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The relationship between age and stress during the pandemic in Ecuador—Tourism strategy recommendations

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ABSTRACT

The objective of this work was to analyze the correlation between stress in times of pandemic and the age of people, through inferential statistics in order to propose tourism strategies. The study variables were: stress level and age. The sample consisted of 4220 people from 19 provinces of Ecuador. A questionnaire was applied in google forms using the survey technique. The statistical analysis of the data was carried out using the SPSS version 23 statistical program and the corresponding non-parametric statistical test "Spearman's Correlation", with a confidence level of 95% and a significance level of 5%. It was concluded that those most affected in terms of stress are people between 19 and 28 years of age and that tourism should be developed with an anti-stress approach to demand on a constant basis.

Keywords: stress; age; tourism; tourism strategies; COVID-19

1. Introduction

Coronaviruses are a large family of viruses that cause illnesses ranging from the common cold to more serious diseases. The COVID-19 epidemic was declared by WHO a public health emergency of international concern on January 30, 2020. The Director General of the World Health Organization (WHO), Dr. Tedros Adhanom Ghebreyesus, announced on March 11, 2020 that the new 2019 coronavirus disease (COVID-19) can be characterized as a pandemic. The characterization of pandemic means that the epidemic has spread over several countries, continents, or the entire world, affecting a large number of people[1].

Consequently, on March 14, 2020, President Lenin Moreno, as a preventive measure against the health emergency caused by COVID-19, declared a state of emergency throughout the national territory. Ecuadorian families spent six months in house confinement and other preventive measures, which brought problems to the country's economic system and productive matrix, and one of the most affected economic activities was tourism, considering that tourism is one of the main economic activities in the world[2].

It is important to contribute elements of analysis to the current situation of tourism in the country, even more so in times of pandemic, with a view to

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an early reactivation of tourism. Therefore, the purpose of this study is to analyze the correlation between the stress that Ecuadorian families must currently be experiencing and their age, identifying through inferential statistics the average age of the people most affected in terms of stress in the current pandemic.

The phenomenon of stress is usually interpreted in reference to a wide range of experiences, including nervousness, tension, tiredness, exhaustion, overwhelm, restlessness and other similar sensations, such as inordinate school, work or other pressure, even with depression being a major public health problem, but its etiology and pathophysiology remain poorly understood[3].

This incomplete understanding is probably due to the fact that depression encompasses a heterogeneous set of disorders. Likewise, it is attributed to situations of fear, dread, anguish, panic, eagerness to comply, existential emptiness, eagerness to meet goals and purposes, inability to cope or inter-relational incompetence in socialization, such difficulty in identifying the meaning of the term stress is evident since long ago[4].

Stress is currently known as a natural response of our organism to situations that it perceives as a challenge, an alarm or a problem. To cope with it, it tries to adapt to these situations, and this involves setting in motion a series of physiological, cognitive, emotional and behavioral processes. To measure stress there are several methodologies such as: stress assessment test, Stress Visualization Experience and measurement scales of some authors, such as questionnaires[5].

New approaches to the neurobiology of post-traumatic stress disorder to address the reported crisis in drug development for its treatment may require the field to move beyond a narrow fear-based perspective, as fear-based medications have yet to demonstrate convincing efficacy. Antidepressants, particularly fast-acting antidepressants, exert complex effects on brain function and structure that are based on novel aspects of biology, including the role of stress-related synaptic dysconnectivity in neurobiology and treatment[6].

Tourism comprises the activities carried out by people when they move from their place of residence to another for different motivations, for more than 24 hours and less than a year[7]. The process of understanding and analyzing tourism is explained through a complex system composed of multiple stakeholders[8]. It would be important to make use of prescription-type tourism activities to combat stress, anxiety, obesity and sedentary lifestyles (current problems in our society).

Precisely, the present work evaluates the stress of the inhabitants of Ecuador in times of pandemic and correlates it with age, taking the result of this correlation as an indicator of the tourist activities that people need to carry out at present to improve their health. In addition, to contribute with important information for a prompt endogenous tourist reactivation, from the local, regional and national tourist currents.

In the literature review consulted, no similar studies have been found with the same study variables with a tourism focus. Therefore, some studies found that used inferential statistics to reach their conclusions with other study variables are mentioned. One of them performs a quantitative behavioral analysis based on data from random surveys conducted by the National Institute of Statistics of Uruguay[9]. Another deals with the relationship between residents, tourists and real estate/tourism agents in a Barcelona neighborhood of La Barceloneta[10]. Another evaluates the economic, sociocultural and environmental impacts caused by tourism in Spain[11].

2. Methodology

2.1. Population and sample

The study population consisted of the inhabitants of Ecuador from 12 to 66 years of age. Since there is no updated data from the National Institute of Statistics and Census of Ecuador, being the last population and housing census conducted in 2010

(14,306,876 Ecuadorians) when there are currently 17,452,484 Ecuadorians, it is impossible to know the real size of the study population, for this reason the formula was used to calculate the sample when the population is not known, with a confidence interval of 97% and a margin of error of 3%, resulting in 1,309 people.

$$n = (Z^2 \times Pq)/e^2$$
$$= ((2.17)^2 \times 0.5 \times 0.5)/(0.03)^2$$
$$= (4.7089 \times 0.25)/0.0009$$
$$= 1.177225/0.0009$$
$$= 1,308.02$$
$$= 1,309 \text{ person}$$

Based on the data obtained from the 2010 population and housing census, the population was segmented from 12 to 66 years of age, and with the help of Excel through the data analysis tool, 1,309 inhabitants were randomly selected. It should be noted that obtaining the data of the randomly selected inhabitants was complex due to outdated data, such as age, address and contact information, and even more complex in times of pandemic. For this purpose, we coordinated and had the help of authorities, employees, teachers and students of the Technical University of Cotopaxi (UTC) and by working together we obtained the necessary data for the sample. It is worth noting that 4,220 valid responses were obtained and understanding that the more participants, the greater the probability of obtaining a representative sample, which includes people between 12 and 66 years of age, from 19 provinces of Ecuador's 24 provinces. The number of participants by province of residence is described below.

Table 1. Stress test questionnaire of the institute for psychotherapy and psychosomatic research

Questions	0 Nothing in absolute	1 Occasionally	2 Two to three times a week	3 Daily	4 On an ongoing basis
Do you feel tachycardias or strange palpitations in your heart?	0	1	2	3	4
Do you suffer from headaches, especially in the back near the trapezius and shoulders?	0	1	2	3	4
Do you have a lack or excess of appetite?	0	1	2	3	4
Do you have gastrointestinal problems?	0	1	2	3	4
Does smoking, drinking alcohol or feeling desperate?	0	1	2	3	4
Do you have back pain?	0	1	2	3	4
Do you sleep poorly or irregularly?	0	1	2	3	4
Do you have difficulty concentrating?	0	1	2	3	4
Do you feel angry or irritated out of the blue?	0	1	2	3	4
Do you feel a sense of loss of control?	0	1	2	3	4

Source: Based on stress test[12].

2.2. Data collection instrument

Once the participants that made up the study sample had been defined, the questionnaire and/or data collection instrument was prepared. First, the research team worked on a matrix of operationalization of variables (independent variables, indicator, units and type of variable) and through discussion and cross-checking of information, with the objective of using an instrument with validity and reliability, it was decided to use the stress test of the Instituto de Psicoterapia & Investigación Psicosomática (Institute of Psychotherapy & Psychosomatic Research).

For its evaluation, the answers to the 10 questions are added up and according to the resulting number, stress is classified according to the following scale; From 0 to 10 points controlled stress. From 11 to 24 points severe stress with problems (change something in lifestyle). More than 24 points very severe stress with red alert (stress should be controlled immediately).

In addition, a pilot sample of 100 people between 12 and 66 years of age was designed. Based on the results obtained in the pilot, and with the help of SPSS version 23, a higher Cronbach's Alpha for

the two factors of 0.84 was obtained. These data indicate that it is a questionnaire with an acceptable degree of validity and reliability for assessing perceived stress.

2.3. Procedure

The present study analyzed the correlation between the ordinal categorical variable stress level and the discrete numerical variable age in order to propose tourism strategies. For this purpose, the following hypotheses were proposed: the first was the null hypothesis "There is no correlation between stress level and age" and the second was the alternative hypothesis "There is a correlation between stress level and age". For its verification, the non-parametric statistical test "Spearman's Correlation" was chosen because it was the statistical test that best fitted the naturalness of the study variables[13]. In this sense, 4220 valid responses were obtained, and then the data of the two study variables were entered into the statistical program SPSS version 23 and the aforementioned statistical test was applied, and based on the results, tourist activities were proposed according to the level of stress and age of the people.

3. Results

3.1. Variable: Stress level

Table 2. Frequency table of the stress level of the sample

		Frequency	Percentage	Percent accumulated
Stress	Controlled	3,344	79.2	79.2
	Severe	534	12.7	91.9
	Very severe	342	8.1	100.0
	Total	4,220		

Source: Own elaboration based on test results.

It can be seen in **Table 2** that most of the people in the sample, 3,344 people equivalent to 79.2% exactly maintain a controlled stress, while 534 people equivalent to 12.7% of the sample suffer from severe stress, having as a recommendation to change some aspects of their lifestyle, and 342 people equivalent to 8.1% suffer from very severe stress, having as a recommendation to perform urgent actions or activities to control stress.

3.2. Variable: Age

Table 3. Frequency Table of the age of the sample

Age	Frequency	Percentage	Cumulative percentage
12	60	1.4	1.4
13	50	1.2	2.6
14	80	1.9	4-5
15	30	0.7	5.2
16	20	0.5	5.7
17	70	1.7	7.3
18	180	4.3	11.6
19	260	6.2	17.8
20	350	8.3	26.1
21	360	8.5	34.6
22	310	7.3	41.9
23	400	9.5	51.4
24	160	3.8	55.2
25	140	3.3	58.5
26	90	2.1	60.7
27	20	0.5	61.1
28	60	1.4	62.6
29	60	1.4	64.0
30	60	1.4	65.4
31	30	0.7	66.1
32	50	1.2	67.3
33	50	1.2	68.5
34	40	0.9	69.4
35	80	1.9	71.3
36	60	1.4	72.7
37	130	3.1	75.8
38	60	1.4	77.3
39	60	1.4	78.7
40	70	1.7	80.3
41	20	0.5	80.8
42	70	1.7	82.5
43	100	2.4	84.8
44	60	1.4	86.3
45	60	1.4	87.7
46	20	0.5	88.2
47	50	1.2	89.3
48	30	0.7	90.0
49	50	1.2	91.2
50	60	1.4	92.7
51	50	1.2	93.8
52	20	0.5	94.3
53	40	0.9	95.3
54	30	0.7	96.0
55	10	0.2	96.2
56	10	0.2	96.4
58	20	0.5	96.9
59	30	0.7	97.6
60	20	0.5	98.1
61	20	0.5	98.6
62	10	0.2	98.8
63	30	0.7	99.5
65	10	0.2	99.8
66	10	0.2	100.0
Total	4220	100	

Source: Own elaboration based on test results.

Table 3 shows that the sample is made up of people of a wide variety of ages and from 19 of Ecuador's 24 provinces, with a good frequency distribution.

3.3. Hypothesis testing

Table 4. Table of results of the correlation test of the variables under study Spearman correlations

			Stress level	Age of settlers
Spearman's Rho	Stress level	Coefficient of correlation	1.00	-0.076**
		Sig. (bilateral)	.	0.00
		N	4,220	4,220
	Age of settlers	Coefficient of correlation	-0.076**	1.00
		Sig. (bilateral)	0.00	.
		N	4,220	4,220

**. Correlation is significant at the 0.01 level (bilateral).

Observing in **Table 4** that the P value is 0.01, much lower than the level of significance or maximum level of error allowed 0.05, the null hypothesis is discarded and the alternative hypothesis "There is a correlation between the level of stress and the age of the people" is accepted. Although there is a correlation between stress and the age of the inhabitants of Ecuador in times of pandemic, this correlation has a strength of "Rho" of -0.076, resulting in a very low negative correlation.

Table 5. Measures of central tendency and dispersion of the stress level of the sample.

Age	Controlled	Severe	Very severe	Total
Number of data	3344	534	342	4220
Media	29.58	26.55	27.70	29.04
Standard deviation	12.59	9.85	11.10	12.20
Standard error	0.22	0.43	0.60	0.19

Source: Own elaboration based on test results.

It can be seen in **Table 5** that the mean age of people who keep stress under control is 29.58 years old and the mean age of people suffering from severe stress is 26.55 years old, compared to the mean age of people suffering from very severe stress of 27.70 years old.

4. Discussion

As mentioned in the introduction, no similar studies were found that analyze the correlation between the variables stress level and age of people in order to propose tourism strategies. For this reason, it is difficult to contrast the results obtained in the present study with the results of other studies carried out previously; rather, the data obtained will serve as a theoretical framework for future research.

The impacts produced by HIV/AIDS are evident throughout the world, both on people's health and on the economy of the people. From this perspective, it is imperative that tourism be part of the disciplines that attempt to mitigate the impacts of the pandemic, especially in the two aspects mentioned above. The main focus of tourism before the pandemic was tourism expenditure and the economic redistribution benefits that this generated in the economies of the peoples. It can be said that tourism had a top-down approach in terms of the economic status of the tourist demand and precisely once the pandemic fades away, families and towns will become poorer and poorer and this scenario is not favorable for the aforementioned tourism approach.

As mentioned in the previous paragraph and based on the results of this research, it is proposed as a tourism strategy to change the focus of tourism towards a more endogenous bottom-up approach having as main objective the health of people, especially to raise tourism debates with a view to solving the main problems that society currently faces such as: stress, obesity, sedentary lifestyle, anxiety, among others, leaving in the background the tourism expenditure, emphasizing that this will come in addition.

Thus, tourism reactivation should start from the analysis of local, regional, national and international tourism flows, but not the opposite. For this reason, the present work contributes with information on the stress levels in times of pandemic of the inhabitants of Ecuador. Although it is mentioned that the questionnaire was applied in the month of May exactly two months after home confinement and the beginning of the pandemic and it may have been too early to measure the stress of the people, for this reason the

results show that 79.2% of the people have a controlled level of stress, or it may be that the participants of the study did not respond with the truth of the case, considering interesting to measure the

stress currently to observe the behavior of the levels of stress before the aggravation of the impacts of the pandemic.

Table 6. Proposed tourism strategies

Stress level and age	Description	Type of tourism and tourist activities
tourist activities	Although, according to the results of the research, they keep stress under control, they have a lot of energy, curiosity and desire to socialize, even more so in times of pandemic.	Recreational tourism (electronic games, recreational games at home, recreational activities at home with the family with or without technology). City tour (walks through the neighborhood, city of residence, nature trails, other cities and shopping) Fun and discovery tourism (meetings with or without technology between young people of the same age with different themes). Sports tourism (sports activities at home, neighborhood or city, with family or friends, with or without technology).
Severe and very severe 19–29 years	According to the results of the research and stress, they are the people most affected by the pandemic, having the highest accumulation of cortisol and adrenaline in their body. Having an urgency to do something to eliminate them.	Adventure Tourism (any activity that requires physical effort and adrenaline, whether in water, land or air, with or without technology). Ecotourism (mountain biking, horseback riding, hiking, climbing, any activity in nature that requires a medium to high level of effort and adrenaline, with or without technology). Sports tourism (sports activities in the city or nature that require competitiveness, effort and adrenaline, with or without technology). Fun tourism (accompanied by sun and beach, in the city or in the countryside, with or without technology)
Controlled 30–66 years	Although, according to the results of the research, they keep stress under control, precisely to keep it under control they need many relaxation activities that take them out of the daily routine, without major physical effort, but rather for health reasons.	City tour (walks through the neighborhood, city of residence, nature trails, other cities and shopping, always with the family). Ecotourism (relaxing walks in nature with the family, activities in nature that do not require much effort). Sports tourism (sports activities without major effort or competition, with or without technology in their homes, neighborhood or city of residence). Culinary tourism (relaxation activities related to food and food preparation, whether at home, virtual courses, etc.). Virtual tourism (relaxing virtual realities, relaxing virtual courses, training courses, etc.)

Source: Own elaboration.

On the other hand, the results obtained in relation to people with severe and very severe stress levels are found between the ages of 19 to 29 years old, with a higher prevalence in people between 25 and 27 years old, leaving a great concern to investigate the causes of these results, taking into account that at first glance it could have been assumed that the most stressed people in times of pandemic may have been the older ones, but this was not the case in the present study.

Based on the proposed tourism approach, the following Table proposes a classification of the types

of tourism and tourism activities, on which it is suggested to focus tourism reactivation efforts, and ideas for adaptation and entrepreneurship in times of pandemic and post-pandemic, under strict biosecurity measures as appropriate in each case.

Therefore, it is necessary to take into account the in-depth knowledge of the tourism stakeholders in the territory and their relationships, since this is a basic element for the active management of any tourism destination, as they have a special importance in the strategies and actions that must be

undertaken to adapt to the new conditions of the context[14].

5. Conclusions

It was verified through the SPSS program version 23 and the non-parametric statistical test "Spearman's Correlation" with a value of P = 0.01, with a significance level of 5%, that there is a correlation between the level of stress and the age of the persons and that the correlation strength of "Rho" is -0.076, which is a very low negative correlation strength.

The higher the age - the higher the level of stress in a person according to the data obtained in the present study in times of pandemic, rather currently as a consequence of the health emergency produced by COVID-19, the most affected people in terms of stress are those who fluctuate between 19 and 29 years of age.

It is proposed to change the current approach to tourism spending for an endogenous approach based on people's health, using tourism activities and products as recipes to combat stress, anxiety, obesity, sedentary lifestyles, among other problems that society is currently facing, highlighting that tourism spending will come in addition.

Finally, it is proposed to reactivate tourism in Ecuador from the analysis and search for local, regional, national and international tourism flows, in that order of priority, as a result of the new approach to tourism, by unifying efforts from the public, private and community, due to the strong impacts of the pandemic and the current state of the family economy.

Conflict of interest

The authors declare no conflict of interest.

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