Annales Médico-Psychologiques 180 (2022) 514–518

Available online at ScienceDirect www.sciencedirect.com

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Original article

Perceived stress, emotion regulation and quality of life during the Covid-19 outbreak: A multi-cultural online survey

Stress perçu, régulation des émotions et qualité de vie pendant l'épidémie de Covid-19 : une enquête en ligne multiculturelle

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ARTICLE INFO

Article history:
Received 14 November 2020
Accepted 30 December 2020
Available online 15 February 2021

Keywords:
COVID-19
Emotion
Perceived stress
Quality of life
Regulation

ABSTRACT

The present COVID-19 epidemic is a threat to physical health and brings a drain to Quality of life and mental health in the general population. However, changes in Quality of life and mental health status due to pandemic-related is less known. This study was implemented to investigate and predict changes in the Quality of life and psychological changes in people worldwide due to the pandemic. 3002 individuals participated in an online survey. The result showed that Quality of life is significantly decreased over time, meanwhile perceived stress level is raised significantly, and an increased level of difficulty in emotion regulation has happened. Almost everyone faced with increased perceived stress and current quarantine experience were significant predictors of perceived stress escalation. Younger people and individuals who had a worsening quality of life response tended to show more stress and emotion regulation problems. Furthermore, prediction models show that by extending the time of quarantine, Quality of life will worsen, and therefore the rate of perceived stress will be higher, and the problem with emotion regulation will arise more. As the whole world faces the pandemic, this research provides several implications for public mental health intervention.

Mots-clés:
COVID-19
Émotion
Stress perçu
Qualité de vie
Régulation

RÉSUMÉ

L'épidémie actuelle de COVID-19 est une menace pour la santé physique et pèse sur la qualité de vie et la santé mentale de la population générale. Cependant, les changements dans la qualité de vie et l'état de santé mentale dus à la pandémie sont moins connus. Cette étude a été mise en œuvre pour étudier et prédire les changements dans la qualité de vie et les changements psychologiques chez les personnes dans le monde en raison de la pandémie. Trois mille et deux personnes ont participé à une enquête en ligne. Le résultat a montré que la qualité de vie diminue considérablement au fil du temps, que le niveau de stress perçu augmente de manière significative et que la régulation des émotions est plus difficile. Presque tous les sujets confrontés à une augmentation du stress et à une quarantaine étaient des prédicteurs significatifs de l'escalade du stress perçu. Les jeunes et les individus dont la qualité de vie se détériorait avaient tendance à présenter davantage de problèmes de stress et de régulation des émotions. De plus, les modèles de prédiction montrent qu'en prolongeant la durée de la quarantaine, la qualité de

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https://doi.org/10.1016/j.amp.2021.02.005
0003-4487/

vie se détériore, le taux de stress perçu est plus élevé, et le problème de la régulation des émotions se pose davantage. Alors que le monde entier fait face à la pandémie, cette recherche fournit plusieurs pistes pour l'intervention publique en santé mentale.

1. Introduction

The current pandemic of severe acute respiratory syndrome coronavirus 2 (SARS-COV-2) caused by the Covid-19 virus has already (as of August 6, 2020) resulted in 18,793,522 cases and 707,715 deaths worldwide [6]. Past research on large-scale events shows that such events greatly impact the general population's physical, emotional, and personal satisfaction. [13].

As primary prevention of the pandemic, It is so clear that The mental health effect of COVID-19 will not be restricted to the individuals who are directly going up against the condition. Almost every nation has actualized unprecedented levels and sizes of isolate, physical removing, and even network lockdown to cover the infection's spread. Albeit influential in leveling the plague bend [17] being in quarantine was the preliminary action plan which causes isolation; Being isolated frequently is a terrifying encounter for the individuals who experience it. Being apart from friends and family, loss of opportunity, vulnerability over illness status, and exhaustion now and again have emotional, psychological, and mental impacts. In most of the same cases, self-destruction has been reported [2] considerable displeasure created [12] following the inconvenience of isolation in past flare-ups. The expected advantages of compulsory mass isolate should be weighed cautiously against the conceivable mental costs [15].

Although several studies revealed that quarantine impacts life, life experiences can also be regarded as part of the external components of the changing in the moods and causes failures that about the psychological well-being of stress and problems with emotions are two cases of them. On the other side of the situation, undoubtedly, Quality of life as a crucial factor directly impacts the mental status, psychological factors, and behavior. This influences the entire population, both individuals and those considered as weak people or vulnerable.

Perceived Stress is the views or musings that individuals have about the amount of stress they are under at a given point in time or over a given timespan. Perceived stress consolidates feelings about the wildness and unconventionality of one's life, how frequently one needs to manage difficult issues, how much change is happening in one's life, and trust in one's power to manage issues or troubles. It is not estimating the sorts or frequencies of Stressful occasions that have happened to an individual, thus far instead how individuals feel about the general stressfulness of their life and their capacity to deal with such stress. People may endure comparable contrary life occasions; however, assess the effect or seriousness of these to various degrees because of elements, for example, character, adapting assets, and backing are still important, and by this way, perceived pressure mirrors the collaboration between an individuals and their condition [5,10].

Emotion Regulation, or the capacity to direct one's own and others' feelings, is a significant aptitude for people, empowering them to work sufficiently in their social condition. Emotion Regulation can be characterized as one's endeavors to screen and regulate their enthusiastic experience [8,9]. Typically, research has arranged Emotion Regulation procedures as usually versatile or maladaptive, even though whether Emotion Regulation is versatile for the individual is needy upon the situation [1]. Among ordinarily forming people, Emotion Regulation debilitation or over-dependence on maladaptiveness.

Some studies have conducted investigations regarding aspects of Covid-19 on different aspects of life during the current situation. As essential, psychological factors were included. However, studies about Quality of life, mental health factors, specifically direct effect of Quality of life during the pandemic, emotion regulation, and perceived stress has not been revealed; in a conducted try to find an answer about the current factors, we discussed hypothesis below:

- during the pandemic, Quality of life has been changed and worsen, so the cut-score of Quality of life has increased;
- changes in the Quality of life causes changes in the other psychological aspects such as emotion regulation and perceived stress;
- there is a positive correlation between high score of Quality of life during the pandemic and increasing the perceived stress and emotion regulation scores;
- as a worldwide survey, the mentioned changes are applied to the people all around the world.

2. Method

2.1. Participants and procedure

During the time of February 20, 2020, until July 20, 2020, a number of 9000 requests sent to participants all around the world through different social media application include dating apps: Instagram, Facebook, VK for Russian participants, Telegram, and some other local apps such as WeChat for China, Soroush in Iran, Viber for Cyprus and Iraq. Among all sent requests, 3002 participants from all around the world participated in our survey. All participants agreed to answer the question based on their consent, honesty, and the instructions in the questionnaires. In case of preventing fake data, we restricted the availability of surveys a maximum of two times per each IP address and Device; the full detail of the participants, is presented in Table 1.

2.2. Procedure

Our survey was conducted on an online advanced survey platform which could prevent duplicate IP, preventing from skipping answers and was based on IP address, so that we could

Table 1
descriptive statics based on the location and gender (alphabetical sort).

Location	No. of participants			Count	Mean	Std. Dev
Africa	554	18.5%	Female	266 (8.9%)	1.53	0.500
			Male	288 (9.6%)		
North America	497	16.6%	Female	244 (8.1%)	1.49	0.501
			Male	253 (8.4%)		
Asia	881	27.0%	Female	425 (14.2%)	1.48	0.500
			Male	386 (12.9%)		
Australia	494	16.5%	Female	238 (7.9%)	1.51	0.501
			Male	256 (8.5%)		
Europe	527	17.6%	Female	270 (9.0%)	1.50	0.501
			Male	257 (8.6%)		
South America	119	4.0%	Female	65 (2.2%)	1.45	0.500
			Male	54 (1.8)		

prevent using questionnaire more than two times per each IP address and/or phone or desktop devices. Participants first provide personal details, including their gender and age range, choosing their present location since last month. After the first step, participants were directed to answer the Covid-19 Quality of life questionnaire V1.5 [13]. Perceived Stress Scale (PSS-10) [4], and Emotion Regulation Questionnaire [8].

2.3. Questionnaires

2.3.1. Demographic Questionnaire

To have access to more information about all the participant in this research, we asked participants to provide primary data about themselves include age, current location during the pandemic, and range of age; in purpose to have better results, we categorized age into five levels include category 1: below 20; category 2: between 20–25; category 3: between 25–30; category 4: between 30–35 and category 4: up to 35 years old participants.

In the next stage, because we could not distinguish all participants based on their country, we divided our participants based on geo-location to have the categories of North America, Africa, South America, Asia, Australia, and Europe.

2.3.2. Covid-19 QoL questionnaire

The Covid-19 QoL [13] is a six-item scale covering primary regions of Quality of life comparable to emotional wellness. Determination of items was guided by the plan to cover the primary areas that are believed to be, for the most part, affected by a considerable scope general well-being episode: Quality of life and psychological wellness indications. The questionnaire covers patients' sentiments about the current pandemic's effect on their satisfaction when all is said in done. The second and third items incorporate members' impressions of conceivable mental and physical well-being crumbling. The last item identifies with expectant tension regarding physical well-being experienced due to seeing various degrees of the danger of being defiled. Although the vast majority will not be involved, it very well may be reasonable that the more significant part is worried about the danger of being tainted. The fourth and fifth items measure the degrees of uneasiness and sadness because of the pandemic, individually. The last item that incorporates the degree to which patients see their well-being is currently at serious risk. Cut-score for this test is 30, and as the overall number is high, it means the Quality of life is low.

2.3.3. Emotion Regulation questionnaire

It is Represent a 10-item scale for measuring Reappraisal (six items) and Suppression (four items) subscales [9,11].

The scale intended to survey constant utilization of two usually utilized systems to change feeling: psychological Reappraisal and expressive Suppression. Expressive concealment includes diminishing the outward articulation of feeling.

2.3.4. Perceived stress questionnaire

The Perceived Stress Scale (PSS-10) [4,7] is likely the most broadly acknowledged stress estimations. This 10-item questionnaire asks the respondent how frequently specific encounters of pressure happened in the most recent month. Instead of testing, apprehension is accepted to result from experienced over-burden with a further accentuation on experienced unpredictability of uncontrollability of occasions. This infers the presence of fear, and being worried in an individual is incompletely deduced from data on the individual's understanding of the absence of control. Two items straightforwardly address "stress" and "hassles," three allude to circumstances of over-burden, though nine items allude to wild, unmanageable, or erratic circumstances. In this manner, the PSS centers around a more intellectual evaluation of stress and the respondent's apparent control and adapting capacity. An absolute score is given. No subscales are accounted for in the test [7]. The maximum cut score for this test is 40; users with Scores ranging from 0–13 would be considered low stress; Scores ranging from 14–26 would be considered moderate stress, and Scores ranging from 27–40 would be considered high perceived stress.

2.4. Statistical analyses

Different statistical tests were completed to study possible eloquent correlations between categorical variables. The steadfastness of the applied scales was evaluated using Cronbach's alpha. A Binary forward regression has been executed to predict the prevalence of behavioral impairments and Covid-19 QoL among all users. All Statistical data analysis was performed on SPSS v24.0 and MS Excel for Windows.

3. Results

Participants' demographic data has shown in Table 1; 1508 (50.2%) of participants were women, and 1494 (49.8%) were men. Our area distribution was 497 participants (16.5%) from North America, 119 participants (4.0%) from South America, 527 participants (17.6%) from Europe, 811 participants (27.0%) from Asia, 554 participants (18.5%) from Africa, and 494 participants (16.5%) from Australia. In our research, 119 data for Africa; 108 for Europe, 69 data for Asia, 73 data for America, 4 data for Australia, and 18 data for South America provided the same answers, including just choosing one row in the survey; so that provided data has been excluded from our results. Data about the age of participant are provided in Table 2

Table 3 presents descriptive statistics about our questionnaires and observed data. As can be seen in Table 3 mean range for Quality of Life during Covid-19 is high, which confirms that despite location, for most of our participants, Quality of life during pandemic has been worsening. This confirms that being apart from society, isolation, and stopping working caused more side effects on our participants' Quality of life.

This also can be noted that the mean range of QoL-Covid-19 for America was 20; for Europe was 21; for Asia and Africa were 20 and Australia and New Zealand was 22. Fig. 1 shows the mean of all

Table 2
Age range and number of participants.

	Count	Percentage	Count	Percentage
Age Range	Below 20	Female	315	49.0%
		Male	328	51.0%
	Between 20-25	Female	342	51.4%
		Male	324	48.6%
	between 25-30	Female	365	47.0%
		Male	411	53.0%
	between 30-35	Female	366	53.0%
		Male	324	47.0%
	up to 35	Female	120	52.9%
		Male	107	47.1%

Table 3
Descriptive statistics for the questionnaires and obtained results.

	Mean(computed)	Standard Deviation
Covid19_QoL	21(21.18)	5(4.789)
Perceived stress	30(30.78)	7(7.865)
Reappraisal	32(32.14)	8(8.119)
Suppression	21(20.09)	6(5.927)

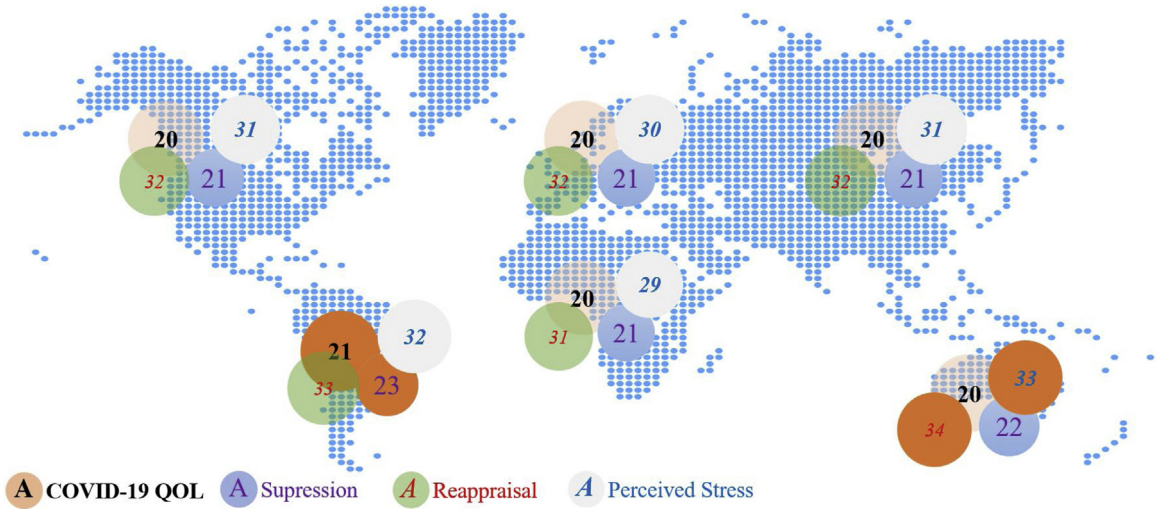

Fig. 1. Geographical map of all scores based on questionnaires.

Table 4
compared mean and Std. Deviation for total and different groups of our participants.

		Total participants		US-CA		Africa		Asia		AU-NZ		South America		Europe	
		M*	SD[a]	M	SD	M	SD	M	SD	M	S.D	M	SD	M	SD
Scale	Covid-19 QoL	21	4	21	5	21	5	21	5	22	4	23	4	21	5
	Perceived Stress	30	7	31	8	29	9	31	8	33	7	32	4	30	8
	Emotion Regulation														
	Suppression	32	8	32	6	20	7	20	6	20	5	21	4	20	6
	Reappraisal	20	5	20	6	31	9	32	8	34	7	33	5	32	8

[a] In case of questionnaires numbers without decimal computes are inserted into the tables.

scales on the map; each area's high range has been colored with orange color. To understand each scale, we calculated the mean of scores for all scales, which were 21 for Covid-19 QoL; 30 for Perceived stress; 32 for Reappraisal; and 20 for Suppression (Table 3). Our research also shows that a high cut score of Quality of life among our users is related to a high perceived stress and emotion regulation. This is confirmed by other studies that there is a linear correlation between the Quality of life and psychological behavior such as stress and emotion regulation [3,14,16].

As shown in Table 4, Australia, despite less time of the quarantine they had more cut-score about Quality of life and perceived stress during the quarantine and the pandemic, but their cut score about Suppression was quiet lower than whole the world means. Like other aspects, they have a high score of about Reappraisal, which needs to be concerned with further questions. For other areas, we have almost the same range of cut-scores. All the same, cut-scores show that the Covid-19 pandemic almost had the same effect(s) on the people worldwide. This is an essential crisis that needs to be concerned regarding the effects of huge problems about national society, leading to fundamental problems if they are not concerned. It can also be seen in all continents despite North America; they have a high cut-score about Reappraisal respected to the Worldwide Mean and standard deviation.

Table 4 shows the statistical correlation obtained in our research. The table shows that for all our predicted scales, we have a positive correlation between Covid-19 Quality of life and other scales. As we already predicted during our project, Quality of life during the pandemic has been dramatically decreased, and this case, excessive amount of perceived stress, and problems in the case of Emotion regulation.

Table 5
Partial correlations between parameters (N = 3002).

	QoL-COVID-19	Perceived stress	Reappraisal	Suppression
Covid-19 _QoL	1			
Perceived stress	0.670[a]	1		
Reappraisal	0.595[a]	0.799[a]	1	
Suppression	0.547[a]	0.686[a]	0.695[a]	1

[a]Correlation is significant at the 0.01 level (2-tailed).

To determine and predict the pandemic's future aspect on the various measured factors, we run a binary logical regression to understand the effects (Table 5). The Covid-19 QoL has a significant impact on the other aspects of life, and we found out that there is a logical regression between Covid-19 QoL and location for all the participants. In other aspects, we have a significant prediction between Covid-19 QoL and Emotion regulation with the estimation of .800 for Reappraisal; 0.0435 for Suppression, and an estimate of 1.243 for Perceived stress factor. Our data has resulted in the dependent variable of Covid-19 QoL and the overall estimation of .611 and the rate of 38.743 Wald Z and standard Error of 0.001. These results show that Covid-19 affects all aspects which we were already hypothesized them. Our prediction confirms that by extending the virus's period, more isolation, and other limits, all our factors will be increased, making a great alarm regarding the psychological and behavioral aspects of the human being's life (Table 6).

Table 6
logistic binary regression test based on COVID-19 QoL and Location of the participants.

	B	S.E.	Wald	df	Sig.	Exp(B)
Covid-19 QoL[1]	1.902	.054	1227.220	1	.000	6.697
Location[2]	0.96	0.39	6.161	1	0.013	5.000

Summary[1]: -2 log likelihood = 987.418; Nagelkerke R: 0.666; overall percentage of correct classification comes 87% on $P < 0.005^*$. Summary[2]: Model log likelihood: -1159.446; change in -2 log likelihood: 6.227; overall percentage of correct classification comes on 87% on $P < 0.005^*$

4. Conclusion

There is no doubt that the pandemic of Covid-19 has impacted people all around the world. This impact has been changed the psychological and cognitive performance of people; as we showed in our result, the most effective of Covid-19 pandemic can be seen in the case of Quality of life, which has some other consequences such as increasing rate of stress and therefore problems in the case of emotion regulation. That which is apparent is the number of dead cases regarding the virus, losing jobs due to the economic crisis. Also, fear of infection to the virus dramatically and negatively impacted people's lives worldwide [18]. Another side of this research mentions that some of the continents like Australia and New Zealand, despite having a high quality of life, are more faced with psychological and behavioral impairment due to the pandemic, which can be considered. The most critical factor, such as Quality of life in developing countries versus underdeveloped countries, shows that the pandemic impacts countries with a low-income rate and a low standard of life. Though this research has not been specified to the countries, we have done surveys based on the continent. However, our data still shows that developed countries are more faced with the pandemic's behavioral and psychological impacts.

Research limitation

As we already mentioned, this research has been conducted based on the continents, not on the countries. However, some other researches have been done based on countries like China, but still, this impact can be more specified to be more investigated. Also, despite having many participants, we believe that this research should be done based on more participants to precisely understand the satiation.

Funds

This study was not funded by any organization, university and/or institute. All process of this research is part of a personal interest of authors in the research.

Disclosure of Interest

The authors declare that they have no competing interest.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent

Informed consent was obtained from all individual participants included in the study.

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