

COVID-19 A POTENT COCKTAIL WITH ASSOCIATED MENTAL PROBLEMS: THE PSYCHOSOMATIC EFFECTS IN PREGNANT WOMEN - AN INTERDISCIPLINARY APPROACH

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Abstract. *Objective.* The coronavirus disease (COVID-19) pandemic is having a profound effect on mental and physical health across a wide range of categories including pregnant women. We explored the psychological effects of COVID-19 by analyzing it from several perspectives which reflect the authors' backgrounds (medicine, psychology, marketing) and set out to determine the full extent of consequences in a group of pregnant women. *Methods.* We chose the test and retest method to establish the initial level of depression, anxiety, self-esteem, melancholy. We also used separate questions about the occurrence of somatizations following the clinical criteria in a convenience group that was later retested. *Results.* As hypothesized, all tests and questions indicated statistically significant increases in terms of the measured level of depression, anxiety, self-esteem, melancholy and somatizations. *Conclusions.* Future research should focus on the mental health effects of the COVID-19 pandemic on vulnerable groups and the population as a whole.

Keywords: pregnancy; COVID-19; depressive disorder; anxiety disorder; low self-esteem; melancholic depression.

INTRODUCTION

The Coronavirus pandemic (COVID-19) directly and indirectly affects the mental health of societies around the world [1,2]. The pandemic is occurring against the backdrop of increased prevalence of mental health issues in the world as reported by various studies regarding depression, melancholy, low self-esteem and anxiety [3-11].

The analyzed target group is the population of pregnant Romanian women considered by the authors a population at risk in this difficult period, from a medical, economic and mental health point of view. The starting point of the authors was the relevant literature carried out on other nationalities, considering pregnant women as a population at risk [3-9]. This research began before the state of emergency was

declared and is essentially a lot of convenience, giving thus the opportunity to analyze data from before and after the imposition of the isolation measures.

This research complements the studies already published regarding the pandemic. However, it comes with novelty elements. This study offers a unique perspective by combining the following conditions: psychological questionnaires (depression, anxiety, self-esteem, and melancholy), interdisciplinary analysis, the somatizations associated with the respective psychological conditions and the fact that it captured the period before and after the state of emergency was declared in Romania on March 16, 2020 (it offers an image of the situation before and after a few weeks of limitation of personal mobility rights).

The team's background spreads across various fields of study such as: medicine, psychology (clinical

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psychology and psychology applied to the field of national security), and marketing. Based on this asset, we analyzed from each perspective the mechanism involved in mental health problems and its relation to COVID-19.

We focused on depression, anxiety disorder, melancholic depression, low self-esteem, and somatizations because of their deleterious effects [12-19].

MATERIALS AND METHODS

Instruments – Questionnaires

The questionnaires chosen by the research team were: BECK's (depression assessment), Hamilton anxiety scale – HRSA, Rosenberg self-esteem test, Bech-Rafaelsen Melancholia Scale (MES). The administration of the tests was done by observing the indications from the license of use and the tests were offered in the native language (Romanian). We used the respective translated tests, endorsed by the competent socio-professional organization at national level (Romanian College of Psychologists).

Participants

The study group was one of convenience (convenience sampling, opportunity sampling), as the pregnant women from the initial group (450 individuals) received the 4 questionnaires for depression, anxiety, low self-esteem, and melancholy – before the COVID-19 outbreak that determined the first lockdown (called “state of emergency”) in Romania. The women included in the study did not show clear signs of psychological or psychiatric disorders and did not have a history of problems of a psychological or psychiatric nature.

From the initial group, 200 women agreed to retake the questionnaire at an interval of 4 weeks from the first test, during the first month of “state of emergency” in which Romania had the strictest rules imposed to combat this outbreak.

Procedure

The implemented procedure was specific for the test and retest method. The time between the first and second tests (T1 and T2) was 4 weeks. The T1 period was between March 1 and March 8, 2020, and the T2 period was between 30 March and 5 April 2020. The first round of testing (the T1 time) lasted for about one week for implementation and ended a few days before the start of the state of emergency. For

the standardization of the test and retest, the pregnant women who were willing to participate in the retest were asked to complete the test 4 weeks after the initial test date. To assess the incidence of somatization at the time of the second testing (T2), we added specific questions for the clinical elements of somatizations. The questions aimed to self-evaluate the occurrence of the respective somatizations during the pandemic. We analyzed the presence of somatizations related to depression, anxiety, low self-esteem, melancholy, and classified them by the anatomical system that had somatization. We considered all the changes that affected the good functioning of the daily activity through intensity, duration, frequency, or periodicity. We looked for digestive manifestations, respiratory manifestations, cardiac manifestations, urogenital manifestations, and insomnia, as follows:

- digestive manifestations: digestive pain, nausea, acidity, excessive peristalsis, transit changes;
- respiratory manifestations: feeling of shortness of breath, feeling of suffocation, accelerated breathing without just cause (without physical effort, out of the blue);
- cardiac manifestations: tachycardia without apparent cause;
- urogenital manifestations: increase in urinary frequency not associated with behavioral changes, such as excessive water consumption; in many cases manifested as nocturnal urination;
- insomnia, not due to urogenital manifestations (night urination) but caused by episodes of intense screaming, crying, thrashing, and a depiction of nightmares that could only be described as “night terrors”.

These manifestations were considered only in cases where the patient reported that the proper functioning of daily activities was affected.

Hypothesis

Main hypothesis

1. COVID-19 induces very high levels of depression in pregnant women.

Secondary hypothesis

2. COVID-19 induces, in pregnant women, conditions associated with depression such as anxiety and low self-esteem, and depression with melancholic features.

3. There is, in pregnant women during the COVID-19 pandemic, an occurrence of somatizations structured by the digestive, cardiac, respiratory, and urogenital systems, respectively.

4. There is an increase in insomnia (impaired circadian rhythm) in pregnant women during the COVID-19 pandemic.

RESULTS

Descriptive analysis

A close analysis of the histogram shows that the average age of pregnant women is 29.42 years (minimum age of 18 and maximum age of 40). According to the Gaussian curve, no significant inclination was identified in any direction (Fig. 1).

According to the distribution of pregnant women by trimester, out of the 200 pregnant women, 71 were in trimester 1, 64 in trimester 2 and 65 in trimester 3. The distribution by pregnancy quarters was close to uniform. Out of the total of 200 pregnant women, 63 were domiciled in rural areas, while 137 were domiciled in urban areas.

As regards to addictions (alcohol and tobacco), out of the 200 pregnant women, 156 said they did not drink alcohol regularly. However, 44 did consume alcohol regularly. At T2, 168 pregnant women claimed that they did not consume alcohol regularly. The other 32 pregnant women considered that they consumed alcohol regularly.

In terms of tobacco use, 91 pregnant women claimed that they had not consumed tobacco regularly. However, most pregnant women (109) claimed to have consumed tobacco regularly. At T2, the majority of pregnant women (144) claimed that they consume tobacco regularly. On the other hand, only 56 pregnant women claimed that they did not consume tobacco regularly.

Inferential analysis of results

Mental health conditions (Test-Retest)

In depression (Test-Retest), the first test averaged a score of 16.41 (a value between 16-23 corresponds with average depression). The second test found that the mean depression increased to 28.41 (a value between 24-60 represents severe depression). The average of the results was significantly increased due to the extreme values (50-60), reported by a significant number of individuals. The differences between the first and the second test were statistically significant (Table 1). The first hypothesis was, therefore, confirmed.

In terms of anxiety, the average pregnant women tested score was 9.82 (a value between 6-14 represents slight anxiety). During retesting, an increase to 29.16 (a value between 29-42 represents severe anxiety) was identified. The average of the

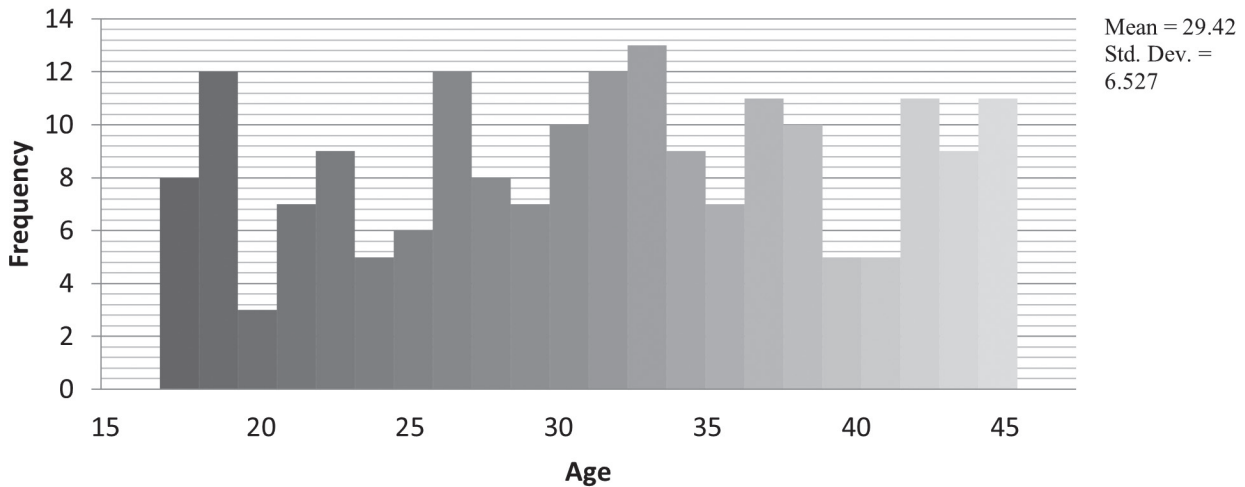


Figure 1. Age distribution of pregnant women.

Table 1. T-test for mental health conditions (Test-Retest); differences of average scores T1-T2

Disorder	Mean	Std. Deviation	Std. Error Mean	Paired Differences		t	df	Sig.(2-tailed)
				95% Confidence Interval of the Difference				
				Lower	Upper			
Depression	-12.005	7.594	.537	-13.064	-10.946	-22.356	199	.000
Anxiety	-19.345	6.149	.435	-20.202	-18.488	-44.495	199	.000
Self-esteem	12.540	6.884	.487	11.580	13.500	25.760	199	.000
Melancholy	-6.355	5.003	.354	-7.053	-5.657	-17.962	199	.000

results significantly increased due to the extreme values (43-56 represents very severe form of anxiety) which, to the concern of the research team, reported by a significant number of participants. The differences between the first and the second test were statistically significant (Table 1).

The self-esteem score showed an average of 33.69 (a value between 17-33 represents average self-esteem and a range between 34-40 corresponds to high self-esteem) in the first test and 21.15 in the second test. The average of the results was significantly lower due to the extreme lower values which, were reported by a significant number of patients. The differences between the first and the second test were statistically significant (Table 1).

At the first test, the average melancholy score was 10.57 (a value between 7-10 represents mild melancholic depression and a range between 11-14 less than major melancholic depression). At the second test, the score increased to 16.93 (a value between 15-25 represents major melancholic depression). The differences between the first and the second test were statistically significant (Table 1).

The second hypothesis was, therefore, confirmed.

In terms of digestive manifestations, at the first test, 154 pregnant women (77%) said they did not have any digestive manifestations, while only 46 (23%) said they have digestive manifestations. At the retest, most pregnant women, i.e., 120 (60%), reported digestive manifestations; the number of pregnant women who did not show digestive manifestations was 80 (40%). The incidence of digestive somatizations statistically significantly increased from T1 to T2 (Table 2).

Of the 200 pregnant women, at T1, 166 (83%) reported no respiratory manifestations. The number of pregnant women who reported respiratory manifestations was 34 (17%). During the retest, most pregnant women, i.e., 135 (60%), reported respiratory manifestations; the number of pregnant women who did not report respiratory manifestations was 65

(32.5%). The incidence of respiratory somatizations statistically significantly increased at T2 (Table 2).

At T1, 170 (85%) pregnant women did not report cardiac manifestations. The number of pregnant women who reported cardiac manifestations was 30 (15%). At retest, the majority of pregnant women, 137 (68.5%), reported cardiac manifestations; the number of pregnant women who did not report cardiac manifestations was 63 (31.5%). The incidence of cardiac somatizations statistically significantly increased at T2 (Table 2).

At T1, 170 (85%) pregnant women reported no urogenital manifestations. The number of pregnant women who reported urogenital manifestations was 30 (15%). During the retest, most pregnant women, i.e., 117 (58.5%), reported urogenital manifestations; the number of pregnant women who did not show urogenital manifestations was 83 (41.5%). The incidence of urogenital somatizations statistically significantly increased at T2 (Table 2).

At T1, 165 (82.5%) pregnant women did not report insomnia. The number of pregnant women who reported insomnia was 35 (17.5%). At retest, most pregnant women, i.e. 124 (62%), reported insomnia; the number of pregnant women who did not report insomnia was 76 (38%). The incidence of insomnia statistically significantly increased at T2 (Table 2).

The third and fourth hypothesis were confirmed.

DISCUSSION

Psychosomatic medical research has shown an overlap of mental health pathologies that correlate with physiological problems. Psychological conditions contribute to increased risk of disability [20-22]. An overlap of anxiety, depression, low self-esteem, and in some cases intense somatization generated the interest for this study.

The research team studied depression during pregnancy and tested and retested 200 pregnant

Table 2. T-test for Somatic symptoms (Test-Retest); differences in average individual somatization frequency, as resulted from T1-T2

Manifestations	Mean individual frequency	Std. Deviation	Std. Error Mean	Paired Differences		t	df	Sig.(2-tailed)
				95% Confidence Interval of the Difference Lower	Upper			
Digestive	-.370	.484	.034	-.437	-.303	-10.811	199	.000
Respiratory	-.505	.501	.035	-.575	-.435	-14.249	199	.000
Cardiac	-.535	.500	.035	-.605	-.465	-15.131	199	.000
Urogenital	-.435	.497	.035	-.504	-.366	-12.378	199	.000
Insomnia	-.445	.498	.035	-.514	-.376	-12.632	199	.000

subjects. Thus, the moment before and after the lockdown (imposed by the state authorities) was captured by coincidence.

In the statistical analysis of the results, we must mention that the average of the results was significantly increased due to the extreme values which, to the concern of the research team, did not prove to be few. Test scores include a large margin for severe forms of psychological entities analyzed by each questionnaire

There are many theoretical directions under the dome of psychology, from the multitude of psychotherapy schools [23] from the best known to exotic ones. Some are closer to medical perspectives and others are more focused on spirituality [24], in some cases, we have specific forms that have been included in certain areas of applied sciences: made and adapted to the needs imposed by the field (applied psychology in the field of national security) [25]. In this case the individual analysis reveals a three-dimensional image similar to a faceted diamond with research dimensions that is inspired by the multi-axial system in DSM 4 but with additional dimensions and sub-dimensions in some cases. Thus, the individual analysis noticed a depressive nucleus with 2 facets, represented by anxiety and respectively low self-esteem and occasional inclusions of melancholy (depression with melancholic features). The psychological fortitude image or an element called “pillars of self-esteem” that reflects the psychological resilience is constantly oscillating. The pillars of self-esteem are a 3-dimensional construct that has 3 facets as follows: 1) “unconditional self-love” - body scheme, self-appreciation; 2) “Social status” - social security / social level and validation by others; 3) acceptance of sexuality (masculinity and femininity of subjects). The last pillar has major fluctuations - something to expect if we report to the group analyzed (pregnant women) but also pillar 2 which we think that reflects the perception of pregnant women on job security (the economic future for them and their spouses) and their place in this construct.

By affecting these 2 pillars changes were induced in the first pillar. Mechanisms could involve compensation in the form of an “induced narcissism”, decrease of self-esteem, anxiety attacks or a form of nagging and distancing with melancholy-like elements.

One element that needs to be addressed is that of vices. Though this aspect was not screened in this research - the declarative level (even if subject to biases) is worrying. Thus, we can hypothesize that the subjects were trying to combat the personal stress associated

with the limitation of physical mobility (excluding going to work and performing essential activities). A new direction of research is, therefore, currently being considered.

The psychological effects of the Covid-19 pandemic were very significant, especially in at-risk populations. COVID-19 induces very high levels of depression in pregnant women. Associated pathologies of depression that can act as precipitating factors, such as anxiety and self-esteem, had an astonishing growth.

Limitations

The implemented procedure was the test and retest method. Thus, the possibility of bias was present as we relied on the honesty (truth bias) of the respondents. The time between the firsts and second tests (T1 and T2) was 4 weeks. Thus, we relied on the respondent's compliance (compliance bias) with the test and retest interval.

For of somatizations' analysis, we added specific questions at the time of the second testing (T2). We took into account all the changes that affected the good functioning of the daily activity through intensity, duration, frequency, or periodicity – which could imply a degree of subjectivity.

In conclusion, this study explored depression, anxiety, self-esteem, melancholy, and somatization by test-retest technique in a population of Romanian pregnant women and found significant changes in the constructs being examined.

All tests and questionnaires indicated statistically significant increases in terms of the level of depression and anxiety measured.

All tests and questionnaires indicated statistically significant increases in a particular form of depression: melancholic depression. All tests and questionnaires indicated a statistically significant increase in associated psychological elements, such as low self-esteem and somatizations.

This research will pave the way for new studies on other risk categories (e.g.: ethnic minorities).

Conflict of interest

The authors declare no conflict of interest.

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