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Stress Level, Fear of Accessing Health Care, And Drug Uptake during and After the Covid-19 Lockdown

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Abstract: Background: the study aimed to analyze the perceived stress level, the fear of accessing health care (i.e., from the pharmacy, hospital, general practitioner's office, dental office), and drug uptake during and after the COVID-19 lockdown. **Methods:** A prospective study was conducted on a convenience sample. There were included persons 18 years of age or older living in Bucharest. Data were collected through questionnaires administered by phone interviews during the COVID-19 lockdown (T1-May 2020), and four months after it (T2-September 2020). **Results:** Fifty-three participants were included. The stress level was statistically significantly higher in T1 than in T2 ($p=0.011$). Fear related to going to different medical and pharmaceutical services was statistically significantly different (for both T1 and T2 $p<0.001$), the greatest fear being related to going to the hospital, and the least fearful being the visit to the pharmacy. The trend observed in T2 compared to T1 was to perceive going to the dental office as slightly less fearful and going to the general practitioner and pharmacy as slightly more fearful. Comparing medicine uptake in T1 and T2, Paracetamol, Vitamin C, lozenges for the throat, and mouthwash were more frequently used in T1, while vitamin D, sleeping pills, anxiety pills, and baking soda water rinses were used more often in T2.**Conclusion:** Based on this research, considering its limitations, it is possible to state that worldwide health issues and medication administration, such as the COVID-19 pandemic, posed different challenges, in time-related changes, and context, according to its novelty.
Keywords: stress, SARS-CoV-2, self-medication, medicine, drugs

I. Introduction

Worldwide health issues, such as the COVID-19 pandemic, pose different challenges related to their particularities. COVID-19 in particular is a life-threatening condition that abruptly disrupted the normal life course of people worldwide, mainly transmitted by close contact routes [8,36]. World Health Organization also made recommendations in this regard, the measures taken during different periods include: lockdown, implementing hygiene and disinfection protocols, wearing face masks, maintaining a minimal physical distance in public places, and vaccination [35]. During the pandemic, there were some changes in human behavior, to control the spreading of COVID-19 [3,36]. Some of the measures to control and contain the spreading of COVID-19 had negative effects on people's lifestyles, physical activity was reduced impacting general and mental health [30]. Fear of contracting SARS-CoV-2 was correlated with high stress, anxiety, and depression, which impaired daily activities, sleep cycles, and general well-being [2].

In addition to the direct medical problems, COVID-19 brought several challenges in the interactions with medical services [17]. The COVID-19-associated changes in health care services as well, aspects such as reduced access to medical services [21] and fear of going to hospitals, perceived as being sites of contagion [9] are reported from the patient perspective. Some negative behaviors as self-medication practices for COVID-19, even if highlighted as being contraindicated, were reported to be highly prevalent, for both preventive and therapeutic purposes [14]. Some of those medicines were: vitamins, antipyretics, antibiotics, chloroquine, and ivermectin [31].

This study aims to analyse the perceived stress level, the fear of accessing health care (i.e., from a pharmacy, hospital, general practitioner's office, or dental office), and drug uptake during and after the COVID-19 lockdown.

II. Materials and Methods

A prospective study has been conducted on a convenience sample. People 18 years of age or older, living in Bucharest, who verbally agreed to participate in this research were included. There were excluded Those with deficiencies in communication or understanding. Data were collected through a telephone interview, which lasted approximately 5 to 10 minutes for each participant. The same interview was administered in two periods: in May

during the COVID-19 lockdown (T1 –5th of May to 8th of May 2020), and, four months after the COVID-19 lockdown (T2- 5th of September 2020 to 20th of September 2020).

The interview had 25 questions structured into four sections, being collected data on the general characteristics of the participants (1st section), the perceived stress level (2nd section), the addressability to medical and pharmaceutical services (3rd section), and drug uptake (4th section).

In the 1st section, the general characteristics of the participants recorded were age, sex, income (self-rated, as being good or poor), educational attainment (school, high school, university, university bachelor, university master's or doctorate), and the number of people they lived with (5 questions).

In the 2nd section, the stress level was recorded on a five-point scale, (i.e., not at all, a little, medium, a lot, or much stressed) In T1 it was compared the stress level before pandemics with the stress level during the state of emergency (more stressed, less stressed, same stress) and in T2 was compared the stress level from the state of emergency with the period between T1 and T2 (2 questions).

In the 3rd section, regarding the addressability to medical and pharmaceutical services, the participants were asked to rank the named medical units (pharmacy, hospital, general practitioner's office, or dental office) from most stressful to least stressful when considering attending then at that moment Additional questions were addressed on the addressability to dental offices i.e., on the willingness to immediately make an appointment if needed, on how long they would be willing to postpone it, and on the reason of postponing it, if stating so (4 questions).

Regarding drug uptake, participants were asked if they took any medication for chronic diseases, and also medication that did not require a prescription, which was mentioned as beneficial in the media for preventing COVID-19. After stating them, participants were specifically questioned about taking the following: Paracetamol/acetaminophen, antibiotic, aspirin, throat lozenges, vitamin complex, vitamin C, vitamin D, vitamin E, sleeping pills, anxiolytics, mouthwash, rinsing with salty water or baking soda water (14 questions).

Statistical analysis depended on the variable type, the scale used, and the data distribution for the quantitative ones. SPSS statistics was used for data analysis. Mann-Whitney and Friedman's tests were used for group comparison. The level of significance was $p<0,05$.

III. Results

One hundred and two people have been contacted for this study in T1 (COVID-19 lockdown), from which 92 agreed to participate. From the latter, 53 persons responded in both periods, during and four months after the lockdown, this being the sample used in this research. All participants stated that did not previously have COVID-19. From those who did not answer in T2, two participants died, two participants were in the hospital when contacted, and the rest did not answer the phone).

General characteristics of the participants

The general characteristics of the participants that responded both times are presented in Table 1, most of them being 25 to 64 years of age, females, having a university bachelor's degree, and living with another person. All the participants did not previously have COVID-19

Characteristic	n	%
Age		
18-24	1	
25-64	40	
≥ 65	12	
Gender		
Female	35	66%
Male	18	34%
Education		
Primary school	5	9.4%
High school	15	28.3
University Bachelors	23	43.4
University Master or Doctorate	10	18.9
Living state		
Living alone	5	9.4%
One person	22	41.5%
Two persons	15	28.3%
Three persons	11	20.8%

Table 1. General characteristics of the participants

The stress level was higher in the lockdown period (median in T1=3), than in the follow-up decreased (median in T2 =2), p=0.011. Comparatively analyzing stress levels in T1 and T2 there was seen a trend of relaxation, 26 persons had a lower stress level in T2 than in T1, 19 persons had the same stress level in T1 and T2, and only 8 had a higher stress level in T2 than in T1. Examining the evolution of stress level from T1 to T2

(Figure 1), we observed that high and very high level of stress in T2 was encountered in almost half of those who exhibit a high and very high level of stress in T1, and a small proportion (n=2; 8.33%) of those who registered a small or very small level of stress in T1.

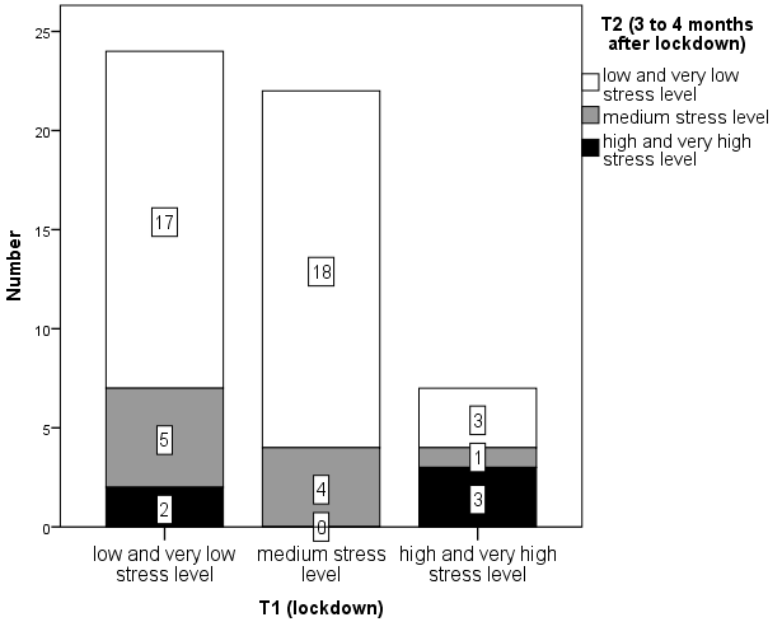

Figure 1. Stress level in T1 (COVID-19 lockdown) and T2 (3 to 4 months after COVID-19 lockdown)

Attendance to health care services

Considering attending medical and pharmaceutical services in the pandemic context, the greatest fear in case of health problems was going to the hospital appointment (ranked 1st), followed by the dental clinic appointment (ranked 2nd), followed by the general practitioner appointment (ranked 3rd), and the least fearful being the visit to the pharmacy (ranked 4th). The ranking was the same in T1 and T2 and showed a statistically significant difference in ranking between healthcare units in both periods (the p-value for both T1 and T2 was <0.001). Pairwise comparison showed that only the ranking of fear of going to the dental office and general practitioner did not reach a statistically significant level (p-value for both T1 and T2 was >0.05). A comparative assessment of these units in T1 and T2 showed that more than half persons (n=24) ranked the stress of accessing these units the same in both T1 and T2. Between the two periods, the following trends were observed: perception of hospitals was similar; the level of stress related to going to the dental office was slightly decreased in T2 compared to T1; the level of stress related to going to the general practitioner and pharmacy was slightly increased in T2 compared to T1 (Table 2). Asked about their willingness of attending a dental appointment if needed, 30 participants in T1, and 16 participants in T2, stated they would postpone it for a variable period, from at least two weeks to as far as possible. From these, the majority, 26 participants in T1, and 8 participants in T2 said they would postpone the dental visit due to factors related to the COVID-19 pandemic.

Change from T1 to T2	Hospital	Dental Office	General practitioner	Pharmacy
Ranked as more stressful (no)	3	8	13	11
Ranked the same (no)	46	30	30	34
Ranked as less stressful (no)	4	15	10	8

Table 2. Change in the level of stress related to attending medical and pharmaceutical services from T1 (lockdown period) to T2 (3 to 4 months after lockdown period).

Regarding drug uptake, Paracetamol was the most frequently used drug in this study sample, approximately 2/3 of the participants took it sometime during this period. Others relatively frequently used, of about or more than a quarter of the participants were mouthwash, vitamins, lozenges for the throat, and anxiety pills. Mouthwash and Paracetamol were frequently used in both T1 and T2 periods by the participants. Comparing medicine uptake in T1 and T2, Paracetamol, Vitamin C, lozenges for the throat, and mouthwash were more frequently used in the COVID-19 lockdown (T1), while vitamin D, sleeping pills, anxiety pills, and baking soda water rinses were used more often after COVID-19 lockdown (in T2) (Table 3).

Medicines	Never used	Used in both periods (T1 and T2)	Used only in T1	Used only in T2
Paracetamol	17(32.1%)	14(26.4%)	14(26.4%)	8 (15.1%)
Antibiotic	43(81.1%)	1(1.9%)	5(9.4%)	4(7.5%)
Aspirin	47(88.7%)	2(3.8%)	2(3.8%)	2(3.8%)
Vitamin D	38(71.7%)	1(1.9%)	4(7.5%)	10(18.9%)
Vitamin C	30(56.6%)	5(9.4%)	14(26.4%)	4(7.5%)
Vitamin complex	35(66.0%)	3(5.7%)	8(15.1%)	7(13.2%)
Lozenges for throat	39(73.6%)	4(7.5%)	8(15.1%)	2(3.8%)
Sleeping pills	43(81.1%)	6(11.3%)	1(1.9%)	3(5.7%)
Anxiety pills	40(75.5%)	5(9.4%)	3(5.7%)	5(9.4%)
Baking soda water rinses	46(86.8%)	3(5.7%)	1(1.9%)	3(5.7%)
Salty water	44(83.0%)	2(3.8%)	4(7.5%)	3(5.7%)
Mouthwash	21(39.6%)	17(32.1%)	10(18.9%)	5(9.4%)

Table 3. Medicines uptake during and after COVID-19 lockdown (T1 and T2)

IV. Discussion

The COVID-19 pandemic, during the lockdown and immediately after, in the alert state, was marked by evident changes in the population's behavior, both in accessing healthcare services and in medication consumption.

The main study results indicate that during the lockdown most of the participants took Paracetamol and used mouthwash. Quite often they also took medication for sore throat, vitamins, vitamin C, sleeping pills, or anxiolytics and rinsed their mouth with salty water. The majority of participants said they felt greater stress than before the lockdown. Their biggest fear was visiting a hospital, followed by visiting a dental clinic, a general practitioner clinic, and a pharmacy. Most of the participants declared they would postpone dental treatment if it wasn't an emergency, even after the lockdown, because they would fear contracting the virus. This fear was significantly greater for younger people.

Furthermore, the pandemic and the measures taken during the pandemic have also affected other aspects, such as the economic, social, and relational ones, as well as those related to the education of children and young people in various forms of teaching. A study conducted in Zagreb showed that dentistry students had difficulties adapting to online classes, with some experiencing anxiety and a lack of motivation [1]. On the contrary, in another study, from Kuwait, dental students had a good perception of online and hybrid learning[15].

Therefore, regarding the behavior at the population level, changes were observed in the level of stress and fear, which also affected access to healthcare services, many of which were restricted by the measures taken during the lockdown. Fear of getting COVID-19 or worsening preexisting conditions induced changes in behavior related to prevention or treatment, with an increase in self-medication.

The level of stress was high in both periods, higher at the beginning of the pandemic during the state of emergency. Other studies have reported a higher level of stress and anxiety during the pandemic, both in the general population and among physicians [20,34]. Armfield suggests that fear or anxiety about going to the dentist can influence both overall health and public health, which is why it's important to measure the level of fear [4].

Participants were more relaxed four months after the lockdown, although the active cases of COVID-19 were higher over that period according to the Worldometer. The number of active cases of COVID-19 was almost six times higher in T2 (September) than in T1(May) in Romania [10].

The lower level of stress and higher number of cases can be explained by adaptation to the changes brought by the pandemic and also by the reduction of restrictions.

Since the beginning of the pandemic, a change for the worse in sleep has been observed in patients diagnosed and hospitalized with covid, in medical staff, and also in the general population [6,18]. A slight sleep disturbance can also be seen in this study, the use of sleeping pills was higher in T2. In the general population, there were also some people whose sleep has improved [18].

Antibiotics used without medical recommendations can be harmful because of exceeding the recommended dose of drugs, drug interactions, and bacterial resistance [13].

Regarding medication consumption, there has been an increase in the tendency towards self-medication. Some of the reasons for self-medication reported in the literature during the COVID-19 pandemic have been fear of infection, fear of quarantine, and the resulting stigma [31]. Additionally, it is known that elderly people receive a higher number of medications in relation to the comorbidities associated with oral health status and education level, often resorting to self-medication [5].

According to the literature, frequently self-administered medications during the pandemic included vitamins, acetaminophen, antimalarials, and antibiotics [31,32]. In this study, a high number of participants consumed paracetamol and vitamins. According to a meta-analysis, vitamin D administered after a COVID-19 diagnosis represents a protective factor (OR=0.35(0.14,0.85)) for severe forms of the disease requiring intensive care. However, vitamin D administered before a COVID-19 diagnosis did not show a significant benefit in disease progression [23]. Nevertheless, studies have shown that a low level of vitamin D and calcium micronutrients at COVID-19 admission is associated with a negative disease prognosis, thus maintaining nutritional balance is recommended [24]. Therefore, vitamin D supplements would only be beneficial up to an optimal level in the body or after a SARS-CoV-2 diagnosis.

Regarding vitamin C administration in severe COVID-19 cases, studies have not demonstrated a significant benefit, as the number of hospitalization days and mortality did not change significantly [16]. The behavior of vitamin consumption in this study at the beginning of the pandemic was higher for vitamin C, and four months later, vitamin C consumption decreased, and vitamin D consumption increased.

According to a randomized controlled trial, the use of mouthwash reduces the SARS-CoV-2 viral load at 15 and 45 minutes after use, especially mouthwash with chlorhexidine and povidone-iodine solutions [7]. Studies support the use of mouthwash as a potential measure to reduce virus transmission [12]. In this study, mouthwash consumption was higher at the beginning of the pandemic and decreased four months later. Additionally, oral hygiene products and antiseptic agents for cleaning dental prosthetics, which were previously recommended [11,29], remained valid during the pandemic. Proper oral hygiene had to be instituted, especially for treatments with a high degree of microbial plaque retention, such as orthodontic treatments, which could lead to dental damage [26].

Doctor's visit. The pandemic has influenced the accessibility to medical care, both for general and oral health, with reduced access as a result of the measures imposed during the pandemic, as well as the uncertainty created by them and the uncertain information regarding medical settings. As for dental care, uncertain information has created fear among both medics and patients. A study conducted in the UK shows that dental care professionals are at a high risk of exposure to SARS-CoV-2 infection through aerosols, but this risk can be reduced through proper protective equipment and effective infection control [33]. Another study from Croatia shows that due to the protective measures that dentists had to prevent the spreading of infection, pandemics had little impact on the dental profession[22].

Access to dental care has been reduced both during the emergency phase when restrictions were in place and after they were lifted. Immediately after the lockdown, 26 people (49%) postponed their dental visits due to the pandemic, and four months later, a smaller number of people postponed their visits for the same reason 8 (15.1%). Some patients may postpone their visits regardless of the pandemic, due to reasons such as treatment costs, fear, or anxiety about dentists. During the pandemic, patients mainly sought emergency dental care, with reduced access to conservative or maintenance treatments [25]. It is known that regular check-ups are necessary for orthodontic treatments, as they may induce changes in dental hard structures if not intervened in a timely manner [27,28]. Complex therapeutic interventions, which can be postponed were not considered.

Among the **limitations of the study** are: the small sample size; the recorded data are those reported by the participants, who may be subjective in their reporting, and recall bias may be present; stress level was recorded by a single question with answers on a five-item Likert scale, this being a method of evaluation inferior to other more complex and accurate indices, but this short form of assessment was chosen considering data was collected by telephonic interview, and is considered as having a relatively good indicative value of the level of stress [19].

V. Conclusions

The periods of emergency and alert during the Covid-19 pandemic were marked by significant changes in behavior among the Romanian population. These changes affected both young and adult individuals. A higher level of stress was observed, leading to a clinical picture dominated by fear, anxiety, and uncertainty related to government measures and uncertain information about the pandemic and the SARS-COV-2 infection. These states were more evident at the beginning of the pandemic (during the lockdown and emergency periods) than later during the alert period. In addition to lockdown measures, there was a decrease in accessing general medical and dental services. There was also a tendency towards self-medication (with increased consumption of paracetamol and vitamins) or postponing treatments, with possible consequences on the health status and quality of life, induced by modified behavior and self-medication in the absence of medical recommendations and supervision.

Conflicts of Interest: The authors declare no conflict of interest.

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