

Mini Review

Elderly People During the Coronavirus Disease 2019 Epidemic: Selected Problems

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ABSTRACT

The coronavirus disease 2019 (COVID-19) infection mainly affected elderly patients in many countries. The care of elderly patients, especially in countries where the percentage of people over 65-years of age is significant, is an important public health problem now during the COVID-19 pandemic. In this review particular attention to the problem of proper nutrition of such patients was paid, which must be preceded by an appropriate assessment of their nutritional status. The important role of physical activity and adequate rehabilitation is highlighted. The care of elderly patients should be in line with the recommendations of the relevant scientific societies and international organizations in this respect.

Keywords

COVID-19; Elderly people; Malnutrition; Food insecurity; Nutritional risk; ESPEN recommendations; Physical activity.

INTRODUCTION

European Geriatric Medicine Society signed on March 23rd, 2020, a special statement on the coronavirus disease 2019 (COVID-19) epidemic. Society informs that analysis showed that mortality rates are about 15% in contaminated subjects over 80-years, whereas it is less than 0.5% in people below 50-years-old. It also draws attention that “... *Advanced age should not by itself be a criterion for excluding patients from specialized hospital units...*”. It also stresses the need for rapid rehabilitation of people who are not carriers of the virus.¹

Globally as of 3.59 pm CEST, 12 September 2020, there have been 28,329,790 confirmed cases of COVID-19 including 911,877 deaths reported to World Health Organization (WHO). According to WHO COVID-19 affects different people in different ways. Most infected people will develop mild to moderate illness and recover without hospitalization. Most common symptoms are fever, dry cough and tiredness. Aches and pains, sore throat, diarrhea, conjunctivitis, headache, loss of taste and smell, a rash on skin, or discoloration of fingers or toes are considered to be fewer common symptoms. Serious symptoms are difficulty breathing or shortness of breath, chest pain or pressure and loss speech or movement.²

An important factor in any disease is the problem of the patient's nutritional status, especially when he or she is older. Malnutrition is three times more likely to cause the risk of infection and prolong patients' stay in a hospital.³ Food insecurity and lack of physical activity along with malnutrition seem to be particularly important considerations for elderly patients with COVID-19.

MALNUTRITION

Among the many reports about COVID-19 deaths there is information about the mortality of the elderly, and the reason is cited as multimorbidity. One important cause may be malnutrition of these people, which is a basic problem, regardless of the country of residence of the elderly person and increased morbidity.³ Malnutrition may be caused by reduced food intake, reduced nutrient use or increased body demand for nutrients. European Society for Clinical Nutrition and Metabolism (ESPEN) diagnoses malnutrition when person's body mass index (BMI) is below 18.5 kg/m² or by meeting two of these three criteria: unintentional weight loss (>10% in an indefinite time period or >5% over the last three months) combined with either a low BMI (BMI of <20 kg/m² if <70-years of age, or <22 kg/m² if >70-years of age) or a low fat-free mass index (FFMI) score (FFMI of <15 and <17 kg/m²

in women and men respectively).⁴ In elderly people, defined by the WHO as people over 60-years of age, there are other causes of malnutrition (Table 1).⁵

Table 1. Causes of Malnutrition in People over 60-years ⁶	
Reasons	Nature of Causes
Physiological changes	Changes in the mechanisms for regulating hunger and satiety; reduced ability to feel thirsty; reduced ability to feel taste and smell.
Physical constraints	Limited functioning of arms, hands and fingers; weakness of gait, staying in bed, immobilization; weakness of sight; ailments during chewing (inflammations, loose dentures); swallowing disorders.
Mental status	Tangle and dementia; depression; widowhood, mourning; anxiety.
Social state	Loneliness, isolation; poor adaptation to the care facility; lack of integration.
Health	Acute and chronic diseases; drugs; digestive diseases and gastrointestinal disorders such as nausea, vomiting, diarrhoea; pain.
Lifestyle	Unfavourable dietary habits; smoking; alcohol; inactivity.
Chronic diseases	Chronic heart failure; chronic lung diseases; chronic polyarthritis; cancer; stroke; chronic infections; gastrointestinal diseases; dementia; Parkinson's disease; depression.
Financial security	Pension - lack of money reduces the quantity of food consumed and the scope for choice and variety within the diet.
Social isolation	Persons living alone are reluctant to invest time in cooking and eating; often they cannot lift more than 5 kg shopping bag.

FOOD INSECURITY

Niles et al⁷ assessed impacts of COVID-19 on food insecurity. They conducted a statewide population-level survey using a convenience sample in Vermont (USA) from 29 March to 12 April 2020. The mean age of survey respondents was 51.5±15.6-years (19-94-years). There was 32.3% increase in household food insecurity since COVID-19 ($p<0.001$), with 35.5% of food insecure households classified as newly food insecure. Authors concluded that a job loss had three times greater odds of living in a household experiencing food insecurity (OR 3.06; 95% CI, 2.107-4.457), and those experiencing a furlough (OR 2.89; 95% CI, 1.856-4.485), or a lost of hours (OR 2.05; 95% CI, 1.446-2.916) also had significantly greater odds. Two-thirds of households eating less since COVID-19 ($p<0.001$).⁷

NUTRITIONAL RISK

The study conducted by Liu et al⁸ was to assess the nutritional risks among older patients with COVID-19. They used four nutritional risk screening (NRS) tools: NRS 2002, malnutrition universal screening tool (MUST), mini nutrition assessment shortcut (MNA-sf), and nutrition risk index (NRI). Patients diagnosed with COVID-19, older than 65-years, and hospitalized with a length of stay (LOS) more than 24 hours were enrolled in this study. COVID-19 was categorized into mild, common, severe and extremely severe in accordance with the 6th edition of Diagnostic Standards

for COVID-19.

In multivariate regression analysis prolonged LOS, more hospital expenses, poorer appetite, and greater weight loss were significantly associated with nutritional risk. Authors concluded that the NRS 2002, MNA-sf, and NRI are useful and practical tools with respect to screening for patients with COVID-19 who are at nutritional risk.⁸

EUROPEAN SOCIETY FOR CLINICAL NUTRITION AND METABOLISM RECOMMENDATION

Appropriate nutritional assessment and treatment are well-documented to effectively reduce complications and improve clinical outcome various conditions, including intensive care unit (ICU) stays. The ESPEN aims at providing concise experts statements and practical guidance for nutritional management of COVID-19 patients. The recommendations are based on current ESPEN guidelines and further expert advice (Table 2).⁹

PHYSICAL ACTIVITY

The results of a study by Coker et al¹³ on the effects of a 10-day bed rest healthy older people (60-85-years of age) published in 2015 showed statistically significant changes. They are losing weight, BMI, total lean mass, muscle quality, isometric and concentric (60°) knee extensions, stair ascent and descent powers and times increased, as well as floor transfer, five-minute walk, walking speed and chair stand. Authors concluded that the consequences of bed rest without appropriate countermeasures may be closely linked to inability to perform activities of daily living, increased hospitalization, and possibly lead to increased morbidity/mortality. After study all individuals participated in a 3-month rehabilitation program that enabled them to return or exceed their baseline strength and physical performance values.¹³

Roschel et al¹⁴ adapted from the WHO's recommendations (2010 years) physical activity for older adults (aged >65-years) to improve health. Isolation with social distancing, despite the later positive effects on disease spread, increase in sedentary behavior in older people and prone to frailty, sarcopenia, and chronic diseases. Authors proposed step-reduction model as better representing inactivity imposed by isolation.¹⁴

According to Italian geriatrists nutritional intervention should be combined with physical exercises. They recognized 4 phases at the recovering time: a) recover of orthostates, b) train balance and coordination of movements, c) regain muscle strength and d) start endurance training.¹⁵

RECOMMENDATIONS FOR OLDER PEOPLE IN SELECTED COUNTRIES

The recommendations announced on the website of the Polish Chief Sanitary Inspector concern the restriction of the movement of persons aged 70+ excluding the exercise of professional activ-

Table 2. ESPEN Expert Statements and Practical Guidance for Nutritional Management of Individuals with COVID-19 Infection⁸

1.	Prevention and treatment of malnutrition in individuals at risk or infected with COVID-19 infection ⁹	Additional criteria
1.1.	Identification of risk and presence of malnutrition. GLIM (Global Leadership Initiative on Malnutrition)—a two-step approach for diagnosis – a) first screening to identify “at risk” status, b) assessment for grading the severity of malnutrition.	MUST criteria or NRS 2002 criteria, Phenotyping and etiologic criteria of malnutrition.
1.2.	Optimization of nutritional status proper diet: Energy needs: a) 27 kcal/kg body weight and day—polymorbid patients aged >65-years; b) 30 kcal/kg body weight and day—severely underweight polymorbid patients; c) 30 kcal/kg body weight and day; Protein needs: a) 1 g/kg body weight and day, amount should be individually adjusted with regard to nutritional status; b) ≥ 1 g/kg body weight and day, polymorbid patients; Fat and carbohydrate needs are adapted to the energy needs—energy ratio 30:70 (patients with no respiratory deficiency) to 50:50 (ventilated patients).	Consultation with experienced professionals - register dieticians, experienced nutritional scientists, clinical nutritionists, specialized physicians.
1.3.	Patients with malnutrition should ensure sufficient supplementation with vitamins (D, A, E, B6, B12, C) and minerals (Zn ¹⁰ , Se).	Vitamin D deficiency has been associated with different viral diseases. Overview of vitamin D deficiency (less than 50 nmol/L) was observed in regions highly affected by COVID-19 (China, Iran, Italy, Spain, United States, France, UK). ¹¹ Based on experiences from treatments of SARS and other viral infections the nutritive supplements administered at an early stage of the infection were important for enhancing host resistance against RNA viral infections, which might also include severe COVID-19. ¹²
1.4.	Patients in quarantine should continue regular physical activity while taking precautions. Exercise at home using various safe, simple, and easily implementable exercises is well suited to avoid the airborne coronavirus. Even outdoor activities can be considered.	Examples of home exercises include walking in the house and to the store as necessary, lifting and carrying groceries, alternating leg lunges. Garden exercise, walking/running in the forest (alone or in small family groups). Every day >30 min or every second day >1 h exercise is recommended to maintain fitness and mental health.
1.5.	Oral nutritional supplements (ONS) should be used to meet patient's need, when dietary counselling and food fortification are not sufficient to increase dietary intake. ONS should provide at least 400 kcal/day including 30 g or more protein/day and shall be continued for at least one month. The oral route is always preferred when practicable.	Nutritional treatment should continue after hospital discharge with ONS and individualized nutritional plan.
1.6.	In polymorbid medical inpatients and in older persons with reasonable prognosis, whose nutritional requirements cannot be met orally, enteral nutrition (EN) should be administered. Parenteral nutrition (PN) should be considered when EN is not indicated or unable to reach targets.	
2.	Nutritional management in Intensive Care Unit (ICU) patients infected with COVID-19 ⁹	If the energy target is not reached with an oral diet, ONS should be considered first, and then EN treatment.
2.1.	Medical nutrition in non-intubated ICU patients.	If there are limitations for the enteral route it could be advised to prescribe peripheral PN in the population not reaching energy-protein target by oral or enteral nutrition.
2.2.	Medical nutrition in intubated ICU patients I.	EN should be started through nasogastric tube; post-pyloric feeding should be performed in patients with gastric intolerance after prokinetic treatment or in patients at high-risk for aspiration.
2.3.	Medical nutrition in intubated ICU patients II.	In ICU patients who do not tolerate if full dose EN during the first week in the ICU is not tolerated, initiating parenteral nutrition (PN) should be weighed on a case-by-case basis.
2.4.	Nutrition in ICU patients with dysphagia.	Texture-adapted food can be considered after extubating. If swallowing is proven unsafe, EN should be administered.

ities, meeting the necessary needs of everyday life, exercising or participating in the exercise of religious worship. Persons aged 60+ from Monday to Friday can do food and goods shopping between 10-12 am. During this time younger persons are not allowed to buy.

Centers for Disease Control and Prevention (CDC) (USA) for people at risk of severe illness from COVID-19 limit their interactions with other people as much as possible. If they decide to engage in public activities should behave according to general rules. Persons have underlying medical conditions should continue medicines and have at least a 30-day supply of prescriptions and non-prescriptions medicines.

The French government imposed a curfew on two-thirds of the country from Friday night (23.10.2020). There are in total 47 areas of France. Greece has declared a night curfew. Spain imposes national curfew to curb COVID spread. As well as a night-time curfew, travel between regions can be banned under the emergency measures. Other European countries – Slovakia, Czech Republic, Republic of Ireland, Portugal decided about partial lockdowns. Australian government prepared special COVID-19 support line and My Aged Care. Register persons 65+ years have My Aged Care ID, which allow them for urgent home support services.

For months elderly Swedes over 70 and other at-risk

groups have been advised to avoid going to shops, including supermarkets and pharmacies. Now they should follow the same coronavirus guidelines as the rest of population. Sweden's Public Health Agency recognized physical and mental health consequences for those groups.¹⁶

PUBLIC HEALTH PLANNING APPLICATION: A COMPLEMENTARY STRATEGY

Given the findings previously presented, it seems that a strategy that focuses only on addressing elderly people with existing malnutrition might not bring them make a full recovery. Instead we propose a complementary strategy. Keeping in mind guidelines to protect persons from a communicable disease, this strategy would include developing an interdisciplinary team consisting of a physician, a nurse, a dietician, a physiotherapist, a psychologist, a social worker, and a person who safeguards spiritual needs according to religion. Also, the team could include a case-manager for helping elderly persons sort out aspects of daily living. Collectively, this team could help meet the needs of elderly people in terms of evaluation of nutrition, material security (self-financing of the aid or the need for financing from other than one's own resources), place of residence - family environment, social welfare homes. This complementary strategy might help elderly people successfully cope with the current pandemic by practically addressing malnutrition, food insecurity, and physical activity needs.

CONCLUSION

Many of the COVID-19 symptoms indicating that elderly people develop coronavirus are superimposed on those related to the ageing process. Researchers draw attention to the need for multidisciplinary teams to care for elderly patients. An important aspect is the proper nutrition of patients, in order to prevent the malnutrition which is still frequent in healthy older people. The lack of appropriate rehabilitation of these patients does not promote full recovery. There is no proper estimation of the costs of care for the elderly during a pandemic and the psychosocial efficiencies of their departure in the cultural aspect-family or social.

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