Correlations between anxiety levels, gastrointestinal manifestations and social isolation following the lockdown due to coronavirus outbreak in Romanian students

Alexandrina Curpan, Alexandra Săvucă, Luminița Hriscu, Alin Ciobîcă, Daniel Timofte

ABSTRACT
Background: People choosing to follow a university degree are exposed to different degrees of stress and anxiety that might be higher or lower depending on the level of study, field of interest and even age and sex. It is a well-known fact that social isolation with little to no contact with other people has an impact on the mental health of any individual. Objective: The aim of this study was to evaluate the level of anxiety and its gastrointestinal impact as a consequence of the lockdown caused by Covid-19. Method: A cross-sectional study was conducted by using a single questionnaire representing a variety of the Hamilton scale for anxiety (HAM-A). Results: Out of a total of 38 results, 17 results were excluded as they were composed of people that are not students, but belong to the working and retired class. Conclusions: There seems to be a correlation between anxiety levels, gastrointestinal manifestations and social isolation following the lockdown due to coronavirus outbreak, as observed in this preliminary study of ours in Romanian students, considering that more than half of the participants (61.91%) have reported mild to severe symptoms in all 14 categories of the scale and we observed that more than 50% of participants have reported mild to moderate severity in all of the items within the gastrointestinal category.
INTRODUCTION
Modern society brings a high degree of pressure on the shoulders of modern individuals whether it be work or money-related, school-related or simply day-to-day survival. These problems are diminished or amplified based on the social and cultural expectations, home country, financial status, family, age and even sex. Therefore, these types of worries might lead to different degrees of anxiety some being beneficial (it can give a warning of a possible dangerous situation) and some not so much with the risk of developing general/social anxiety disorders, major anxiety disorders or even suicidal thoughts if anxiety is combined with burnout for example (1). People in general tend to avoid situations that might trigger an uncomfortable degree of anxiety or that can worsen it (like the aforementioned factors) (2). Therefore anxiety disorders are a common trait of modern society at a global level (3). Anxiety becomes a disorder when symptoms like physical weakness, poor memory, fear (especially at the level of phobias), palpitations, gastrointestinal manifestations, poor concentration etc. become chronic making the individual feel uncomfortable and helpless (4).

Recent studies have suggested that there is a connection between gastrointestinal conditions and psychological symptoms, with patients with irritable bowel syndrome for example, a disorder characterized by abdominal pain and alterations in bowel habits, presenting elevated levels of anxiety, depression and somatization compared to healthy individuals(5). When it comes to gastrointestinal symptoms it is possible that by using samples from a clinical setting to not faithfully reproduce a general representative of the population with gastrointestinal symptoms due to the possibility of the selected patients to be more prone to these type of symptoms and to psychological ones as well, therefore the use of random selected participants might lead to different outcomes when anxiety and depression scales are applied. A study performed in Norway on 62651 individuals has revealed anxiety and depression as risk factors for 4 gastrointestinal symptoms (diarrhea, nausea, heartburn and constipation) while observing that anxiety is increasing the risk more than depression (6).

A pandemic is an epidemic that spreads globally, its spread being influenced by various factors with the ease of transmission from one person to the next and the movement of people being the most important ones (7). Sars-cov-2, the novel virus responsible for covid-19, was thought to be a simple flu virus in a specific region of China and has rapidly spread globally thanks to the wonders of modern transportation reaching the level of a pandemic within weeks from his first public appearance. So far there are no efficient or standard treatments for this virus, but several antivirals and vaccines are in different stages of clinical trials. A pandemic of this proportion has determined all countries to enter in complete lockdown with borders, school and any leisure facilities closed, meaning the possibilities of freely moving, socializing or simply going for a walk becoming highly restricted (8).

After performing a literature search, we observed that it is suggested that restrictive measures as the before mentioned ones have an impact on the psychological status of people as well as their emotional response to
the crisis at hand (9, 10). Similar studies conducted during previous outbreaks like MERS (2012) (11), H1N1 (in 2009) (12) and SARS (2002-2003) (13) on general populations have highlighted high levels of anxiety, avoidance behaviors and worries about the infection. This only supports the idea that during an outbreak, in addition to preventing the spread, an extensive attention should also be placed upon the public health response with focus on psychological problems (14). A study conducted on university students during the SARS epidemic in Hong Kong to assess anxiety levels has described higher anxiety levels in students from the teaching hospital where the outbreak occurred and lower in students of other university situated 20 km away (15).

A cross-sectional study performed on local residents in Liaoning Province, China during the covid-19 pandemic, targeting mental health observed that more than half of the participants did not feel helpless due to the pandemic, but at the same time 52.1% felt horrified and apprehensive. They also observed an increased care amongst family members with only a mild stressful impact (16). A study performed on undergraduate and postgraduate students from University of Jordan to see if there is a correlation between conspiracies theories and anxiety levels regarding covid-19 pandemic has revealed a correlation between lower level of knowledge and higher levels of anxiety with females and participants with low income being more prone to believe that the disease is a conspiracy thus higher anxiety (17).

Therefore, we planned this study to investigate the levels of anxiety and any possible gastrointestinal manifestation among individuals from different age groups at the beginning of the lockdown and to identify the most common symptoms. MATERIAL AND METHODS

A cross-sectional study was performed in the north-eastern region of Romania on students enrolled at University of Agricultural Sciences and Veterinary Medicine „Ion Ionescu de la Brad” of Iasi that expressed a desire to be part of the study one week (22 of March 2020) after the instauration of the lockdown in Romania. This study was approved by the Ethical committee of USAMV Iasi. The questionnaire was performed online using Google Forms by sending the targeted individuals an accession link to it with the first question being either they want to be part of the study or not. Participants were enrolled in different cycle of studies starting from bachelor and going till PhD level as well as in different faculties or departments. Medical history was not an exclusion criteria as we wanted to measure the anxiety levels on a general setting rather than having a well-controlled study group. Before handing over the accession link, all participants were informed about the aim and objective of the study. We didn’t have any dropouts and we managed to get a diverse group of participants in age and sex.

The survey included social and demographic information of the participants (age, sex, locality and social class – student/working/retired) and by applying Hamilton scale for anxiety (HAM-A) we gathered information like fears, insomnia, depression, cardiovascular, gastrointestinal, respiratory symptoms etc. The test had no time limit, but the time required to fill it in is about 20 minutes.

RESULTS

A total of 38 individuals participated in the study, with ages between 20 and 60, but we excluded 17 of them based on whether they were studying at the moment or not, leaving us with 21 final participants – 16 females and
5 males (Figure 1). Amongst the 21 final responses, all 5 males belong to the 20-30 age group, while for females 15 are in the 20-30 age group and 1 in the 30-40 age group.

After gathering all of the results and calculating the score according to the HAM-A scale, the results were divided into mild severity (a score <17), mild to moderate severity (score of 18-24) and moderate to severe (25-30). Most participants fell between the limits of mild to moderate category (42,86%), followed by mild severity (38,10%) and ultimately moderate to severe (19,05%) (Figure 2).

The average value is 18, with the lowest score standing at 7 and the highest at 33, with the rest of the values being in normal limits compared to the standard deviation of the mean (Figure 3).
Fig. 3 HAM-A results. The results of a number of 21 participants with a mean score of 18 and a standard deviation of 6.711752 the lowest score (7) belonging to participant number 13 and the highest (33) to participant number 1. All the other values fall between normal limits.

When it comes to gastrointestinal manifestations of anxiety (difficulty in swallowing, wind abdominal pain, burning sensations, abdominal fullness, nausea, vomiting, borborygmi, looseness of bowels, loss of weight, constipation) based on the scores given by participants on the symptoms taken all together, the values varied from absent to moderate (Figure 4).

The mean value is 1 and the standard deviation is 0.69, all values fall between normal limits. When it comes to symptoms taken separately the most common and highest ranked ones were borborygmi (with a mean score of 1.47), abdominal pain (mean score of 1.428) and burning sensations and
nausea/vomiting (both with a mean score of 1.23). Overall, the severe symptoms have been registered only 4 times in 3 participants and were for borborygmi, abdominal pain, burning sensation and weight loss, the rest of the symptoms were absent to moderate in the majority of participants.

CONCLUSIONS
There seems to be a correlation between anxiety levels, gastrointestinal manifestations and social isolation following the lockdown due to coronavirus outbreak, as observed in this preliminary study of ours in Romanian students, considering that more than half of the participants (61.91%) have reported mild to severe symptoms in all 14 categories of the scale, with almost half (42.86%) reporting at least moderate symptoms in severity.

When the focus was put onto gastrointestinal manifestations, we observed that more than 50% of participants have reported mild to moderate severity in all of the items that fall within this category. As mentioned at the beginning of this article, 4 specific symptoms have been previously correlated to be increased by anxiety, those symptoms being diarrhea, nausea, heartburn and constipation. We also observed in our preliminary study, a general prevalence of two of them – heartburn and nausea, but the most common one and with the highest mean value was borborygmi which might be associated with certain bowel disorders, like irritable bowel syndrome when is present with other signs as well as it is not enough on its own. Our study is limited by the number of subjects and the fact that we did not analyze their general anxiety level before the lockdown. Therefore, we suggest that more studies should be made on this topic and maybe on a larger scale that might give a clearer correlation between anxiety levels, gastrointestinal manifestations and social isolation.

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Correspondence:

Luminița Hriscu,
Faculty of Veterinary Medicine, University of Agricultural Sciences and Veterinary Medicine “Ion Ionescu de la Brad” of Iasi, 3rd Mihail Sadoveanu Alley, Iași 700490, Romania,
lumidih@yahoo.com

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