4a. The answers to the Question 4: "What are general governmental regulations applied to protect nursing home residents?"

	Hungary	Lebanon	Russia	Slovenia	Tunisia	Turkey
Q4(i)	Yes	Yes λ	Yes	Yes	Yes	Yes
Q4(ii)	Yes	No φ	Yes θ	Yes	Yes	Yes
Q4(iii)	Yes	Yes	Yes	Yes	Yes	Yes
Q4(iv)	Yes	Yes	Yes	Yes	Yes	Yes
Q4(v)	Yes	Yes	Yes	Yes	Yes	Yes
Q4(vi)	Yes	No	Yes	No	Yes	Yes
Q4(vii)	Yes*	Yes	N/A	Yes	Yes	Yes
Q4(viii)	Yes	Yes	Yes	Yes	Yes	Yes
Q4(ix)	Yes	Yes Ω	Yes	No	Yes ψ	Yes
Q4(x)	Yes	Yes	N/A	Yes	Yes	Yes
Q4(xi)	Yes	No	Yes	Yes	Yes	Yes
Q4(xii)	Yes	Yes	N/A	Yes	Yes &	Yes

Q4(i) Ban of external visits
Q4(ii)Postponement of new admissions
Q4(iii)Halting nursing homes club activities
Q4(iv)Providing protective gears
Q4(v)Reinforcement of hygiene measures such as regular disinfections
Q4(vi)Staff-specific transport services
Q4(vii) Avoidance of nursing home staff from outside contact as much as possible
Q4(viii) Education of nursing home staff and residents
Q4(ix) Regular PCR tests for the staff or resident's declaration of nursing home guidelines
Q4(x) Transfer of medical professional to nursing homes if needed
Q4(xi) Nomination of NH-hospital coordinators
Q4(xii) Case management directives (e.g., how were the residents affected by COVID isolated from the rest to protect others)
*locally
λ not all
φ PCR was required for admission
θ new admissions only for emergency cases (loss of autonomy, difficult social situation). If person was admitted – there were 1-week quarantine placement in separate part of the building.
ψ PCR tests were performed only in case of clinical suspicion of COVID-19.
Ω not all nursing home
& isolation room was prepared for those not required hospitalization
COVID-19: Coronavirus disease-2019, PCR: Polymerase chain reaction

Table 4b. The answer to the Question 4: "How effective or not effective was the protection taken of older adults living in nursing homes?"

Hungary	During the first phase of the coronavirus pandemic, Hungary's protection against the virus was effective and the country's protection policy was one of the most successful one in Europe. The social institutions, especially the retirement homes performed outstandingly during the pandemic, especially if we compare those results to the Western European numbers. The spread of the virus has decelerated in these institutions and many old patients have recovered from the disease.
Lebanon	Since there was no obligatory regulation so the measures were not effective.
Russia	There were not cases of spreading infections in nursing homes.
Slovenia	Few NH have not prevented COVID to enter and to spread among residents. With population of 2 million, 20% older than 65 years, of which 23,000 NH residents, in first wave Slovenia suffered total 131 fatal cases, 95% older the 65 years, almost exclusively nursing home residents, 40% of NH fatal cases occurred in hospital. Fatal NH cases affected 0.59% of all NH residents.
Tunisia	Nursing home did not declare any case of COVID-19 up to August 2020. Such strict measures were associated however with negative socio-psychological effects on the older people.
Turkey	Precautions were strict at nursing house from the beginning of the pandemic in Turkey, that help to survive with no tragedy in nursing house up to now. However, the strict precautions and isolation brought some psychosocial negative effects on the older people.

COVID-19: Coronavirus disease-2019

There are number of factors brought about differences between these six countries. First, differences between these countries' strategies might depended on inadequate knowledge about the virus at the beginning, including incubation period, obscurity of the asymptomatic cases. Second, the social-economic condition and the health care systems of the governments.

There were no significant differences in diagnostic protocols between older adults and younger patients between participated GEI countries. Although COVID-19 is a new virus, researches have shown that the severe outcomes of the virus are mostly presented in the older adults (Appendix 3) (6,10). Studies demonstrated that atypical presentation is common in older adults which may also result in worse outcomes such as organ damages requiring earlier management and special treatment (11,12). Development of special COVID-19 diagnostic indications for the older adults is an urgent need. Moreover, it has been emphasized by the British Geriatrics Society that an index or criterion of suspicion for atypical presentation of COVID-19 in older adults is needed. There were some warnings regarding diagnosis of older adults in diagnostic protocols applied by the GEI countries involved. In Tunisia, the unusual presentation such as falling, delirium, sudden loss of autonomy and hypothermia were also considered when assessing the necessity of real time-polymerase chain reaction (PCR) in older adults.

It would be greatly beneficial to establish guidelines on specific diagnostic criteria for the evaluation of older adults. This approach could aid in early identification of COVID-19 at the old age and providing closer follow-up for them, taking isolation measures and potentially decrease the adverse outcomes of the disease and the degree of socio-economic burden.

Protocol following hospitalization for older adults with COVID-19: At the beginning, the rapid spread and unknowledges of the virus put a major pressure on the healthcare system. Not every country in the world was adequately prepared to handle the crisis. Each country continued to develop protocols for hospitalization in addition to the WHO for the detection and follow-up of COVID-19 patients who had to be hospitalized to prevent health system collapse.

The hospital admission management in six GEI countries involved in the study was based on the point to protect health care system and there could be differences in the proper procedure of the diagnostic chain because of the differences of the structure of their systems. Hospital admission for the patient with COVID-19 was mainly focused on vital signs abnormalities, comorbidities, organ failures and low O_2 saturation in all involved countries (Appendix 4). Common criteria were the low oxygen saturation with different limits for the all-participant countries. Slovenia declared that there were no written admission criteria. Pneumonia and infiltrates were accepted as admission criteria in Hungary, Lebanon and Turkey. Lebanon, Tunisia and Turkey regarded comorbidities as admission point. Laboratory findings (lymphocyte <800/mm^3, CRP> 40 mg/L, ferritin >500 u/mL, D-dimer >1.000 ng/mL) which were supporting COVID-19 were applied as criterion in Lebanon and Turkey. Additionally, unlike all participant countries, delirium was accepted as criteria in Tunisia. In Tunisia, frailty screening and social assessment was routinely preformed (SEGAm) in this age group for the decision taking for admission to the hospital. It was updated by the end of the 1st wave of the pandemic and no longer were considered.

Malnutrition and impairment of oral food intake were considered at the hospitalization of patient in Turkey. Only Turkey declared changes on the hospitalization protocol by August 2020 in order to ensure the sustainability of the health care system.

It is known that age itself is a greater risk factor for negative outcomes during illnesses. As it was recognised as criteria for admission in Lebanon (>50 age), Tunisia (>65 age), Turkey (>50 age). There was no additional protocol specified for the older adults in any countries.

As a course of COVID nature, it can cause severe symptoms which require intensive care unit (ICU) admission or palliative care. The ratio may vary according to population, culture and local ICU admission criteria. ICU admission has been recorded in a wide range between 5 and 90 percent as per different countries (8,13,14). The admission to the palliative care due to severe COVID-19 was not the first option among the participating countries. Generally, all critically ill patients and those who met the ICU admission criteria regardless age were admitted to the ICU. While direction of older adults with serious disease for palliative care transfer rather than ICU was not considered in all countries. Despite that, Slovenia declared if locale admission criteria have not been met it was an option for the older adults.

Assessing age-related factors and atypical infection symptoms such as confusion, lethargy, delirium, impaired oral food intake, and deterioration in older adult could prove advantageous as part of hospitalization criteria. Action taken by these countries, along with the global publications will shape the criteria for the future pandemic situation.

Governmental and social coping strategies: Globally increasing cases of COVID-19 has forced governments to take strict prevention in order to minimize the public health effects. The timing and severity of the measures taken against pandemic might had created differences in incidence between the countries. As Russian Federation had the higher incidence between March and August, Hungary had the lowest at the same time among the participant countries (Table 3a). Each country has determined the fundamental coping strategies, according to social and economic background of the country. Some of the coping strategies were provided by the government, while some were supported by the social organizations. As the course of the

COVID-19 has revealed its most devastating effects on the older people. Incidence of the affected older adults was non-available in most countries while Slovenia reported as 22%. Research has shown that age was the most important factor for exposure to the virus (6), thus the governments measures were more directed towards older adults. Most important imposed governmental precaution was lock-down. At the duration of March 2020-April 2020 general lock-down was applied in most countries (Hungary, Lebanon, Russian Federation, Slovenia, Tunisia) while Turkey had applied lock down only for over 65 years of age in all week days and for the younger just at weekends. In the period of June 2020-August 2020, lock-down was lifted in most countries. At this time mostly age specific lock down was continued in some countries (some region in Russian Federation and for older with frailty and chronic diseases in Tunisia between May and June).

Most of the countries have formed coping strategies that prevent the spread of the new coronavirus. Various COVID related coping strategies such as TV spots, leaflets, telemedicine consultation, food delivery, bill payment assistance, supplemental payment, safe medication purchase, prevention of accumulation above certain numbers, interregional movement restriction were implemented by participating countries (Appendix 5). An increasing number of countries had made wearing face masks mandatory or strong recommendation in public areas all around the world despite WHO's early advices regarding use of masks published on 6 April (15). Although it was mandatory only in closed public areas in Hungary, there was masks requirement in outdoor and indoor areas in other five countries.

There were curfews in Hungary, Lebanon, Slovenia and Turkey. In Turkey, there was an age specific curfew for those over 65 age and for under 18 ages. Generally, in order to protect older adults, a state-controlled timespan determined for the people above the age of 65 as they only were allowed to go in shops, markets, supermarkets and pharmacies. In Russian Federation, staying at home was a recommendation for older adults. In Lebanon and Slovenia, there was no age specific restriction in this field. Some countries allowed citizens to leave homes only for work or to food stores/markets, pharmacy, sport activity (alone), or dog walking. As priority was given to serving older people at supermarkets and food stores in Russian Federation.

The guideline and booklet were published in Lebanon, Tunisia and Turkey by the geriatricians or psychogeriatricians, specifically targeting to help older people cope with the stressful situation and to clarify the questions about COVID-19. The Alzheimer Association of Lebanon helped dementia patients and their relatives in online way. Besides that, Tunisia was the only country that geriatricians issued a guideline concerning the management of patients of old age with COVID-19.

Differences and similarities between coping strategies among these six countries have drawn attention. A common approach observed among the countries was implementation of government-imposed curfews and lock-down measures to ensure that older individuals remained at home and minimized their social interactions. The variations mostly were depended on the social construction within each country. Commentary regarding the advantages and disadvantages of all coping strategies is early at this stage. In addition to the positive effect of reducing the impact of the pandemic, older adults may also experience certain physiological and psychological effects.

Regulations regarding nursing homes: Seniors living in nursing homes were more vulnerable with a higher risk for infection and adverse outcomes because of living close by each other and having more comorbidities (16). Hence, the governments of the most countries published guidelines or booklets regarding the provision of the nursing homes' seniors care during the pandemic. As stated in guideline published by WHO's for- long-term care facilities (17), nursing home measures in several countries were also based on recognition, personal protection, isolation and source control.

It is known that infections are the very common cause of acute hospitalization among nursing home residents (18), the most important one is pneumonia (19). The compliance with hygiene rule, such as hand washing or following infection control measures, are also less than optimal in nursing homes (20). Daily activities of nursing home residents are carried out in groups. Considering all these factors, the control of the pandemic was difficult in nursing homes. After the emergence of the COVID-19, the governments of several countries took strict measures in order to protect vulnerable home care residents. The most important implemented step of the six countries was making restriction of external visits. Additionally, new admissions were postponed in all countries, while Lebanon required PCR and Russian Federation set 1-week quarantine rule in separate part of the building for new admission to the nursing homes. Many different precautions were implemented to protect nursing homes in six GEI countries (Appendix 6). Additionally, Hungary, Russian Federation, Tunisia and Turkey created staff specific transport services. A 14-day shift system imposed for the staff in nursing homes in Turkey is a different remarkable measure in comparison with the other countries. Regular PCR tests were performed in Hungary, Lebanon (in some nursing homes), Russian Federation and Turkey, while Tunisia performed PCR in case of the suspected COVID cases and Slovenia declared no regular PCR testing in nursing homes. All countries referred the residents to hospital when necessary and those who just need isolation was isolated in hospital. For those who do not need to be isolated, isolation rooms were prepared only in Tunisia. The lack of knowledge made countries to appoint coordinators in nursing homes to adopt close management, such that persons were nominated in participating countries except Lebanon. The most effective measurements to protect nursing homes were denial of visitors and increased disinfection regulations.

Hungary declared that the management strategies were effective and the Hungary' protection policy was one of the most successful in Europe. Lebanon stated the measures were not effective due to the lack of obligatory regulations in their country. Russian Federation announced not any cases spreading in nursing homes. Slovenia expressed that the precautions were not effective enough to prevent cases spreading in all nursing homes. These might show the importance of regular PCR and keeping staff away from outside contact. Strict measures were told as effective however with some negative socio-psychological effects in Tunisia and Turkey.

Conclusion

The whole world was unprepared for a pandemic like COVID-19. All countries have created their own measures against pandemic in order to protect people and their health care system. However, COVID-19 have had significant impact on human life. Since the older adults are the most vulnerable in society, they were affected deeply. According to the answers of the involved countries we can understand that some special precautions were taken for older adults among different countries. In summary, the responses from all participating countries regarding the management of COVID-19 in older adults exhibited a remarkable level of similarity in multiple aspects, with only minor variations observed among different countries. The global impact of COVID-19 and the preventative measures taken by different countries will serve as a guiding framework for future planning in the event of such a disaster. The valuable steps taken by different countries and interpreting their impact against the pandemic will contribute to enhancing global preparedness.

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Authorship Contributions

Surgical and Medical Practices: Ş.G., Concept: Ş.G., A.L., Design: Ş.G., Data Collection or Processing: Ş.G., A.L., A.A., S.B., K.E., R.G., M.S.H., I.K., G.V., Analysis or Interpretation: Ş.G., A.L., Literature Search: Ş.G., A.L., A.A., S.B., K.E., R.G., M.S.H., I.K., G.V., Writing: Ş.G.

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Appendix 1. Four questions and subsections formulated for the countries

Question 1. Which protocol was followed from the beginning of pandemic to diagnose COVID-19 for older adults? Did this protocol differ from the one applied in younger adults?

- Diagnostic flow diagram for detection of acute SARS-CoV-2 infection in individuals with clinical suspicion for COVID-19
- Is it different from the WHO's diagnostic flow diagram for the detection of acute SARS-CoV-2 infection? In what way?
- Did this protocol differ from the younger adults? In what way?

Question 2. Which protocol was followed from the beginning of pandemic to hospitalize older adults with COVID-19? Did this protocol differ from the one applied in younger adults?

- **What was the indication for hospitalization at the beginning?**
- **What was the last version for hospitalization protocol/diagram by August 2020?**
- **Did this protocol differ from the one applied in younger adults?**
- **Role of factors to hospitalize the older adults.**

- Is frailty screened for older adults if needed hospitalization? (at the beginning and currently)
- Are there differences in terms of ICU transfer in older adults? (at the beginning and currently)
- Have the older adults with serious disease been directed for palliative care transfer rather than ICU? (at the beginning and currently)

Question 3. What is the situation in your country for older adults now? What are governmental and social strategies to cope with the ongoing pandemic (the trend of the incidence, lock down, screening. etc.)? Do you offer some actions to improve these strategies as a geriatrician in your country? If so, please give detail.
(From March-31 August 2020)

- **The COVID-19 incidence in total population %**
- **The COVID-19 incidence of affected older adults %**
- **Trend of incidence (compare March-April 2020 and June-August 2020):**
- **Was there a general population or older people-specific lock-down? (March-April 2020)**
- **Is there a general population or older people-specific lock-down? (June-August 2020)**
- **Please indicate if the following coping strategies are performed by the government? Please indicate if some of the below coping strategies are being performed by non-governmental organizations and if so, write their names (such as National Geriatrics Society, National Alzheimer Society...etc.)**

· COVID-related TV spots:
· Leaflets:
· Online information:
· Information via telephoning:
· Food/basic product supplies:
· Billing payment assistance for the older adults that do not have relatives/caregivers that can support them, telemedicine applications:
· Possibility to receive long-term medications without going to a hospital or without formal prescriptions:
· Obligatory wear of face masks (at indoors and outdoors):
· Curfews:
· Restricted freedom of movement among regions:
· Limited number allowed to gather:
· Minimum m^2 per person in services, stores etc.

- **Geriatricians' suggestion:**

Question 4. What are general governmental regulations applied to protect nursing home residents? How effective or not effective was the protection taken of older adults living in nursing homes?

- **General governmental regulations applied in nursing homes**

· Ban of external visits:
· Postponement of new admissions:
· Halting nursing homes club activities:
· Providing protective gears:
· Reinforcement of hygiene measures such as regular disinfections:
· Staff-specific transport services:
· Avoidance of nursing home staff from outside contact as much as possible:
· Education of nursing home staff and residents:
· Regular PCR tests for the staff or resident's declaration of nursing home guidelines:
· Transfer of medical professional to nursing homes if needed:
· Nomination of NH-hospital coordinators: The nursing homes were strictly inspected by the government
· Case management directives (e.g., how were the residents affected by COVID isolated from the rest to protect others):

- **Please provide an overview for the effectiveness of these measures.**

COVID-19: Coronavirus disease-2019, SARS-CoV-2: Severe acute respiratory syndrome-coronavirus-2, PCR: Polymerase chain reaction, ICU: Intensive care unit, WHO: World Health Organization

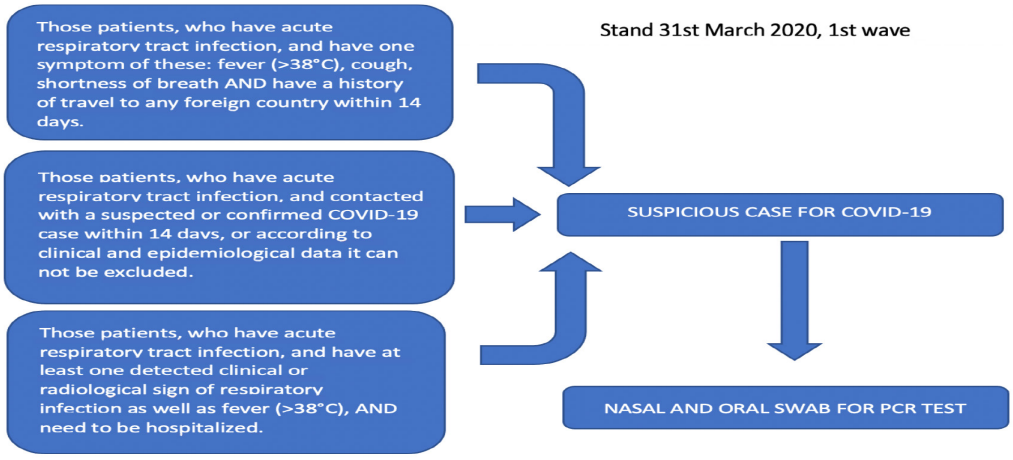
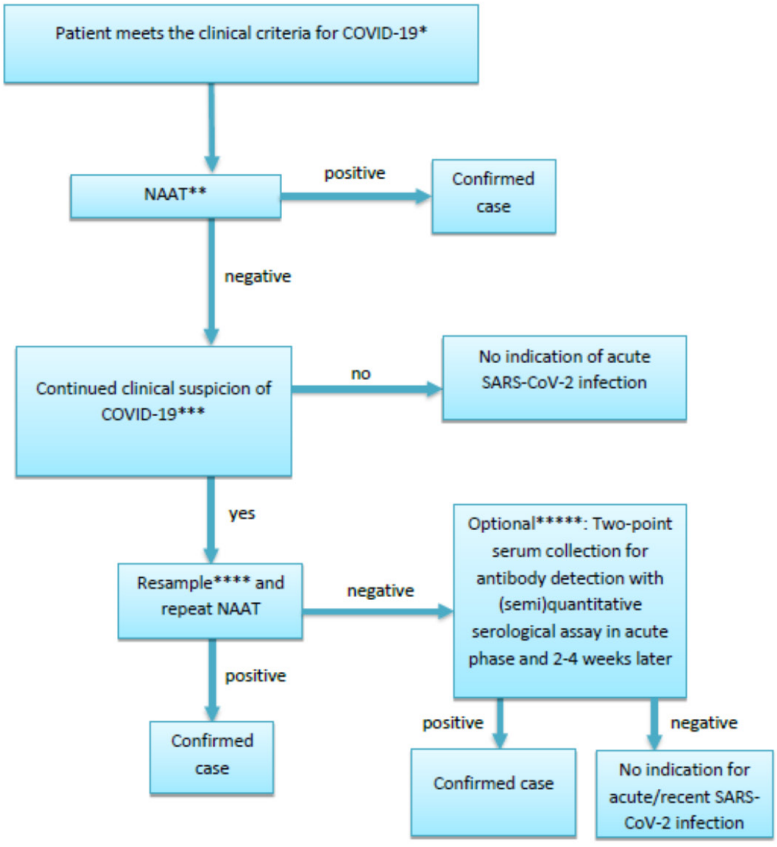
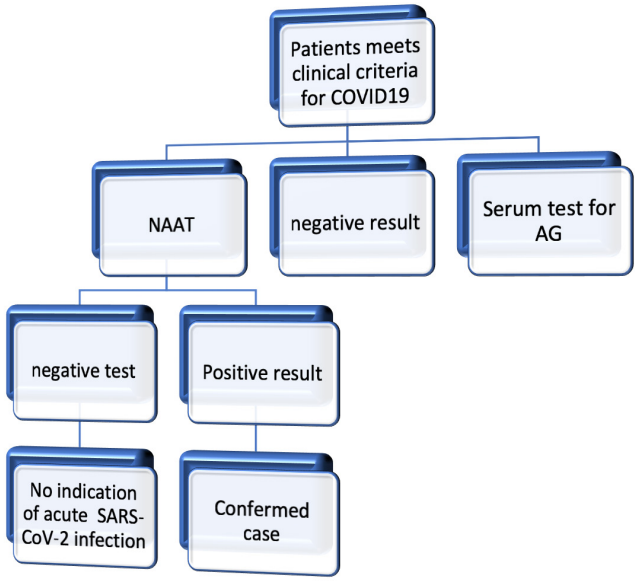
<table>
<tr><td>Hungary</td><td> 
</td></tr>
<tr><td>Lebanon</td><td>It was the same as the WHO protocol

Figure 1: Diagnostic flow diagram for the detection of acute SARS-CoV-2 infection in individuals with clinical suspicion for COVID-19
 

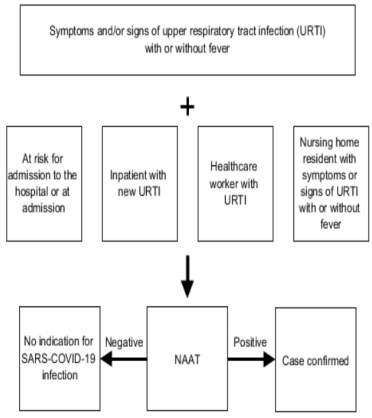
* Clinical management of COVID-19 (Interim Guidance), World Health Organization [99].
** If antigen detection would be incorporated into the testing algorithm, how this needs to be done depends on the sensitivity and specificity of the antigen test and on the prevalence of SARS-CoV-2 infection in the intended testing population. For more information see section below on "Rapid diagnostic tests based on antigen detection" and the specific guidance Interim guidance on antigen-detection in diagnosis of SARS-CoV-2 infection using rapid immunoassays [5].
*** Continued clinical suspicion can, for example, be the absence of another obvious etiology, the presence of an epidemiological link, or suggestive clinical finding (e.g. typical radiological signs).
**** The selection of specimen type will depend on the clinical presentation, see section "Specimens to be collected". Increasing the number of samples tested will also increase the sensitivity of testing for COVID-19. More than two samples might be needed on some occasions to detect SARS-CoV-2 [73].
***** For interpretation of serology, see section "Implementation and interpretation of antibody testing in the clinical laboratory". Serology cannot be used as a</td></tr>
</table>

Russian Federation

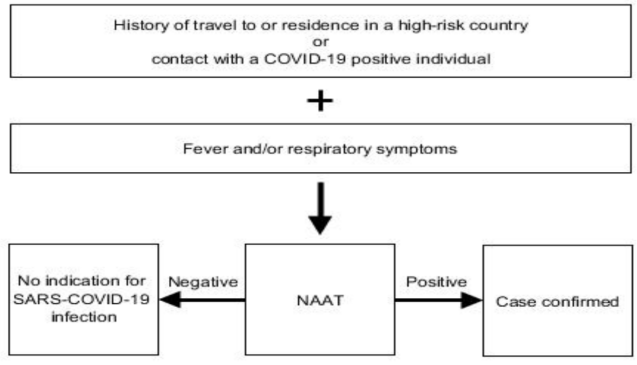


Slovenia

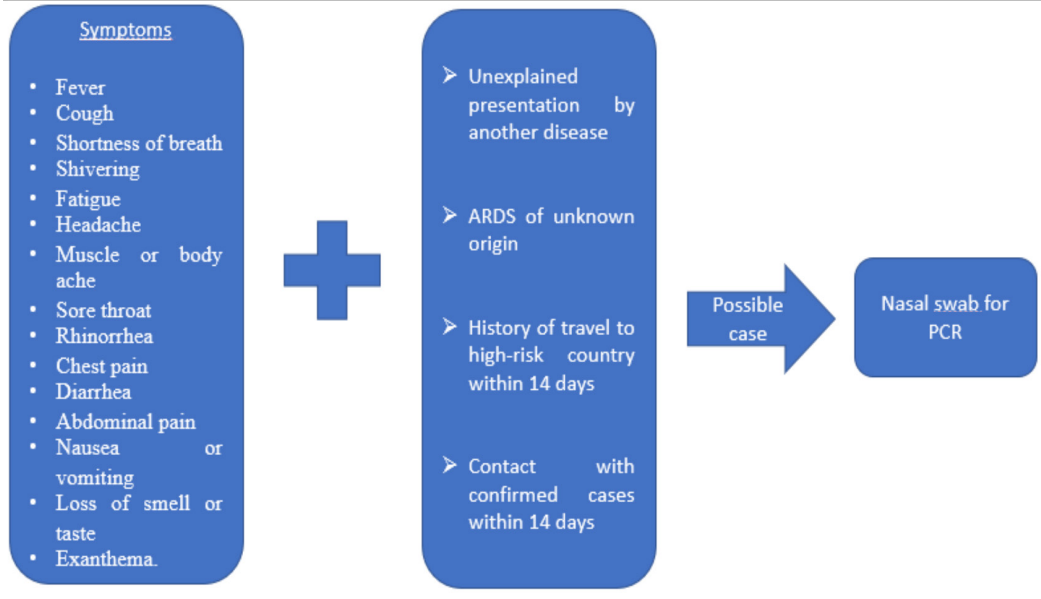
Since 16th March 2020



Till 16th March 2020



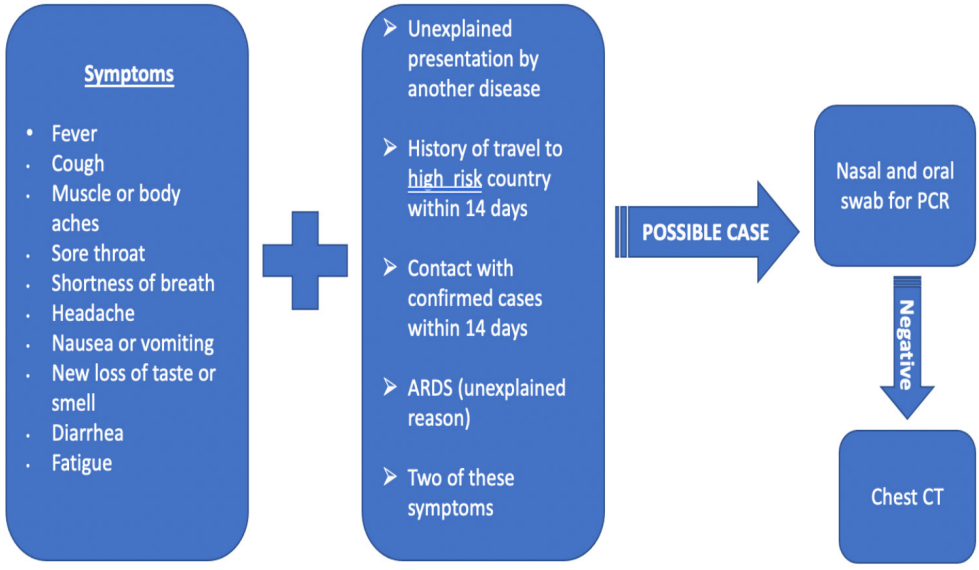
Tunisia



Appendix 2. Diagnostic flow diagram for detection of acute SARS-CoV-2 infection in individuals with clinical suspicion for COVID-19

SARS-CoV-2: Severe acute respiratory syndrome-coronavirus-2, COVID-19: Coronavirus disease-2019, PCR: Polymerase chain reaction, WHO: World Health Organization, ARDS: Acute respiratory distress syndrome, CT: Computed tomography

Turkey



Appendix 3. Detailed information about "Applied diagnostic protocol and indications for COVID-19 testing"

A) Russia pathways did not have additional steps when clinical suspicion was high. In Slovenia, negative Nucleic Acid Amplification Test (NAAT) has been considered conclusive even if symptomatic. Additionally, the attitude of the Slovenia was the same as Russian Federation in cases with continuing clinical suspicion after negative NAAT. It is important not the accept negative test for rule out the patient in case of the clinical suspicious. It has been shown that the false negative results decreased by days (1). Turkey stands out from other countries and the World Health Organization (WHO) by implementing chest-CT scans on individuals who have negative PCR test results and are considered suspicious cases (2).

B) Most patients hospitalized for Coronavirus disease-2019 (COVID-19) are in old age and have more than one chronic disease such as hypertension, cardiovascular disease, diabetes, chronic respiratory disease and chronic kidney disease (CKD) (3,4). The most common presenting symptoms in entire population were fever, fatigue, dry cough and dyspnoea (5,6). Less commonly reported symptoms were headache, loss of smell and taste, joint pains, chills, nausea/vomiting, and diarrhoea. Besides that, the older adults could present with atypical symptoms such as falls, mobility issues or generalized weakness, lethargy, reduce oral intake, delirium, sore throat, chest pain, tachycardia or tachypnoea (2,7,8). The presence of the two most common symptoms (cough and fever) were found less often in older adults compared to young people (8).

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Appendix 4. Indications for hospitalization at the beginning...
Hungary
More than 1 criteria of the followings:
• Oxygen saturation ≤93%
• Respiratory distress (≥30 breaths/min)
• Pulmonary infiltrates occupy >50% of the total lung field within 24 to 48 hours.
• Partial pressure of oxygen (PaO_2)/fraction of inspired oxygen (FiO_2) ≤300
• ARDS
• Acute respiratory failure requiring mechanical ventilation
• Shock included septic shock
• Other organ dysfunction requiring intensive care unit admission
Lebanon
Any suggestive symptoms of COVID-19 and additionally one of:
• Oxygen saturation <90%
• Affected lung by chest CT scan of the chest greater than 30%
• Pneumonia with respiratory distress
• Hypotension sepsis or septic shock
• Arrythmia
• Acute renal failure
• Persistent fever
• Age greater than 50
• Comorbidities (CVD, DM, HT, chronic liver disease, immunodeficiency)
• Abnormal laboratory (lymphocyte <800/mm^3, CRP >40 mg/L, ferritin >500 u/mL, D-dimer >1.000 ng/mL)
Russian Federation
Any suggestive symptoms of COVID-19 and additionally one of:
• Shortness of breath or difficulty in breathing (SpO_2<95%, RR >22)
• Temperature >38
Risk group: older age >65 years, history of immunodeficiency, comorbidities (cancer, COPD, CVD, DM, HT, autoimmune diseases, cirrhosis, CKD, cancer, immunodeficiency state)
Slovenia
• All community cases admitted to hospital in case of medical needs regardless of age (no written admission criteria, by far most often causes were low oxygen saturation, extensive pulmonary involvement without low oxygen saturation and prostration without proxy to provide care). NH residents treated in NH with help of staff from hospitals, transfer to hospital if needed if not in palliative care.
Tunisia (depending on severity of the clinical presentation)
• Asymptomatic/pauci-symptomatic patients unable to ensure self-isolation at home in order to interrupt transmission.
• SEGAm (modified short emergency geriatric assessment) >8 for older adults.
Criteria for admission for symptomatic patients at the beginning of the pandemic:
• Oxygen saturation ≤92%
• Respiratory distress (≥30 breaths/mn)
• Hypotension: Systolic ≤90 mmHg or diastolic ≤60 mmHg
• Age (≥65)
• Underlying medical conditions (at least two): Diabetes, hypertension, chronic kidney failure, known arrythmia
• Delirium
Turkey
Criteria for hospitalize the patients at the beginning of the pandemic **(suspected or confirmed cases displaying any of the following criteria)**
• Oxygen saturation ≤92%
• Respiratory distress (≥30 breaths/min)

Appendix 4. Continued

Hungary
• Bilateral pneumonia
• Higher pneumonia index (confusion or tachycardia >125/min)
• Hypotension
• Sepsis or septic shock
• Arrythmia
• Acute renal failure
• Age (>50)
• Comorbidities (CVD, DM, HT, chronic liver disease, immunodeficiency)
• Abnormal laboratory (lymphocyte <800/mm^3, CRP> 40 mg/L, ferritin >500 u/mL, D-dimer >1.000 ng/mL)

ARDS: Acute respiratory distress syndrome, COVID-19: Coronavirus disease-2019, CT: Computed tomography, DM: Diabetes mellitus, HT: Hypertension, CRP: C-reactive protein, CVD: Cardiovascular diseases, COPD: Chronic obstructive pulmonary disease

Appendix 5. Various coping strategies performed by the government and non-governmental organization

	S(i)	S(ii)	S(iii)	S(iv)	S(v)	S(vi)	S(vii)	S(viii)	S(ix)	S(x)	S(xi)	S(xii)	S(xiii)
Hungary	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes*	Yes	No	No	Yes	Yes
Lebanon	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Russian Federation	Yes	No	Yes	Yes	Yes	YesΨ	Yes	Yes	No	Yes	No	Yes	Yes
Slovenia	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Tunisia	Yes	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes	Yes	No
Turkey	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No

Strategies(S)
S(i) COVID-related TV spots
S(ii) Leaflets
S(iii) Online information
S(iv) Information via telephoning
S(v) Food/basic product supplies
S(vi) Billing payment assistance for the older adults that do not have relatives/caregivers that can support them,
S(vii) Possibility to receive long-term medications without going to a hospital or without formal prescriptions
S(viii) Obligatory wear of face masks (at indoors and outdoors)
S(ix) Curfews
S(x) Restricted freedom of movement among regions
S(xi) Limited number allowed to gather
S(xii) Minimum m^2 per person in services, stores etc.
S(xiii) Telemedicine
*Only in closed public areas, not at outdoors
Ψ by social works and volunteers
COVID related TV spots, leaflets (except Russia and Tunisia) and online information were provided in most countries to help people have better understanding and to make them taking personal precautions. Telemedicine consultation was applied in Hungary and Lebanon, Russian Federation and Slovenia that helped older adults to stay away from highly risk areas as hospitals. Governmental and non-governmental organisations of all countries, except Tunisia, provided food and basic products to those in need. The essential shopping and food were delivered at their home in Turkey. Moreover, in areas where relatives of older adults were unable to help family members of old age, the government of Hungary provided food and products for basic needs. Billing payment assistance for the older adults was made in all countries. Additionally, the seniors who comply with all proposed restriction were granted with one-time supplementary payment for pensions in Russian Federation and the retirees get raise in pension and it was delivered to their homes if they apply in Turkey. The older adults received their medication safely without going to pharmacy in all participated countries. In order to prevent the rapid spread of the virus movement among the regions was restricted and was under control by the government in Lebanon, Russian Federation, Slovenia, Tunisia and Turkey. It was tried to prevent people from gathering above the certain numbers in all countries except Hungary and Russian Federation. Additionally, the guidelines of the all countries specified the minimum number of square meters required to comply with social distancing measures.

Appendix 6. Detailed information about "Regulations regarding nursing homes"

Social activities were stopped in all involved countries. All the countries provided protective gears to the staff and residents and hygiene measures such as regular disinfection was enhanced. Nursing staff was uneducated and unprepared for control the infection, as the countries needed to strict precautions for the staff as well as residents. As the course of the virus, evidences showed that staff and seniors in nursing homes might be asymptomatic (1). To this end, education was provided for both staff and residents in all participated countries. External contact of the staff was avoided as soon as possible in all countries

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