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LEADING ARTICLE

Risk factors, clinical and psychosomatic status in patients with chronic noncommunicable diseases during lockdown and self-isolation

Mamedov M.N.[1], Kutsenko V.A.[1], Serpytis P.[2], Seysembekov T.Z.[3], Mekhtiev S.H.[4], Murkamilov I.T.[5]

[1] National Research Center for Preventive Medicine of the Ministry of Healthcare of the Russian Federation, Moscow, Russia

[2] Vilnius University Hospital Santaros Clinics, Vilnius, Lithuania.

[3] Astana Medical University, Nur-Sultan, Kazakhstan.

[4] Azerbaijan State Advanced Training Institute for Doctors named after A. Aliyev, Baku, Republic of Azerbaijan.

[5] Kyrgyz State Medical Academy, Bishkek, Kyrgyzstan.

Authors

Mehman N. Mamedov*, M.D, PhD, professor, Head of the Laboratory of Interdisciplinary Approach to Prevention of Chronic Noncommunicable diseases, Department of Comorbidities Prevention, National Research Center for Preventive Medicine of the Ministry of Healthcare of the Russian Federation, Moscow, Russia.

Vladimir A. Kutsenko, Biostatistics Laboratory, Chronic Noncommunicable diseases Epidemiology Department, National Research Center for Preventive Medicine of the Ministry of Healthcare of the Russian Federation, Moscow, Russia.

Pranas Serpytis, M.D, PhD, professor, Vilnius University Hospital Santaros Clinics, Vilnius, Lithuania.

Telman Z. Seysembekov, M.D, PhD, professor, Cardiology Department, Astana Medical University, Nur-Sultan, Kazakhstan.

Samir H. Mekhtiev, M.D, PhD, Internal Medicine Department, Azerbaijan State Advanced Training Institute for Doctors named after A. Aliyev, Baku, Republic of Azerbaijan.

Ilkhom T. Murkamilov, M.D, PhD, Kyrgyz State Medical Academy, Bishkek, Kyrgyzstan.

* Corresponding author. Tel. +79262283309. E-mail: mmamedov@mail.ru

Abstract

Objective *of the current study was to investigate behavioral risk factors, clinical and psychosomatic state in patients with chronic noncommunicable diseases (NCDs).*

Materials and Methods. *This multicenter simultaneous study included 351 patients from 10 cities and 5 countries (Russia, Azerbaijan, Kazakhstan, Lithuania, Kyrgyzstan. Men and women aged 30–69 years with at least one NCD who were self-quarantining during COVID-19 were included. NCDs included arterial hypertension (HTN), coronary artery disease (CAD) with or without history of acute myocardial infarction, cancer treated with radiation and/or chemotherapy, type 2 diabetes (T2D), chronic obstructive pulmonary disease (COPD) or asthma. All patients were asked to fill special questionaries. We also performed routine physical exams that included blood pressure and heart rate measurement and body mass index calculation (BMI).*

Results. *Most patients (n=236, 68 %) had HTN, 30 % had CAD (n=103), 25 % had T2D (n=88), 12 % had COPD (n=40) and only 7 % had cancer. In general, one in four patients with at least one NCD self-isolation was associated with decreased quality of life and health. Hypertonic emergency happened in 78 patients, and 21 % required higher doses of antihypertensive medications. Angina symptoms worsened in 6 %. Among patients with T2D, 34 % required higher doses of diabetes medications. Only 5 % of patients with COPD and cancer noted any worsening of their symptoms. 138 people (40 %) stated that they had less physical activity and 34 (10 %) — that they were more active during the quarantine. 35 % (n=122) stated that they ate more often during self-quarantine and 4 % (n=14) stated that they were more successful in sticking to a diet. 55 % (n=192) stated that they had mild stress during quarantine and self-isolation; moderate level of stress was identified in 39 % (n-137) and severe stress — in 7 % (n=22) of all the respondents. 43 % (n=151) suffered from mild depression and anxiety and severe depression and anxiety were identified in 5 % (n=15) of all patients.*

Conclusion. *During quarantine and self-isolation patients with CNDs had some worsening of their clinical status requiring higher doses of medications. Most people exercised less and had worse diet during self-isolation. One in two patients with CNDs had moderate levels of chronic stress and mild depression and anxiety.*

Keywords. *Risk factors, psychosomatic status, CNDs, COVID-19 pandemic.*

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Conflict of interest: none declared.

Introduction

At the end of 2019 an outbreak of the new coronavirus disease caused by SARS-CoV-2 happened in Hubei province in China [1]. In 2020, high levels of incidence and mortality are still registered in countries where infection control measures were implemented later or only partially (Italy, Spain, USA, the UK). The status of COVID-19 pandemic varies with the largest number of cases registered in the USA, Brazil, and the UK [2, 3].

In May 2020 COVID-19 worldwide mortality rate was 7 %, in February 2021 the situation improved and the number of deaths to number of cases ratio was 2,21 %. Russia was among top 10 countries with the highest COVID-19 incidence: however, the mortality rate in early 2021 was 1,99 % [4].

During COVID-19 pandemic all countries imposed shutdowns and self-isolation according to the WHO recommendations. Elderly people and those with chronic noncommunicable diseases were at the highest risk of COVID-19 associated complications and death [5]. At that time most hospitals only admitted patients with COVID-19, thus those without COVID-19 but with CNDs had limited access to medical care. At the same time, prolonged self-isolation and total lockdown affected the quality of life and psychological state of these individuals [6].

To prevent the negative effects of the lock-down and self-isolation it is important to develop special measures that can be investigated in clinical studies of the risk factors and clinical and psychological status of patients with CNDs.

Materials and methods

This multicenter simultaneous study included 351 patients from 10 cities and 5 countries (Russia, Azerbaijan, Kazakhstan, Lithuania, Kyrgyzstan.

Men and women aged 30–69 years with at least one NCD who were self-quarantining during COVID-19 were included. NCDs included arterial hypertension (HTN), coronary artery disease (CAD) with or without history of acute myocardial infarction, cancer treated with radiation and/or chemotherapy, type 2 diabetes (T2D), chronic obstructive pulmonary disease (COPD) or asthma. Mean age was 60,6±2,4 years.

Exclusion criteria: history of psychiatric disease, severe somatic diseases including the decompensations of previously stable conditions.

Questionaries

All patients were asked to fill special questionnaire that was developed in our hospital. It included: identification information, social and demographic parameters, behavioral risk factors, including alcohol use, diet and physical activity, main disease, medications, and psychological status (levels of anxiety, depression and chronic stress) and also information on COVID-19.

The questionnaire was the main document on which this study was based.

Current smokers were identified as individuals who smoked at least one cigarette per day. Smoking status options were never smoked, used to some and current smoker.

Alcohol use was assessed using the following criteria:

— no alcohol use in the previous year

— for males: low and moderate alcohol use — <168 g of ethanol per week; sever — >168 g of ethanol per week.

Assessment of chronic stress. We used Reeder questionnaire to assess the level of chronic stress. The questionnaire included 10 questions with 5 possible answers each. It assessed 3 levels of stress: low (3,01–4 points), moderate (2,01–3 points) and severe (1–2 points) [7].

Assessment of anxiety and depression. We used European Quality of Life Questionnaire (EQ-5D) to assess the levels of anxiety and depression. The questionnaire included 5 dimensions:

1. Movement
2. Self-care
3. Everyday activity
4. Pain, discomfort
5. Anxiety, depression

Each dimension has 3 levels: no problems, some problems, and extreme problems. The questionnaire also allows the patient to self-rate the changes of his/her health over the past year [8].

Instrumental examination

We measured blood pressure and heart rate (HR) in each patient. Blood pressure reading were performed on the right hand with the standard sphygmomanometer with a patient in a comfortable seated position after at least 5 minutes of rest. Systolic blood pressure (SBP) was assessed according to the first Korotkoff sound and the diastolic blood pressure (DBP) was marked by the disappearance of the sound. Blood pressure readings were performed twice with 2–3-minute interval and the mean value was noted in the chart.

Anthropometric values included height and weight. Body mass index (BMI) was calculated as a person's weight in kilograms divided by the square of height in meters.

Data collection and investigators' training

Data were collected during the planned hospital admissions with the participation of primary care practitioners. The study took place from June to October 2021. We carried out an online training session on the study protocol and questionnaire. Some random questionaries were double checked by independent specialists. Data analysis was performed in National Research Center for Preventive Medicine in Moscow, Russia.

Statistical analysis

Data input was performed in the ACCESS MS OFFICE. Statistical analysis was performed on a personal computer (PC) using the Statistica 6 and R 3.6.1 software. Qualitative values are presented as frequencies and percentages. 95% confidence intervals (CI) are calculated using the Clopper–Pearson method and provided for the percentages. Chi-square (x2) criterion was used to compare qualitative values. Groups "before" and "after" were compared with the sign test. P-value less then 0,05 was considered statistically significant.

Results and discussion

In this multicenter simultaneous study, we investigated the changed of various behavioral risk factors, clinical and psychological status of people with at least one CND (HTN, stable angina, DM, COPD, malignancy).

It is thought that healthcare system overload together with self-isolation and lockdown played an additional role in the increased incidence of some CNDs during COVID-19 pandemic. These factors can lead to

worse risk factor control, insufficient diagnosis and treatment, untimely medical help for worsening patients [9].

In the current study there were 58 % (n=205) patients from Russia and 42 % (n=146) patients from other countries. Most patients had HTN 67,2 % (62,1–72,1) (n=236), 29,3 % (2,6–34,4 %) (n=103) had stable angina (p<0,0001). 25,1 % (20,6–29,9) (n=88) patients had DM; 11,4 % (8,3–15,2) (n=40) had COPD and just 7,1 % (4,7–10,3) (n=40) had malignancy.

At the time of the study 21,9 % (17,7–26,6) (n=77) of patients had COVID-19 and recovered; 12,8 % (9,5–16,8) (n=45) had complications. According to the WHO, people with one and more NCD (CVD, DM, COPD) are at a higher risk of complications and death. Adequate self-isolation and regular health monitoring reduces the risk of acquiring COVID-19 and complications in individuals with CNDs [10–15].

Analysis of social and demographic values showed that 40,7 % (35,6–46,1) (n=143) had higher education, 67,2 % (62,1–72,1) (n=236) were married, 15 % (n=53) were widowers/widows, 6 % (n=21) — divorced. Before lock-down and self-isolation 53 % (47,6–58,3) (n=186) of patients had a job. During the pandemic 24,8 % (20,4–29,6) (n=87) kept working the same way they used to, and 11,1 % (8–14,9 %) (n=39) switched to working from home and 17,1 % (13,3–21,4) (n=60) temporarily stopped working and 1,7 % (0,6–3,7) (n=6) lost their jobs. As such, the changes in job status were statistically significant (186 vs 120, p<0,0001).

During the lock-down we noted some worsening of CNDs in our group of patients. Hypertonic emergency happened in 78 patients, and 21 % required higher doses of antihypertensive medications. Angina symptoms worsened in 6 %. Among patients with T2D, 34 % required higher doses of diabetes medications. Only 5 % of patients with COPD and cancer noted any worsening of their symptoms. To control the spread of SARS-CoV-2 most hospitals all over the world were marked as the "red zone". Access to outpatient care become limited as well. One study analyzed hospitalization frequency in California during the rise of COVID-19 cases and determined that less people were admitted for acute myocardial infarction (MI) at that period [6]. Another study showed that when new COVID-19 cases peaked in Italy the number of MI admissions were lower and the rate of MI-associated complications and deaths was higher, although the number of coronary angiographies stayed unchanged [11]. This can mean that only the most severe patients were admitted. According to the data received from 909 hospitals in 108 countries, less invasive and non-invasive cardiac examinations were performed during COVID-19 [16, 17].

One of the aims of this study was to investigate the changes in behavioral risk factors such as smoking, alcohol use, changes in physical activity and diet. Before the pandemic 31 % (n=108) patients, mostly men, used alcohol. During the quarantine there were some minor changes in the alcohol use pattern: 4 % of patients stated that they used less alcohol and 2 % — more alcohol. Before the pandemic 11,1 % (8–14,9) of patients smoked; during the quarantine one in two smokers started to use more tobacco (p=0,0015) and 10 % began to snoke less (fig. 1).

Changes in the amount of physical activity were among of the most important indicators of the influence of self-isolation. According to our results, 39,3 % (34,2–44,6) (n=138) people exercised less during the

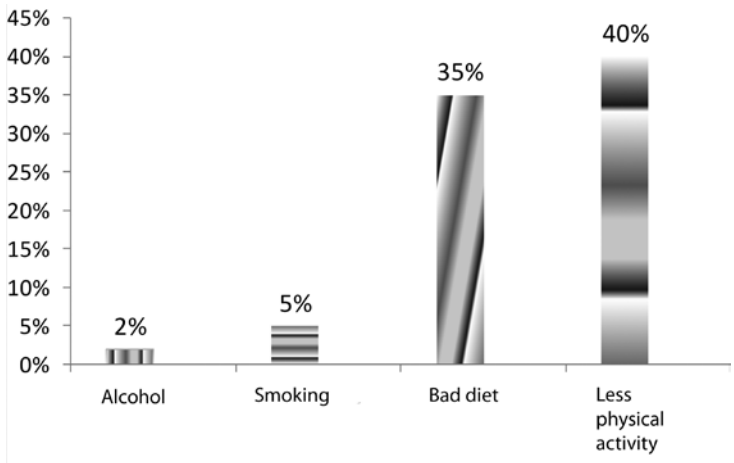

Figure 1. The rise of behavioral risk factors in patients with CNDs during quarantine and self-isolation.

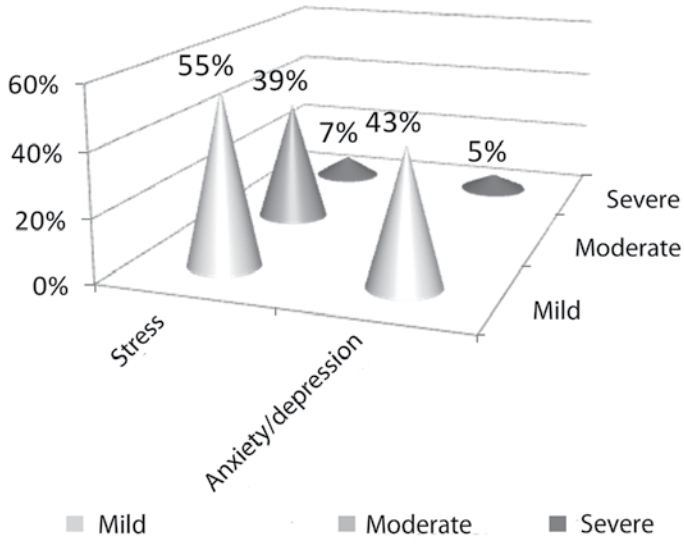

Figure 2. Changes of main psychosomatic factors in patients with CNDs

pandemic (p<0,0001); 9,7% (6,8–13,3) (n=34) had more physical activity.

Same tendency was determined when the dietary habits were assessed. 34,8% (29,8–40) (n=122) stated that they ate more during the quarantine and 4% (2,2–6,6) (n=14) stated that they, on the contrary, ate less.

These changes can be primarily explained by the way of life that the patients with CNDs are used to. All in all, 26,8% (22,2–31,7) (n=94) of patients with some CNDs noted that they felt worse and had lower quality of life during the quarantine.

It was also important for us to assess the effects of quarantine on psychologic status of the patients included (fig. 2). One in two patients with CVDs (54,7% (49,3–60), n=192) had some mild stress, moderate stress was present in 39% (33,9–44,4) cases (n=137) and 6,3% (4–9,3) patients complained on severe stress (n=22). 43% had minor depression and anxiety (n=151) and severe depression/anxiety was present in 4,3% (2,4–7) (n=15).

Undoubtfully, patients are more prone to chronic stress during the quarantine. The rate of moderate stress is rather high and that affects health status and quality of life. At the same time. one in two patients also stated that they had mild depression/anxiety during the quarantine. These conditions are reversible and don't require any addition measures. However, there is a group of individuals among these patients who are at a higher risk of further worsening of psychological status. This should be taken into consideration for the further medical management.

Conclusion

During quarantine and self-isolation patients with CNDs had mild worsening of their clinical status, more hypertonic emergencies, and requirement of higher doses of medications. Most people exercised less and had worse diet during self-isolation. On Patients with CNDs also tended to have higher levels of chronic stress and mild depression/anxiety. In general, in one in four patients with one and more CNDs quarantine and self-isolation were associated with worsening of health status and quality of life.

Conflict of interest: none declared.

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