# RESILIENCE, ANXIETY AND EATING HABITS OF THE SOUTH-EAST AMAZON POPULATION BEFORE AND DURING THE PANDEMIC

## RESILIENCIA, ANSIEDAD Y HÁBITOS ALIMENTARIOS DE LA POBLACIÓN AMAZÓNICA SUR-ORIENTE ANTES Y DURANTE LA PANDEMIA

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## ABSTRACT

**Objectives:** To determine the relationship between resilience, anxiety and eating habits of the south-eastern Amazonian population before and during the pandemic in 2020. **Methods:** Relational, quantitative and qualitative descriptive, the sample consisted of 150 inhabitants aged 30 to 45 years. The instrument used was the STAI: state-trait anxiety inventory, the data were processed with SPSS-25, analysis of significance and difference of means was performed, non-parametric test and post-test significant differences (Wilcoxon test for related samples). **Results:** In adults, State-Trait Anxiety was greater than 65%, a bilateral significance of p = 0.01 was obtained, indicating that anxiety was related to resilience. Food consumption before the pandemic was classified: natural 60%, processed 40% and ultra-processed 0%; During confinement, the consumption of processed foods was 53.33% and ultra-processed 20%. The level of food consumption before and during the pandemic shows a difference, being significant of p <5%. The level of anxiety before and during the pandemic, obtaining a significant of p <5%. **Conclusions:** It is concluded that State-Trait Anxiety was greater than 65% in adults. Anxiety was related to resilience. There is a significant difference in the type of food consumed, in anxiety levels, before and during the Covid-19 pandemic, in the inhabitants of the Southeastern Amazon. The consumption of processed and ultra-processed foods before the pandemic was 40% and during the pandemic this consumption has increased to 73%, therefore, the consumption of food was high in fat and sugar content.

**Key words:** Resilience; State Anxiety; Trait Anxiety; Eating habits (source: MeSH NLM).

## RESUMEN

**Ojetivos:** Determinar la relación entre la resiliencia, la ansiedad y los hábitos alimentarios de la población amazónica sur-oriente antes y durante la pandemia en el año 2020. **Métodos:** Descriptivo relacional, cuantitativo y cualitativo, la muestra fue de 150 pobladores amazónicos adultos cuyas edades son de 30 a 45 años. El instrumento utilizado fue el STAI: Inventario de ansiedad estado-rasgo, los datos fueron procesados con SPSS- 25, se realizó análisis de significancia y diferencia de medias, prueba no paramétrica de test y post test diferencias significativas (Prueba de Wilcoxon para muestras relacionadas). **Resultados:** En los adultos la Ansiedad Estado-Rasgo fue mayor al 65%, se obtuvo una significancia bilateral de p=0,01, indicando que la ansiedad estuvo relacionada con la resiliencia. El consumo de alimentos antes de la pandemia, estuvo clasificado: natural 60%, procesado 40% y ultra procesado 0%; durante el confinamiento, el consumo de alimentos procesados fue 53,33% y ultraprocesados 20%.El nivel consumo de alimentos antes y durante la pandemia, muestra una diferencia, con un valor de p <5%. Se evidenció una diferencia en el nivel de ansiedad antes y durante la pandemia, obteniéndose un valor de p<5%. **Conclusión:** La Ansiedad Estado-Rasgo fue mayor al 65% en adultos. La ansiedad estuvo relacionada con la capacidad resilente. Existe diferencia significativa en el tipo de alimentos consumidos, en los niveles de ansiedad, antes y durante la pandemia Covid-19, en los pobladores de la Amazonia Sur-Oriente. El consumo de alimentos procesados y ultra procesados, antes de la pandemia, fue del 40% y durante la pandemia este consumo se incrementó al 73%, por tanto, se elevó el consumo de alimentos con alto contenido de grasas y azúcares.

**Palabras clave:** Resiliencia; Ansiedad Estado; Ansiedad Rasgo; habitos alimentarios (fuente: DeCS BIREME).

ORIGINAL PAPER

## INTRODUCTION

Resilience has been characterized as a set of social and intrapsychic processes that enable having a "healthy" life in the middle of unwholesome means. These processes are done through time, resulting in favorable combinations between family, social and cultural environments.

Resiliency, from different theoretical approaches, is considered as the capacity for adaptation and the capacity to recover the initial state when disturbance ceases, aspects which reference homeostasis. There are three basic premises: the systems exist within systems, systems are open, and functions of a system depend on its structure. They use the concept of homeostasis, with its double sense of adaptation to the environment and of tendency to return to its previous state[1].

The concept of resiliency is practically synonymous to homeostasis, but while it presupposes a state of equilibrium of a system or organization and presupposes that after conflict, change or disturbance ensues, this system adapts to the new situation or returns to the original situation[2].

It can be assumed as a combination of proactive and reactive measures oriented to minimize the potential effects associated to the risks that a State faces, but not to prevent them. Adaptability and information management are key elements in resiliency.

In anxiety, multiple concepts formulated by different theory models have existed. The initial approaches came from a unidimensional model that stressed the physical processes of transitory character. Later approaches complicated matters by incorporating other variables that were measured in the development and maintenance of anxiety, such as conductive, cognitive and personality. In order to define anxiety in an adequate form, the difference between anxiety as an emotional state and anxiety as a personality trait should be taken into account[3]. The State-Trait Anxiety Theory: the anxiety state is an immediate "emotional state", modifiable in time, characterized by a unique combination of feelings of tension, apprehension, and nervousness, upset thoughts and concerns, together with physiological changes. The anxiety trait refers to the individual differences of relatively stable anxiety, these being a disposition, tendency, or trait. Contrary to the state of anxiety, the anxiety trait does not manifest directly in the conduct and it should be inferred by the frequency with which an individual experiments

increases in their state of anxiety[3].

In this manner, the subjects with a high degree of anxiety trait perceive a greater range of situations such as threats and are more predisposed to suffer from the state of anxiety more frequently or with greater intensity. The high levels of the state of anxiety are perceived as intensely upset, therefore, if a person cannot avoid the stress that causes it, they will put in motion the coping skills necessary to confront the threatening situation. If the person feels inundated by the state of anxiety, they can initiate a defensive process to reduce the irritating emotional state[4].

Their multidimensional character is undeniable, highlighting the situation that provokes it, the takeover manner and the response patterns, a multidimensional model is presented in which the states of anxiety are determined by the interaction of the personal and situational variables[5]. Within the latter, at least four different situational areas are acknowledged: interpersonal situations, situations that imply physical danger, ambiguous or innovative situations and situations of social evaluation. With respect to modes of acquisition, it is proposed that anxiety can be learned through classic conditioning, vicarious learning or through cognitive information[6].

Anxiety was conceptualized as a triple system of physiological, cognitive, and motor response. It is a complex system of cognitive, physiological, behavioral, and affective (named threat mode) response, which is activated when there is anticipation of certain events or circumstances that are evaluated as aversive.

### Normal anxiety

The emotional state of fear is normal as long as there exists a demonstrable threat that poses a risk to a person's life. This behavior of fear in the event of a risk, such as the Covid-19 virus pandemic, is normal and comes as a response to the conscience before a situation of possible danger, as the current situation in the year 2021 in the pandemic, regarding the emergency covid-19 situation. In general, an uncomfortable situation due to social immobility and uncertainty due to the national and international emergency.

### Cognitive theory

From Spielberger's (2001) point of view, distinguished international psychologist, who poses that anxiety

is a human condition evolutionarily developed that provides advantages over other species[7]. From a clinical point of view, anxiety is a clinical syndrome, since it is a complex emotional response, that is activated before cognitive evaluation and reevaluation, and allows the subject to reveal and analyze information relevant to the situation, the resources, and the expected result, to strategically act in consequence. The cognitive processes refer to the mechanisms involved in the information process relevant to the situation and itself. The cognitive manifestations of anxiety include apprehension, fear, helplessness self-perception, low concentration, and memory, reasoning difficulties, feeling of unreality, depersonalization, among others.

### Anxiety as a personality trait

Cognitive theory does not conceptualize anxiety as a personality trait. It recognizes the presence of determined stable individual differences that predispose the subject to the development of emotional distress[7]. It set forth the cognitive vulnerability to anxiety to refer to a cognitive predisposition in developing it.

### Eating behavior

Diet and nutrition present as a multidimensional construct, as a force of habit and custom beyond the satisfaction of merely physiological needs.

The people with greater risk of eating during anxiety or stress situations are the "emotional eaters", that have a greater vulnerability and tend to resort to food as an escape of their own consciences. When they feel anxious or emotionally active or bad about themselves, they try to avoid these negative feelings focusing their attention on food[8]. From this perspective, there not only exists people with a tendency to eat compulsively, that channel their anxiety and stress onto food, but that also, on the other hand, when they are stressed, anxious or depressed they stop eating because food provokes repugnance. Either one of the two extremes bring about negative consequences to health, same as any eating disorder[9].

The relationship that can be presented in many cases between stress and diet not only condition eating habits, but also what lies behind, a metabolic nutritional process, the satisfaction situation on nutritional needs. There could be many consequences, such as delay in digestion, an inadequate and dysfunctional way of metabolizing food, which could provoke disorders that may be chronic and affect the person's health. Stress leads to anxiety, and the same normally causes to eat more food or at times the opposite.

For all the aforementioned, this research work had the following objective: determine the relationship between resiliency, anxiety and eating habits of the inhabitants in the Southeastern Amazon before and during the pandemic in the year 2020. Likewise, two specific objectives were to identify the relationship between the food consumption of adult inhabitants in Madre de Dios in relation to their levels of anxiety and to determine the anxiety levels regarding their resiliency ability.

## METHODS

Descriptive correlational: a research trying to find dependence and independence of the variables is of mixed approach: quantitative and qualitative, in a 20- to 45-year-old population. Instruments: Anxiety state (A/S) and Anxiety trait (A/T) were applied.

### Population and Sample

In the adult population in Southeastern Madre de Dios, a sample of 150 surveyed participants was selected, made up of both genders, between 35 to 45 years of age, married, using non-randomized criteria for convenience, for the application of research instruments.

### Limitations

This research had the informed consent of all the participants prior to the application of the questionnaires, in turn, it had the approval of the Graduate School of the Ricardo Palma University. In addition, the ethical principles of biomedical research in human beings of the Declaration of Helsinki were taken into account.

### Statistic analysis

The SPSS-25 was used, with a verification and analysis of significance with difference of means. Non-parametric test and post test significant differences (Wilcoxon test for related samples).

## RESULTS

Findings of the two dimensions: Anxiety State (A/S) and Anxiety Trait (A/T) with resiliency ability:

**Psychosocial Field. First level of findings of Emotional Instability**

The Anxiety Status- Trait in adults was greater than 65%.

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Following the decision rule in the relational hypothesis test, according to chi square, the bilateral significance is p=0.01, therefore, the alternate hypothesis is accepted, indicating that anxiety was related to resilience.

Additionally, during the pandemic, the studied population's hemoglobin in men was between 12 and 14 g/dl=normal and in women less than 7 was severe anemia.

**Table 1.** Anxiety Related to Resilient Capacity.

| Chi-square tests | | |
|---|---|---|
| Valor | df | Asymptotic significance (bilateral) |
| Pearson's Chi-square 496.414 | 399 | 0.001 |

Food consumption before the pandemic, was classified in three parts: natural 60%, processed 40% and ultra-processed 0%., which can be observed in Figure N° 1.

During confinement, the consumption of processed foods was 53.33% and ultra-processed 20%, which shows a considerable increase, reversing values, lowering natural food consumption.
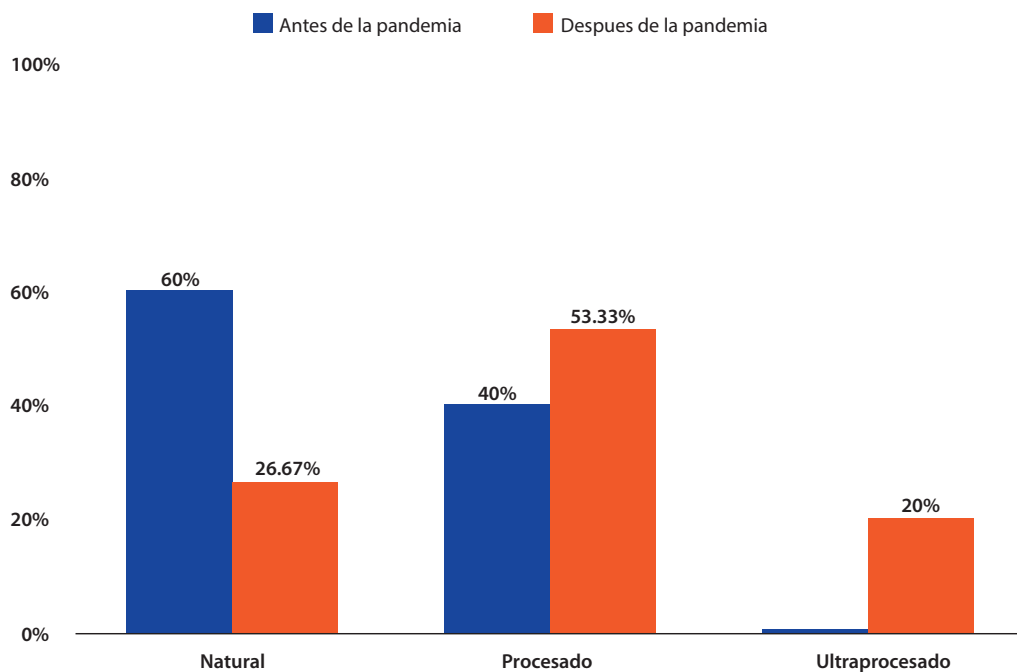


**Graphic 1.** Type of Food Consumption before and during confinement.

Likewise, the Wilcoxon test was applied, and it was found that the level of food consumption before and during the pandemic, shows a significant difference of p<5%.

On the other hand, during this research we found that the anxiety level during Covid-2019 confinement

increased considerably, supported by the type of food consumed, especially high in fat and sugar.

The level of anxiety before and during the pandemic, using Wilcoxon test, shows a significant difference of p<5%.

■ **Antes de la Pandemia**     ■ **Durante de la Pandemia**
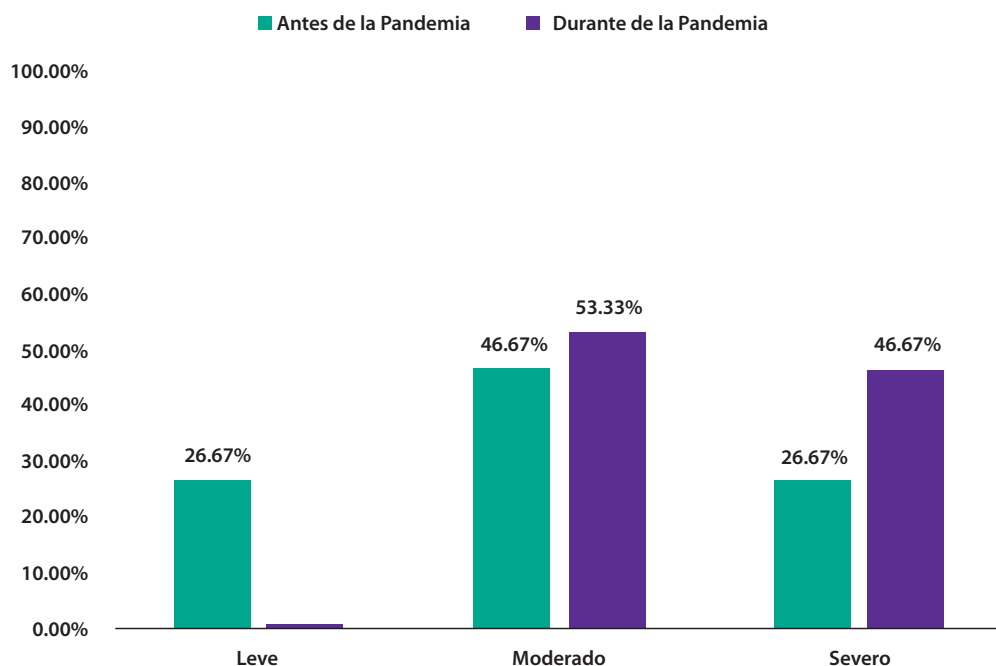


**Graphic 2.** Level of anxiety in Amazonian residents before and during the COVID-19 pandemic.

## DISCUSSION

Resiliency in the Amazonia inhabitants in Madre de Dios is a process, that in terms of quality of life shows us the ability a person must overcome traumatic circumstances such as death by covid-19 virus, surviving the pandemic and a national and international sanitary emergency situation.

Anxiety may be a supposedly normal state if there is a threat stimulus, or a symptom of generalized anxiety disorder and even with panic attacks, and at the same time it may be a neurotic clinical presentation and is especially important to be able to differentiate the levels of Anxiety State (AS), which is temporary as opposed to Anxiety Trait of personality which is permanent. Both play an important role in different aspects of one's life. One of them is if anxiety accompanies other collateral factors which are complications from food consumption, such as giving up eating (anorexia) or abundant eating (bulimia) and several studies are performed by many authors to define, study, and delineate its status among psychic processes, paying attention as both undergo hematologic analysis to examine white blood cells (immune system)[10].

The psychosomatic theory, whose pioneer in the XIX century, Coleman, emphasized with respect to food conduct disorders, may have genetic and learned causes, which is why he recommended multidisciplinary treatments and avoiding the masking hypothesis However, we observe anorexic and bulimic patients have two different causal perspectives, one due to appetite deficit (anorexia) and one with increased appetite (bulimia), in both we can observe increased levels of anxiety[10].

In this research we show a similar reality as observed by Coleman, but in this case the fundamental premise during the pandemic is good mental and physical health as essential for sustainable development. The 2030 agenda reflects the complexity and interconnection of both. It considers the economic and social inequalities, rapid urbanization, climate and environmental threats, continued fight against HIV and other infectious diseases, and new health problems such as non-transmissible diseases. The universal health coverage should be comprehensive to end poverty and reduce inequalities, guaranteeing the specific number 2 objective and put an end to hunger, have a way out to reach food security, improve nutrition and promote sustainable agriculture. Regarding objective number 3: optimal physical and mental health is guaranteeing a healthy life and promoting wellbeing for everyone of all ages[11].

In a research from Argentina, an existing relationship

between stress, anxiety and eating patterns is established in the adult population between 25 and 50 years of age who work in the central zone of the city of Tandil in the province of Buenos Aires, whose results give an account of the tight relationship between these variables[9].

Likewise, the Spielberger (1972) predictions are confirmed, since competitive anxiety-state increases more intensely in those steeply anxious, being able to strongly reproduce the relationship in the somatic dimension of anxiety. However, the overall effects must be considered as low. The greater intraindividual stability of competitive anxiety-trait can be proven with the competitive anxiety-state constructor.

The cognitive as well as the somatic dimension of the anxiety-trait competitive, remain invariable, while the anxiety-state competitive increases in the course of the week prior to the competition, Just as Martens et al. (1990) assumed, this modification of the somatic dimension of the anxiety-state competitive results greater than the cognitive dimension. Therefore, Spielberger's assumption (1972) can be confirmed regarding that anxiety-state increase depends on anxiety-trait.

In México, it was found that the adult population links diet mainly with emotions (predominantly those referring to negative affective states), environment and culture, reflected in cohabitation, special events, and family[12]. Specifically, it has been reported that emotions are one of the factors that have the ability to modify food patterns (in animals as well as humans), from the very nature of the affective state concerned, as well as the personal characteristics[12]. The concept of emotional eating (EE) emerged from mainly psychodynamic theories, that sought to give a psychological explanation about obesity, addressing the role that emotions play incrementing food consumption. Among the findings regarding characteristic food selections in EE, it was mainly identified as caloric type, sweets, and fats that, as reason for its hedonic effect in a rewards system, reinforces its consumption. Accordingly, the people that have a greater inclination of using this type of intake have been called "emotional eaters", including having a greater susceptibility to stress and greater neurophysiological sensitivity to reinforcement.

The anti-consumption of the Amazon inhabitant deserves a type of adaptive change during the pandemic, which affects its weight, height, and quality of life. However, the adult population adapts to the pandemic uncertainty with perseverance to find solutions that benefit everyone and present a real outlook to make decisions in the future. It is unknown if post-pandemic there will be an economic recovery depending on the consumption of products and we will probably see this in a very distant future[13].

## CONCLUSION

The resilience ability in the Amazonian population is of a high level. The State-trait Anxiety was greater than 65% in adults. Anxiety was related to resiliency ability.

There is a significant difference in the type of foods consumed, in anxiety levels, before and during COVID-19 pandemic, in the inhabitants of the southeastern Amazon. The consumption of processed and ultra-processed foods, before the pandemic was 40% and during the pandemic it increased to 73%, also increasing the consumption of food high in fat and sugar.

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