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Analysis of the Stress, Anxiety and Healthy Habits in the Spanish COVID-19 Confinement

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Abstract

Objectives: These were to identify the perceived levels of stress and anxiety in the confined population, to identify if there is an evolution (increase or decrease) in time and provide health educational messages while participating in the study.

Method: Through a questionnaire sent via de social networks, the participants were requested to answer two standardized and validated tests (one on anxiety an done on stress levels) and the daily adherence to a series of habits.

Results: The Stress and anxiety levels increase according to the age and the responsibilities associated with it. These levels increase in an initial moment, showing a decrease as the days in confinement increase. There is a confirmed relation between stress and anxiety and between these variables and the days in confinement. The adherence to healthy habits decreases as the days in confinement increase. In this sense, we have seen that the higher the age range the more adherence to healthy habits.

Results: The data obtained showed the evolution of the three elements to study and also provided tools and tips for the participants so as to cope with the situation.

Keywords: Confinement; Anxiety; Stress; Healthy habits

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Introduction

During the 21st century we have been through various viral diseases outbreaks which have represented a serious threat to the worldwide public health. In 2002-2003 the Severe acute respiratory syndrome coronavirus or SARS-CoV, followed by the H1N1 influenza in 2009 and the Middle East respiratory syndrome coronavirus (MERS-VoC) was identifyed in Saudi Arabia in 2012 [1]. Not to forget the Ebola outbreak between 2012-14 that eventually arrived to Europe and the US, which did create much more expectation than deaths. Following the timeline, we arrive to the end of 2019, where, according to WHO [2] the first case of COVID-19 was confirmed in the Wuhan province of China on the 31st of December, being diagnosed initially as "pneumonia of unknown etiology".

The first cases of COVID-19 were linked to Huanan Seafood Wholesale Market of Wuhan and due to the high amount of animals that are present in this market, the initial assumption was that the transmission was animal-to-human. Although as the virus started spreading, it was confirmed that the human-to-human contact was also a way. It was also identified that the asymptomatic people could also transmit the virus. With these elements in place, the isolation of the population to prevent the outbreak was the key measure for containment [1].

As the cases were expanding through the globe, the different governments were taking the actions that considered necessary with the information that was being provided by the studies and evidence that was being generated. For China, the decision was clear and simple: everyone had to stay at home, and they achieved that over 40 million people stayed at home, reducing the transmission. As China did, the governments where the cases were being identified had to face a tough choice, either declare states of emergency and confine their citizens at home or risk-taking other exposure reduction measures to maintain the welfare state. Each country started their own way, but eventually the state of alarm or emergency (as each country may call it) was declared and the citizens had to stay at home. Initially keeping some work activities ongoing and shifting everything possible to online and at-home work and eventually declaring which key sectors had to continue working, being this, possibly, one of the

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most complicated and difficult decisions that each government has had to take and maintain in the recent years.

Shifting away from the political decisions and focusing on the population, the fact that the liberty of going out of the house was cancelled generated a scenario of stress and anxiety. Once the person is faced with a situation that outweighs its coping mechanisms, the stress comes into scene. There are several types of stress depending on the time of exposure, acute stress, episodic and chronic, as well as post-traumatic. The first phase is the alarm phase or getaway, where the body gets ready to escape getting ready all the available energy. The second phase or resistance phase happens when the alarm phase is maintained in time without any relaxation. The person tries to get back to a normal situation and will be able to depending on the coping mechanisms that he/she may have. The third [3] phase is the exhaustion phase. It happens when the stressful situation is prolonged in time. This phase is the one that will generate the bigger amount of physical and psychological problems. The population will eventually go through the different phases depending on the coping mechanisms that they have.

Several initiatives have aroused since the in-house-confinement that started on the 14th of March in Spain such as the 20:00 hrs applause and thanks to all those that are still working and helping others (nurses, doctors, firemen, police, shopkeepers…), game initiatives in the different apartments, virtual (skype, whatsapp…) coffees or drinks, virtual running races…all of which have an stimulating and positive effect on the person, trying to keep busy and accepting the current situation avoiding to arrive to the third phase, or exhaustion.

The objectives of the study are:

1. Identify the perceived levels of stress and anxiety in the confined population.
2. Identify if there is an evolution (increase or decrease) in time.
3. Provide health educational messages while participating in the study.

With the results obtained, we have been able to fulfill the 3 objectives and confirm the beginning of the decrease in the levels of stress of the population.

Methods

With the outbreak and increase of the cases of the COVD-19, the authorities and professionals started identifying the different areas where the coronavirus was affecting the population and different researches started coming out, flooding the society with questions. This was an element around which this study pivoted and determined the study design.

When designing the study the following factors were taken into consideration:

- Population to where it was going to be sent. As it was oriented to all the population that is confined, it was designed to be clear and simple to understand by everyone.

Taking into consideration that the age is a key element in the confinement, if complex, academic questions were used, the extremes of age (14-25 years and over 65) could face problems in filling it if they did not understand it.

In the same sense, to be able to participate, no personal identification information was requested (mail, name, address, ID card…) so as to eliminate the doubts on "*what are they going to do with my information*" of the participants. This is a bias that was assumed in benefit of the results.

- Way of dissemination: The method of dissemination chosen was the social networks and looking for the snowball effect. The final ways that were used were WhatsApp, LinkedIn and Tweeter. As a professor I shared it with my students of the Camilo Jose Cela University and as an alumni the LSHTM (London School of Hygiene and Tropical Medicine) included it in the weekly newsletter on COVID-19 which was sent on the 1st of April.
- When mixing both previous elements and third decision was taken. It should be short, even if that meant not registering all the detailed information that could be useful. The final decision was to arrive to as much population as possible rather than to get more detailed information. In this sense, the questionnaire takes between 3-4 minutes to be filled in.

The elements that were decided were:

a. First section with basic demographic data.

b. Second section with basic questions on the compliance of several daily habits.

c. Third section with the questionnaire on anxiety perception

d. Fourth section with the questionnaire on stress perception

- Once the questionnaire was completed, we realized that there were already several questionnaires being sent and they all had one thing in common, they all request information from the participant, but the participant does not receive anything in return. Considering this point, it was decided to include health promotion messages that would change every 7-10 days, promoting different aspects:

  a)Healthy sleep (sleep more than 7 hours and avoid use of screens 2 hours before going to bed).

  b) Healthy eating.

  c) Exercise recommendations to be done at home.

  d) Positive thinking.

- With this frame, the intention was to measure the evolution of the perceived stress and anxiety throughout the time of exposure to the confinement. The idea was that the participants would cover the questionnaire once a week to be able to identify the evolution of the stress, anxiety and adherence to selected healthy habits.

To be able to achieve the objectives, the study designed is an ecological longitudinal, observational study.

The questionnaire was sent for the first time on the 22nd of March (8 days after the declaration of the state of alarm in Spain). The

platform used was Whatsapp, where it was shared with personal contacts and groups of work. From then onwards, the link has been active and has been shared via the previously described platforms.

The variables choses for each of the sections were:

- Section on daily habits: The participant should answer if he/she had done any of this activities within the last day:

Sleep over 7 hours, shower, wear clean clothes, over 30 minutes of exercise, take 3-5 healthy meals, read, watch TV, surf the web, Talk with other people, online gaming, cook.

There were 2 questions at the end of the section requesting the perception of the participant on:

1. Do you consider to have a healthy daily routine?
2. Do you consider to have healthy habits?

- Section on the perception of anxiety

The questionnaire chosen is the Inventory of anxiety situations and responses (ISRA). It was originally designed by Cano and Miguel [4] in 1986 and allows to measure the anxiety of any individual that is over 15 years old. The test will evaluate the levels of anxiety considering the general anxiety personality feature. Separately, it analyses the three systems: the cognitive (what we think), the physiological (what we feel) and the behavioral motor (what we do). This test also allows us to analyze four specific anxiety features and areas which are: anxiety in evaluation situations, anxiety in social or interpersonal situations, anxiety in phobic situations and in everyday activities [5]. It has a good capacity for discriminating groups as it does allow to differentiate subjects that do present disorders from those that don't.

Although the internal consistency of this scale depending on the variables changes, it has been observed that it varies between 0,92-0,96 [6]. This test is composed of 224 questions, which, despite its interest for the study is not possible to use as the participants will not complete it. In its case we have used 12 questions to identify three key symptoms of anxiety:

1. Cognitive responses: Concern - Negative thoughts or feelings about oneself - Insecurity - Fear that anxiety will be noticed and what they will think if this happens.
2. Physiological responses: Discomfort in the stomach - Sweat - Tremor - Tension - Palpitations, cardiac acceleration
3. Motor responses: Repetitive movements (feet, hands, scratching, etc.) - Smoking, eating or drinking excessively - Avoidance of situations

- Section on the perception of stress: The questionnaire chosen was the PSS-10 (Perceived Stress Scale 10) as it is one of the most used scales to analyze the perception of stress and takes into consideration three perspectives [7]: the environmental perspective, where the focus is on the stressful events that the person might have gone through. The second perspective analyzed is the psychological one, where it measures the subjective experience and emotional response to the stressor. The third and last one is the biomedical, as it studies the physiological systems involved in dealing with life issues.

This scale has different versions, being the original one the PSS-14 as well as other evolutions that tried to refine the questions. The two most used are the PSS-10 and the PSS-4, having been translated and applied in different languages, being the Spanish one of them [8].

Although the internal consistency of this scale depending on the variables changes, it has been observed that it varies between 0,74-0,91 [9,10].

The scale is composed of 10 questions that have a 5 element Likert scale value going from Never, very few, sometimes, many times and always and the values are codified from 0 to 4, except for questions 4,5,7 and 8, where the values are inverted. The higher the score, the higher the perception of stress [11,12].

The questionnaires were sent using the platform "google forms" as it is widely available, and everyone can access it from their devices (user friendly and adapted to mobile devices).

The results obtained in Microsoft Excel format from the questionnaire platform and were analyzed using the Statistical Package based on the "R" engine, Jamovi.

Results

The participants selected in this phase of the survey were to be any and all people living in Spain who are over 14 years old (selected as the least age for the age frames, being these of 10 years in difference 14-25). Taking the whole of the Spanish Population [13] from the Spanish National Statistical Insitute (INE) for 31st December 2019, the total Spanish population is 47.100.396. As we are only going to consider the population over 14, this leaves us with a total of 40.949.666 people. The last of the elements considered is the key to the study, and that is the heterogeneity, which has been calculated to be 0,9 (being very conservative). This means that we consider that 4.094.966 people are not respecting the confinement, due to professional reasons (still have to go to work) or personal criteria.

Once the survey was launched, the number of participants to make this a significant study with an IC of 95% and a 5% error was 139.

Having launched the study on the 22nd of March, the Spanish participants sought was obtained 17 days later with a total of 144 participants (by the 7th of April). Although the total amount of participants was of 196, being the 55 remaining participants from other parts of the world.

The total amount of questionnaires filled were of 200. Out of this 147 were from Spain and the rest from different areas of Europe (33 from Italy, Germany, UK, Netherlands, Switzerland) the United States (8), Africa (4-South Africa and Nigeria), Asia (7 – United Arab Emirates and India) and Oceania (1 from Australia).

Focusing in the Spanish participants, 32% of them were male and 68% female.

When considering the age of the participants 23% of them were

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between 16-25, 15% between 26-35, 22% between 36-45 and 22% between 46-55, 9% between 56-65 and 9% of participants over 65 years.

The education of the participants was 3% with primary education, 17% with secondary education or professional training, 76% with university degrees, 2% with postgraduate degrees and 2% with PhDs.

The Stress levels have a tendency to increase with as the age ranges increases, arriving at its maximum for the 56-65 ages, as these are the key productive population and the ones in a most vulnerable position for economic distress.

As for the anxiety levels they are equally distributed among the age ranges.

It is interesting to see the adhesion to healthy habits, as the older the participant, the more adhesion to healthy habits that they present.

The results of the comparison between the anxiety and stress variables according to the number of days in confinement shows an initial increase followed by a slight decrease, ending in similar values to those of the beginning of the study. Whereas the adhesion to healthy habits show a decrease as the days in confinement increase (**Figure 1 and Tables 1-4**).

We performed the Shapiro-Wilk normality test to identify of the data with a 95% confidence interval, therefore the valules with $p>0.05$ are not normally distributed.

If we look into the evolution to the adhesion of healthy habits we find:

As we can see, the habit of talking with other people, having a shower, wearing clean clothes is kept throughout the entire timeline, whereas others such as sleeping over 7 h have bigger variances.

Having developed the study throughout several days has provided with key results that have been:

- The Stress and anxiety levels increase according to the age and the responsibilities associated with it. The fear for economic loss might be a factor to take into consideration.
- The higher the age ranges the more adherence to healthy habits.

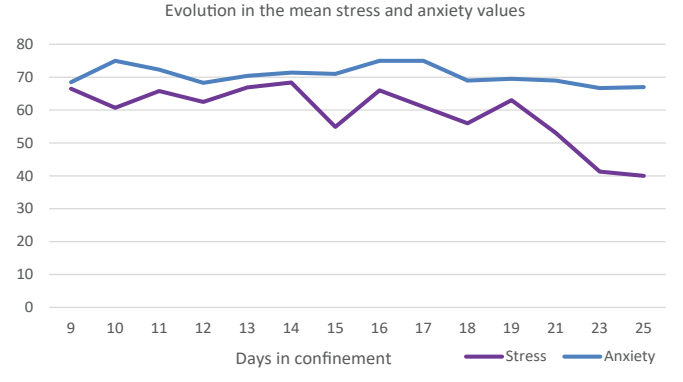

Figure 1 Mean stress, anxiety and adherence to healthy habits values paired with the number of days in confinement.

Table 1 Mean values of Healthy habits, anxiety and stress perceptions.

	Age	Stress	Anxiety	Healthy habits
Mean	14-25	57.9	69.4	69.4
		(26-78)	(62-82)	(62-82)
	26-35	57	71.2	71.2
		(30-78)	60-82)	60-82)
	36-45	60.6	71.7	71.7
		(34-88)	(60-95)	(60-95)
	46-55	64.1	69.9	69.9
		(34-84)	(60-83)	(60-83)
	56-65	70	68.8	68.8
		(56-88)	(63-77)	(63-77)
	>65	66	71.6	71.6
		(56-84)	(63-77)	(63-77)

Table 2 Evolution of mean values of Stress, anxiety and adhesion to healthy habits according to days confined.

	Days in confinement	Healthy Habits	Anxiety	Stress
Mean	9	9.63	68.5	66.5
		(9-11)	(60-80)	(60-80)
	10	9.33	75	60.7
		(9-10)	(72-80)	(42-70)
	11	9.63	72.3	65.8
		(9-10)	(62-77)	(58-72)
	12	7.75	68.3	62.5
		(6-10)	(60-73)	(56-68)
	13	8.34	70.4	66.9
		(5-11)	(60-95)	(38-88)
	14	8.6	71.4	68.4
		(7-10)	(60-77)	(56-80)
	15	7.61	71	54.9
		(4-11)	(63-82)	(26-88)
	16	8.5	75	66
		(7-10)	(70-80)	(60-72)
	17	8.5	75	61
		(8-9)	(70-80)	(60-62)
	18	8.33	69	56
		(7-10)	(60-77)	(34-70)
	19	8.29	69.5	63.6
		(5-10)	(60-83)	(46-76)
	21	8.43	69	53.1
		(6-10)	(65-73)	(34-78)
	23	8.33	66.7	41.3
		(7-10)	(65-68)	(34-50)
	25	5	67	40
		(5-5)	(67-67)	(35-45)

Table 3 Normality test (Shapiro-Wilk).

			W	p
Days in confinement	-	Stress	0.968	0.002
Days in confinement	-	Anxiety	0.984	0.09
Days in confinement	-	Healthy habits	0.984	0.084
Healthy habits	-	Anxiety	0.973	0.006
Healthy habits	-	Stress	0.978	0.019
Stress	-	Anxiety	0.995	0.925

Table 4 Ratio of adhesion to healthy habits.

Date	Sleep >7h	Shower	Clean clothes	Exercise (30min)	3-5 healthy meals	Read	Watch TV	Surf the web	Talk with other people	Online gaming	Cook
22/03/2020	1,00	1	1	0,75	1	0,75	1	1	1	0,25	0,88
23/03/2020	1,00	1,00	1,00	0,33	1,00	1,00	1,00	1,00	1,00	0,00	1,00
24/03/2020	0,88	1,00	1,00	0,88	1,00	0,88	1,00	1,00	1,00	0,00	1,00
25/03/2020	0,00	1,00	1,00	1,00	0,75	0,50	0,75	1,00	1,00	0,50	0,25
26/03/2020	0,68	0,86	0,86	0,66	0,89	0,68	0,75	0,98	1,00	0,27	0,70
27/03/2020	0,60	1,00	0,80	0,40	0,80	0,80	1,00	1,00	0,80	0,40	1,00
28/03/2020	0,64	0,86	0,81	0,50	0,78	0,53	0,67	1,00	1,00	0,14	0,69
29/03/2020	0,50	1,00	1,00	0,50	1,00	1,00	1,00	1,00	1,00	0,00	0,50
30/03/2020	1,00	1,00	1,00	0,50	1,00	1,00	1,00	1,00	1,00	0,00	0,00
31/03/2020	0,33	1,00	1,00	0,67	1,00	0,33	1,00	1,00	1,00	0,33	0,67
01/04/2020	0,48	0,90	1,00	0,86	0,81	0,57	0,71	1,00	0,90	0,24	0,81
03/04/2020	0,71	1,00	1,00	0,57	0,71	1,00	1,00	1,00	1,00	0,14	0,29
05/04/2020	0,67	1,00	1,00	0,33	1,00	0,67	1,00	1,00	1,00	0,00	0,67
07/04/2020	0,00	1,00	1,00	0,00	0,00	0,00	1,00	1,00	1,00	0,00	0,00

- The levels of stress and anxiety increase in an initial moment, showing a decrease as the days in confinement increase.
- The adherence to healthy habits decrease as the days in confinement increase.
- There is a relation between stress and anxiety and between these variables and the days in confinement.

At the end of the questionnaire, the contact details of the main investigator were provided in case any of the participants wanted to share their experience. Not many messages were sent, but there were 2 of them that explained how the participants could not finish the test the first time they faced it because they suddenly realized some of the suppressed feelings. Filing in the forms made them realize what was really going on with them.

These two participants, end saying that they eventually did fill in the test, after taking some time to calm down.

Discussion and Conclusion

The quasi-worldwide confinement is a unique situation that has not taken place in recent history. The effects that it is having on the population has as many variances as subjects that can be studied.

Anxiety and stress are two key factors in the productivity ages [14] which determine the productivity in their workplace and their motivation for the activities they develop. The continuous experience of stress has been associated with mental problems [15,16], mainly in women and with the erosion of the self-concept of the person [17]. The burden to be productive and maintain the family becomes a heavy weight. High stressful situations produce a great psychological demand and may reduce the ability of the person to take decisions, reduce their performance and generate memory failures [18]. This keeps on adding up on the perception of stress on the person. Fortunately, acute stressful situations have a limited time of existence (up to 3 months approximately) due to 2 main reasons; either the person generates individual resources and coping mechanisms so as to learn from the situation or keeps on adding stress developing psychiatric and physical illnesses that may require treatment [19].

We can see in the study how the levels of stress rise within the first days of confinement, but after day 16, the values start to show a slight decrease. This may be due to the adaptation to the situation of the people to their new reality and the creation of coping mechanisms. One of the main mechanisms that is used for the coping of the situation is the social network. Having people who to talk to, who to share your experiences with and those that are in the same situation as you, can be of great help in developing the required abilities to withstand the situation. Examples of this can be found in the collectives that have been through difficult singular situations together such as the military [20], international students [21], or adolescents [22]. The key element between all these groups has been the interactions between them, the social network, the links that have been created between them, which allows them to generate these coping mechanisms.

As we can see in the study, for the exception of 2 days, where only 80% (on the 27th of March) and 90% (on the 1st of April) of the participants talked with other people, the rest of the days, the 100% of the participants talked with their peers, family members or colleagues. All of them in the same situation, being these calls a “defusing” method and a coping mechanism for them [23].

Other methods to cope with the stress and anxiety that generate the privation of the liberty to go outside are the hygienic-dietary measures [24], where it is recommended to sleep over 7 hours, have healthy meals, a correct organization of time with routines and daily objectives, practice some sport, have communication with other people and avoid auto medication. There are three more mechanisms: to avoid the factors that increase the stress, to cope with stress in an adequate manner and to practice well-being and relaxing activities. The first coping mechanisms were part of the questionnaire and it showed that the elder the participant, the more adherence to healthy habits. Studies in this sense show that these habits improve the healthy ageing [25].

Limitations

The main limitations to the study have been:

- The small response rate, which could be due to several

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factors such as the media used to send it, the target population which can be tired of answering questionnaires.

- The way it was distributed, requesting no way of confirming the identity of the participants. True as this may be, the inclusion of this element in the questionnaire would have reduced the amount of participants due to the jealousy for each one's privacy, especially when taking into consideration the psychological profile that comes out of answering the questions.
- The scales used and questions asked provide a limited information on the subjects, This was considered during the inception phase, but the loss of information was assumed in benefit of the easiness and time to respond.

Generalizability

Although the study has been prepared in Spanish and English so as to be able to arrive to the highest amount of population, the main respondents have been Spanish, which is why, in this first manuscript, it focuses in the Spanish participants.

The quantity Spanish respondents is significant, therefore, the results can be generalized.

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