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In the first article we present, *Index of suicide risk in Mexico using Twitter*, by RODRÍGUEZ-ESPARZA, Luz Judith, BARRAZA-BARRAZA, Diana, SALAZAR-IBARRA, Jesús y VARGAS-PASAYE, Rafael Gerardo, with adscription in the Universidad Autónoma Chapingo, Universidad Juárez del Estado de Durango and Universidad Iberoamericana León, in the next article we present, *Government, poverty and corruption in Haiti. Critical reflections on two social programs, brain drain and destination countries*, by LINDOR, Moïse, with adscription in the El Colegio de Tlaxcala, in the next article we present, *Student motivation of the Surgeon Dentist Major of the Veracruz-Boca del Río Area to Study a Postgraduate Program: A Comparative Study*, by MORA-SÁNCHEZ, Aura Leonora, ROESCH-RAMOS, Laura, MORENO-MARIN, Flora and ZAPIÉN-USCANGA, Antonio de Jesús, with adscription in the Universidad Veracruzana, in the next article we present, *Factors related to overweight and obesity in the university population*, by ALVARADO-SÁNCHEZ, Brenda, ZÁRATE-PADRÓN, Alejandra y MACÍAS-PÉREZ, José Roberto, REYES-MUNGUÍA, Abigail, with adscription in the Universidad Autónoma de San Luis Potosí.

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## Index of suicide risk in Mexico using Twitter

### Índice de riesgo al suicidio en México utilizando Twitter

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#### Abstract

Objectives: To identify early suicide risk signs on depressive subjects, so that specialized care can be provided. Various studies have focused on studying expressions on social networks, where users pour their emotions, to determine if they show signs of depression or not. However, they have neglected the quantification of the risk of committing suicide. Therefore, this article proposes a new index for identifying suicide risk in Mexico. Methodology: The proposal index is constructed through opinion mining using Twitter and the Analytic Hierarchy Process. Contribution: Using R statistical package, a study is presented considering real data, making a classification of people according to the obtained index and using information from psychologists. The proposed methodology represents an innovative prevention alternative for suicide.

**Suicide, Analytic Hierarchy Process, Twitter**

#### Resumen

Objetivos: Identificar de manera temprana indicios de riesgo de cometer suicidio por personas depresivas, de forma que se les pueda proporcionar la atención especializada pertinente. Diversos estudios se han centrado en estudiar las expresiones en redes sociales, donde los usuarios vierten sus emociones, para determinar si muestran indicios de depresión o no. Sin embargo, han dejado de lado la cuantificación del riesgo de cometer suicidio. Por ello, este artículo propone un nuevo índice para identificar el riesgo al suicidio en México. Metodología: La propuesta de este índice se construye a través de la minería de opinión utilizando Twitter y el Proceso Jerárquico Analítico. Contribución: Utilizando el paquete estadístico R, se presenta un estudio considerando datos reales realizando una clasificación de las personas de acuerdo al índice obtenido y utilizando información proporcionada por psicólogos. La metodología propuesta representa una alternativa innovadora de prevención al suicidio de las personas.

**Suicidio, Proceso Jerárquico Analítico, Twitter**

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## Introduction

Suicide in Mexico has increased considerably in recent decades. Analyzing suicide risk represents an indispensable task due to the psychological burden that it entails. According to the National Institute of Statistics and Geography (INEGI), in 2016 there were 6,291 suicides, representing a rate of 5.1 suicides per 100,000 inhabitants. Chihuahua and Yucatán doubled the national rate with 11.4 and 10.2 suicides per 100,000 inhabitants respectively. In addition, eight out of 10 suicides during 2016 were committed by men, that is 5,116 of 6,291 suicides (INEGI, 2018).

The World Health Organization (WHO) has defined suicide as the deliberate act of taking one's own life (Jiménez-Ornelas & Cardiel-Téllez, 2013); this fact is considered serious and harmful both for the individual who commits it, as well as their context, because of the destructive intention in it.

WHO considers suicide as a serious public health problem and points out that the effects on families, friends and society are complex and lingers after the loss (WHO, 2018). Among the reasons that cause it, various biological, psychological, social, environmental and cultural factors are indicated.

In psychological terms, the suicidal behavior is composed of emotional and cognitive factors that lead the individual to seek in death a solution to the frustrations, sufferings, anger or fears that overwhelm them (Jiménez-Ornelas & Cardiel-Téllez, 2013). These authors, in turn, show the suicide tendency in Mexico 1990-2011 considering socio-demographic factors.

Within an emotion there are complex physiological, social and psychological aspects. In order to explain this in a graphic way, the American psychologist Robert Plutchik (1927-2006) developed an evolutionary theory about emotions. He proposed that both animals and humans have evolved their emotions to adapt our organism to the environment.

The eight basic emotions proposed by Plutchik (2001) are: Joy, Trust, Fear, Surprise, Sadness, Disgust, Anger and Anticipation.

In his model, each emotion has its opposite, for example, the opposite of Sadness is Joy and the opposite of Trust is Disgust.

An aspect highlighted by Plutchik (2001) is the intensification of emotions; for example, boredom when intensified becomes anger. And, if left unchecked, emotions become feelings that can result in mental health problems.

In this sense, the analysis of feelings or opinion mining is a novel area of research which arises in response to the desire to know the opinions and trends that people follow in social media, blogs or websites dedicated to various activities. Bing Liu (2012, p. 7) defines the analysis of feelings as: "The analysis of feelings, also called opinion mining, is the field of study that analyzes opinions, feelings, assessments, attitudes and emotions of people towards entities and their attributes expressed in written text."

The purpose of the analysis of this information is diverse and recent research indicates that it can be applied in areas such as finance, economics, politics, market research, among others.

On the context of text mining, the characteristics of interest for this work are the words that identify and differentiate the emotions expressed in a text, in order to quantify the suicide risk by the person writing said text. To generate this quantification, this paper presents the technique of the Analytical Hierarchical Process (AHP) as a tool to hierarchically classify the eight basic emotions expressed in social media publications, and then use this hierarchy and generate a suicide risk index of the person who writes the analyzed texts. Since suicide is a serious Public Health problem, its timely detection and prevention are very important for society.

This article represents an instrument aimed at both social and professional groups, particularly relevant in suicide prevention. It also represents a link in a long and diversified chain that includes a wide range of people and sectors, including health professionals, educators, social organizations, governments, legislators, communicators, families and communities.

The rest of this paper is organized as follows. Section 2 shows the background of the AHP, as well as the definitions of emotions. Section 3 presents the proposed methodology for the construction of the suicide risk index. An application of the proposed methodology is presented in Section 4, followed by Section 5 with the annexes. Finally, Section 6 provides the closing comments on this article.

## 1. Background

Below is some main background on two topics which will be of importance in the proposed methodology for calculating the suicide risk index: Emotions and the AHP.

### 1.1. Basic emotions and suicide

According to Plutchik (2001), there are eight basic emotions, with their corresponding opposite emotion, which are also related to the human being's series of adaptive behaviors. The eight basic emotions that Plutchik (2001) enumerates in his roulette are joy, trust, fear, surprise, sadness, disgust, anger and anticipation; they are basic emotions that manifest with a purpose or with a certain behavior. Thus, the emotional response of joy comes through a reproductive stimulus, bonding and search for a partner. Trust is caused by membership in a group, sharing with others and the support of the group. Fear responds to an intimidating stimulus, given a threat, as a protective shield that prepares us for defense or flight. Surprise is a response of the individual to novelty, which prepares them to sharpen attention, to be alert and properly oriented. Sadness is a response to a loss that initiates a process of reintegration and assimilation of harmful events, seeking help and comfort. The stimulus of disgust is the rejection of negative influences and unpleasant things that drives us to move away. Anger responds to the presence of an obstacle, which gives us strength to attack and destroy. And anticipation is caused by the stimulus to analyze and discover new territories, as well as the search for answers (Brujita, 2016).

On the other hand, suicide can be understood from different perspectives: from the religious, philosophical and sociological perspective, to the psychological and biological perspective (Hernández-Urbay, D., n.d.).

In the context of this study, we will address mainly the psychological approach. According to the classification of suicidal behavior, this article considers suicidal ideas and parasuicide or attempted suicide. Moreover, it is worth mentioning that biological factors, family, situations and substance abuse are the main agents of suicide, and as such, are beyond the scope of this study, which is limited to the analysis of texts in social media.

Many warning signs of possible suicidal emotions are also symptoms of depression and stress. Observing the following behaviors helps identify people who may be at risk of suicide: changes in eating and sleeping habits; loss of interest in usual activities; withdrawal from friends and family members; manifestations of contained emotions and estrangement or flight; abuse of alcohol and drugs; neglect of personal appearance; unnecessary risk situations; concern about death; increased physical discomfort, frequently associated with emotional conflicts, such as stomach aches, headaches and fatigue; loss of interest in school or school work; feelings of boredom; difficulty to focus; desire to die; lack of response to praise; statements of plans or attempts to commit suicide, including the following behaviors: verbalizing: "I want to kill myself" or "I will commit suicide"; giving verbal cues such as: "I won't be a problem for much longer" or "If something happens to me, I want you to know that..."; giving away their favorite items; throwing away important belongings; suddenly becoming cheerful after a period of depression; can express strange thoughts and write one or several suicide notes (Stanford Children's Health, n.d.) Suicide threats mean despair and a request for help. Feelings, thoughts, behaviors or suicide plans should always be taken seriously.

What is sadness? What is anger? What is fear? Are they just words or is there something else? In principle, sadness, anger, and fear are emotions. In general, emotions are usually considered to correspond to natural bodily experiences that are then expressed through language, and that language, in turn, is usually described as irrational and subjective. That is, we first feel in the body what later comes out of our mouths in the form of a discourse that somewhat opposes reason.

Emotions are also said to be originated in the unconscious and not in the will, which makes them more spontaneous than artificial, i.e., more “felt” than “thought.” Sometimes, they are mixed with behaviors considered rational, or the existential status of which belongs to the order of the non-emotional, and, recently, it is affirmed that they are not exclusive features of the interiority of people, but that they are social constructions of fundamentally discursive nature. 1) The construction of emotions has been neglected and 2) no attention has been paid to the very nature of the meaning of an emotion. Sometimes simple classifications have been proposed, for example, active emotions and passive emotions, or uncontrollable emotions subsidiary of the individual which unfold in the world outside of any regulation (Belli, S. & Íñiguez-Rueda, L., 2008.)

Emotions are psychophysiological reactions of people to situations relevant from an adaptive point of view, such as those that involve danger, threat, harm, loss, success, novelty, etc. These reactions are universal, quite independent of culture, and produce changes in the emotional experience (cognitive-subjective dimension), in the physiological activation (physiological-adaptive dimension) and in the expressive behavior (behavioral-expressive dimension). In addition, from a psychological point of view, emotions such as joy, fear, anxiety or anger are basic emotions which occur in all individuals of most diverse cultures, they have a considerable biological substrate, they are essentially pleasant or unpleasant, activate us and form part of the communication process with others and, in turn, they can act as powerful motives for behavior (Cano-Vindel, A. & Miguel-Tobal, J. J., 2001.)

Among the emotions, we can distinguish at least two groups: the positive and the negative. Fear-anxiety, anger, sadness-depression and disgust are basic emotional reactions that are characterized by an unpleasant or negative affective experience and high physiological activation. The first three are the most studied emotions in relation to health-disease processes. These reactions have a preparatory function so that people can give an adequate response to the demands of the environment, and thus they are considered eminently adaptive responses for the individual.

However, sometimes we find that some of them can become pathological in some individuals, in certain situations, due to a mismatch in frequency, intensity, context adaptation, etc. When such a mismatch occurs and is maintained for certain time, a health disorder can occur, both mental (anxiety disorder, major depression, pathological anger, etc.) and physical (cardiovascular, rheumatological, immunological disorders, etc.) (Piqueras-Rodríguez, J. A., Ramos-Linares, V., Martínez-González, A. E., Oblitas-Guadalupe, L.A., 2009.)

It is a fact that suicide is a process which begins with small manifestations in the subject's behavior that denote a desire for self-destruction (González-Ganzábal, F., 2016.) These thoughts increase within the mind of the individual until the act is perpetrated. Suicidal ideas are constituted as a series of intrusive and repetitive thoughts that the subject presents regarding how to cause their own death, how to do it, what objects and/or methods to use and under which circumstances (González-Ganzábal, F., 2016.)

## 1.2. Emotion Detection in Social Media

The detection of mental problems through social media has taken relevance in recent years in response to the importance they have acquired in the lives of human beings, as shown by Guntuku, Yaden, Kern, Ungar and Eichstaedt (2017.) As Twitter is a more open social media than Facebook, several studies have focused on the study of the texts published in it. Nadeem (2016) used classification techniques such as decision trees, support vector machines (SVM), logistic regression and naïve Bayes for the analysis of texts shared by users over time.

Jamil, Inkpen, Buddhitha and White (2017) developed a methodology for the detection of depression in Twitter users, at tweet level. With this analysis, the levels of accuracy were biased by the disproportionality between the tweets with depressive content and those that did not present it, so they opted for an analysis at user level, considering the percentage of depressive tweets, thus improving the classification of depressed users. These classifications were carried out through SVM.

Working also with Twitter, Orabi, Buddhitha, Orabi, and Inkpen (2018) developed models based on neural networks as classification techniques with high levels of accuracy, determining whether a user shows signs of depression.

Following the study of social media trend, Reece and Danforth (2017) focused on the analysis of photos uploaded to Instagram to detect signs of depression in users. Through Bayesian logistic regression models and a random forest-based classifier, the authors found that it is possible to identify depressive users through the photographs they share, being able to detect signs of depression even before the users are diagnosed with depressive symptoms by a mental health specialist.

So far, efforts in social media have been aimed at detecting signs of depression, without going into the study of suicide risk in users of these networks. It is relevant to note the central role that machine learning techniques, together with statistical classification techniques, play in the development of methodologies for the detection of symptoms of mental illness in social media users.

Thus, this paper will analyze the suicide risk through text analysis of publications made on the social media Twitter, considering the eight basic emotions presented previously (Plutchik, 201), ranking those emotions through AHP, a tool which has been rather useful in the areas of Mathematics and Psychology.

### 1.3. Analytical Hierarchical Process

Asdalifah Talibe, Aaturrawiah Ali Omar and Tong Sin Bei (2014) determined the most common criteria for depression among students of five science schools at Malaysia Sabah University by using the Analytical Hierarchical Process (AHP). Based on that article, we propose to use this process to study the suicide risk in Mexico through Twitter publications.

The AHP, introduced by Thomas Saaty in 1980 (Saaty, 1980), is an effective tool for making complex decisions, and can help the decision maker set priorities and find the best solution by reducing complex decisions to a series of pairwise comparisons. The AHP helps to capture both subjective and objective aspects of a decision.

Operationally, it helps build indexes, reducing complexity to a simple hierarchical scheme. The process requires that the decision maker provides subjective evaluations regarding the relative importance of each of the criteria, and then specify their preference with respect to each of the decision alternatives and for each criterion (Saaty, 2008.)

The AHP generates a weight for each evaluation criterion according to the decision of the maker, the specialist. Then, pair comparisons of the criteria are made. The higher the weight, the more important the corresponding criteria will be.

The objective of the deliberation is to express, in quantitative terms, the importance of the different elements, even though it is common to assign weight to the criteria, the specification of these is an issue in which there is no method generally accepted for its determination, considering this process as an aspect that can create controversies about the allocation of said weight.

## 2. Methodology

In this work we will use the AHP by making a comparison in pairs of the eight basic emotions, which starts from a square matrix in which the number of rows and columns is defined by the number of criteria to be pondered, that is, 8 by 8.

This establishes a comparison matrix between pairs of criteria, comparing the importance of each one of them with the others. Subsequently, the main eigenvector is set, which establishes the weight which in turn provides a quantitative measure of the consistency of value judgments between pairs of factors (Saaty, 1980).

The measurement scale considers the following score:

- 1- Equally important.
- 3- Slightly more important.
- 5- Notably more important.
- 7- Demonstrably more important.
- 9- Absolutely more important.

Let  $\mathbf{A}$  be the comparison matrix, then  $\mathbf{A}$  is of 8x8 dimension since there are 8 evaluation criteria considered.

Each  $a_{jk}$  entry in the matrix  $A$  represents the importance of the  $j$ -th criterion relative to the  $k$ -th criterion. If  $a_{jk} > 1$ , then the  $j$ -th criterion is more important than the  $k$ -th criterion, while if  $a_{jk} < 1$ , then the  $j$ -th criterion is less important than the  $k$ -th criterion. If two criteria are equally important, then the  $a_{jk}$  entry is 1. The  $a_{jk}$  and  $a_{kj}$  entries satisfy the  $a_{jk}a_{kj} = 1$  condition. Obviously,  $a_{jj} = 1$  for every  $j$ . The relative importance between two criteria is measured according to the numerical scale from 1 to 9 shown above.

Matrix  $A$  can be seen as follows:

	Joy	Trust	Fear	Surprise	Sadness	Disgust	Anger	Anticipation
Joy	1	$a_{12}$	$a_{13}$	$a_{14}$	$a_{15}$	$a_{16}$	$a_{17}$	$a_{18}$
Trust	$1/a_{12}$	1	$a_{23}$	$a_{24}$	$a_{25}$	$a_{26}$	$a_{27}$	$a_{28}$
Fear	$1/a_{13}$	$1/a_{23}$	1	$a_{34}$	$a_{35}$	$a_{36}$	$a_{37}$	$a_{38}$
Surprise	$1/a_{14}$	$1/a_{24}$	$1/a_{34}$	1	$a_{45}$	$a_{46}$	$a_{47}$	$a_{48}$
Sadness	$1/a_{15}$	$1/a_{25}$	$1/a_{35}$	$1/a_{45}$	1	$a_{56}$	$a_{57}$	$a_{58}$
Disgust	$1/a_{16}$	$1/a_{26}$	$1/a_{36}$	$1/a_{46}$	$1/a_{56}$	1	$a_{67}$	$a_{68}$
Anger	$1/a_{17}$	$1/a_{27}$	$1/a_{37}$	$1/a_{47}$	$1/a_{57}$	$1/a_{67}$	1	$a_{78}$
Anticipation	$1/a_{18}$	$1/a_{28}$	$1/a_{38}$	$1/a_{48}$	$1/a_{58}$	$1/a_{68}$	$1/a_{78}$	1

Once the comparison matrix is defined, it is normalized by columns and averaged by rows to obtain the vector of weight per emotion, also known as the main eigenvector (Saaty, 2003), which is composed of the weight obtained from each emotion. Let us denote this weight as  $w_i$ ,  $i = 1, 2, \dots, 8$ .

The next stage is the prioritization of the criteria or emotions, and consists in ordering the values of the weight  $w_i$  from least to greatest, each emotion obtaining a value  $J_i$ ,  $i = 1, 2, \dots, 8$ .

For the identification of emotions, (within tweets, in our case) we use the NRC-Word-Emotion Association Lexicon which consists of a list of words and their associations to the eight basic emotions, as well as to two feelings (positive and negative) (Saif & Turney, 2013.)

The annotations are made manually considering the tweets, resulting in the number of words ( $N_i$ ,  $i = 1, 2, \dots, 8$ ) in each of the emotions, calculating as well the proportion of words in each emotion. Let us denote this proportion as  $n_i$ ,  $i = 1, 2, \dots, 8$ .

Two very important aspects for the calculation of the suicide risk index are both the number of words in each emotion and its proportion, since two people can have the same proportion in some emotion; however, the index will also be affected by the amount of words the person had in such emotion. Then, the final suicide risk index is calculated using the following formula:

$$SI = \sum_{i=1}^8 (w_i N_i + n_i J_i) \quad (1)$$

where,  $w_i, n_i \in [0, 1]$ ,  $N_i \in \mathbb{N}$  y  $J_i \in \{1, 2, 3, 4, 5, 6, 7, 8\}$ .

Finally, based on Bryan and Rudd (2006) and more particularly using the work of Gómez (2012), the classification of the suicide risk index will be: Slight, Moderate, Severe and Extreme. See Table 4 of Gómez (2012) for a detailed explanation of the suicide classification.

A general outline of the proposed methodology is presented below.

#### 1: Hierarchy of emotions through AHP.

- Perform comparison of emotions with support from experts (psychologists). Generate matrix  $A$  of comparisons.
- Check consistency.
- Calculate weight of emotions.
- Obtain the hierarchy of emotions.

#### 2: Obtention of tweets.

#### 3: Opinion mining. Text analysis.

- Classification of the words obtained from tweets in the eight emotions (NRC).

#### 4: Calculation of the Suicide Risk Index (SI).

- Classification of SI: Slight, Moderate, Severe and Extreme.

### 3. Results

In order to know the ideal weight for each of the eight emotions, the instrument shown in Annex 1 was applied to 20 psychologists from different parts of Mexico and these were randomly divided into three groups.

Matrix A of group 1 was given by:

	Joy	Trust	Fear	Surprise	Sadness	Disgust	Anger	Anticipation
Joy			1/9	1/5	1/9	1/9	1/9	1/9
Trust			1/7	1/7	1/9	1/9	1/9	1/9
Fear			1	5	1	7	7	7
Surprise			1/5	1	1/5	1/5	1/9	1/5
Sadness			1	5	1	1	1/5	1
Disgust			1/7	5	1	1	1	5
Anger			1/7	9	5	1	1	7
Anticipation			1/7	5	1	1/5	1/7	1

Matrix A of group 2 was given by:

	Joy	Trust	Fear	Surprise	Sadness	Disgust	Anger	Anticipation
Joy	1	1/3	1/5	1/3	1/7	1/7	1/7	1/3
Trust	3	1	1/5	1/5	1/7	1/5	1/7	1/3
Fear	5	5	1	5	1	1	1	3
Surprise	3	5	1/5	1	1/5	1/3	1/5	1/3
Sadness	7	7	1	5	1	5	1	3
Disgust	7	5	1	3	1/5	1	1/3	3
Anger	7	7	1	5	1	3	1	5
Anticipation	3	3	1/3	3	1/3	1/3	1/5	1

Matrix A of group 3 was given by:

	Jo	Tr	Fe	Su	Sa	Di	A	An
Joy	1	1	1/5	1	1/7	1/7	1/5	1/3
Trust	1	1	1/3	1	1/7	1/3	1/5	1
Fear	5	3	1	5	1/5	5	5	9
Surprise	1	1	1/5	1	1/7	1/3	1/5	1
Sadness	7	7	5	7	1	7	3	7
Disgust	7	3	1/5	3	1/7	1	5	1
Anger	5	5	1/5	5	1/3	1/5	1	1/3
Anticipation	3	1	1/9	1	1/7	1	3	1

Using AHP, weight was calculated for each emotion and for each group of psychologists. The results are shown in Table 1.

Emotion	Group		
	1	2	3
Joy	0.01532	0.02475	0.03108
Trust	0.01532	0.03411	0.03900
Fear	0.32934	0.18618	0.22389
Surprise	0.04925	0.05861	0.03670
Sadness	0.14068	0.24604	0.36923
Disgust	0.13719	0.13641	0.12312
Anger	0.21840	0.23896	0.10806
Anticipation	0.09336	0.07494	0.06894

**Table 1** Final weight using AHP  
Source: Prepared by the authors

The next stage consists in calculating the consistency of the psychologists' decisions, that is, determining whether the decision makers have been consistent in their evaluations. Saaty, T. (2001) argues that when the consistency ratio (CR) is less than 0.1, it indicates that the judgments are within the recommended limits, are consistent and the process must be continued. The following is required to calculate the RC.

**Geometric Consistency Index (CI):**

$$CI = \frac{\lambda_{max} - n}{n - 1}$$

where  $\lambda_{max}$  is the sum of all the maximum eigenvalues, calculated for each criterion, which were in turn obtained as the product of each of the eigenvalues by the total of the sum of the values of the column of each criterion (Saaty, 2001, 2009). And  $n$  is the number of criteria, that is,  $n = 8$ .

**Random Consistency Index (RI):**

$$RI = 1.98 \frac{n-1}{n}$$

**Consistency Ratio (CR):**

$$CR = \frac{CI}{RI}$$

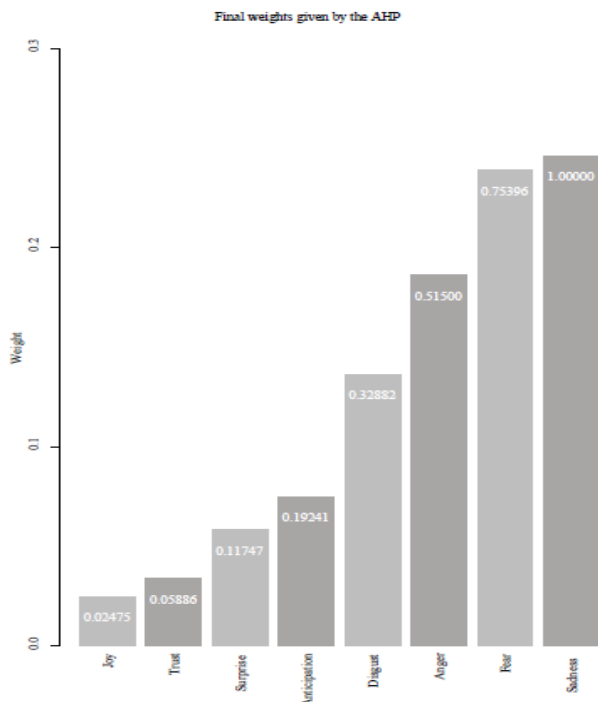
The results of the consistency ratio, for each group of psychologists, was: for group 1, the CR was 0.28786156, for group 2 the CR was 0.08820785 and for group 3 the CR was 0.22103277.

We can see that only for group 2 the consistency ratio is less than 0.1, which indicates that to continue with our process we must consider the weight granted by group 2. The final weight to consider in this work obtained with AHP and the ranking obtained are presented in Table 2.

Emotion	Weight $w_i$	Hierarchy $J_i$
Joy	0.02475	1
Trust	0.03411	2
Fear	0.18618	6
Surprise	0.05861	3
Sadness	0.24604	8
Disgust	0.13641	5
Anger	0.23896	7
Anticipation	0.07494	4

**Table 2** Weight and Hierarchy  
Source: Prepared by the authors

The final weight used to calculate the suicide risk index in addition to the accumulated weight are shown in Figure 1.



**Figure 1** Final weights for each emotion found through AHP. In addition, weight accumulated by emotions are shown

Source: Prepared by the authors

As we can see, Sadness, Anger and Fear are the emotions that have the greatest effect on suicide risk, covering approximately 67% of total weight. Disgust and Anticipation contribute 21% and finally Surprise, Trust and Joy contribute 12%.

The classification of the Suicide Index (SI) proposed in this article is the following: Slight if  $SI < 7$ , Moderate if  $7 \leq SI < 11$ , Severe if  $11 \leq SI < 15$  and Extreme if  $SI \geq 15$ .

Once having the weights and the hierarchy of the eight emotions given by the expert through AHP (Table 2), 177 people were considered for the study. Through the NRC analysis the tweets of these people were analyzed, and the words were counted in each of the main emotions.

This analysis was carried out using the R statistical package. To collect a sample of tweets, the library "twitterR" was used, which allows us to access the public API of twitter.com. A series of alpha-numeric codes is needed to access the twitter API and to obtain them, it is necessary to be registered on its website.

The first thing is to read the file and convert the tweets into a data.frame using the `twListToDF()` function. The analysis of emotions in this work only considers the original tweets of each person. The "syuzhet" library is also used, in which it is enough to pass a string to the `get_nrc_sentiment` function and it returns a data.frame with an estimate of the feeling shown in the text, which can be: anger, anticipation, disgust, fear, joy, sadness, surprise, trust, negative, positive. This library uses the NCR-Word-Emotion Association Lexicon, where words are associated with the eight basic emotions. Even in R, we can see how the words are classified in each emotion. Some important reference libraries are: "dplyr," "tidyr," "tidytext" and "tm."

Let us see an example.

On April 1, 2019, the news in Mexico began with the news of the suicide of musician Armando Vega-Gil, who left a note on his Twitter account. This note contains, among others, the phrase "His orphanhood is a terrible way to violate it, but a terrible ending is better than a terror without an end" (Su orfandad es una manera terrible de violentarlo, pero más vale un final terrible que un terror sin final) (Vega-Gil, A. 2019). This section presents the identification of emotions expressed in the note through the following R code to classify the tweet:

```
get_nrc_sentiment("Su orfandad es una
manera terrible de violentarlo, pero más vale
un final terrible que un terror sin
final", language = "spanish")
```

The identified emotions, with quantity of words per emotion, and their proportion, as well as contribution to the SI are:

Emotion	$N_i$	$n_i$	$w_i$	$J_i$	Contribution to SI
Anger	2	0.1818	0.23896	7	1.7506
Anticipation	1	0.0909	0.07494	4	0.4386
Disgust	2	0.1818	0.13641	5	1.1819
Fear	3	0.2727	0.18618	6	2.1949
Joy	0	0.0000	0.02475	1	0.0000
Sadness	2	0.1818	0.24604	8	1.9466
Surprise	0	0.0000	0.05861	3	0.0000
Trust	1	0.0909	0.03411	2	0.2159
<b>Total words considered</b>	<b>1</b>			<b>SI:</b>	<b>7.7286</b>



Note that both  $w_i$  and  $J_i$  have already been defined in Table 2 and how to calculate the contribution of each emotion to the SI is given in (1). According to these calculations, the phrase presented expresses a level of risk of moderate suicide.

Thus, for each person and the tweets that they have published, the total number of words in each emotion ( $N_i$ ) was counted and their proportion ( $n_i$ ) was calculated. In addition, we established the restriction that there should be at least 15 words in total to be able to quantify its suicide risk index. Note that the number of tweets for each person was not quantified in this work. Finally, this person was classified according to the index obtained in Slight, Moderate, Severe and Extreme.

**Example** Table 3 shows the results of the proposed methodology considering four arbitrary persons. According to their tweets, the number of words for each emotion was counted using the NCR-Word-Emotion Association Lexicon and their respective 'SI' was calculated using equation (1) and the data in Table 2.

Person	P1		P2		P3		P4	
	$N_i$	$n_i$	$N_i$	$n_i$	$N_i$	$n_i$	$N_i$	$n_i$
Joy	0	0	3	0.0566	1	0.0455	9	0.2571
Trust	0	0	10	0.1887	2	0.0909	11	0.3143
Fear	17	0.3269	15	0.283	4	0.1818	1	0.0286
Surprise	0	0	1	0.0189	1	0.0455	2	0.0571
Sadness	9	0.1731	9	0.1698	7	0.3182	1	0.0286
Disgust	14	0.2692	2	0.0377	1	0.0455	1	0.0286
Anger	12	0.2308	9	0.1698	5	0.2273	1	0.0286
Anticipation	0	0	4	0.0755	1	0.0455	9	0.2571
Total	52	1	53	1	22	1	35	1
Index	6.4644		13.4301		10.0247		5.0258	
Classification	Extreme		Severe		Moderate		Slight	

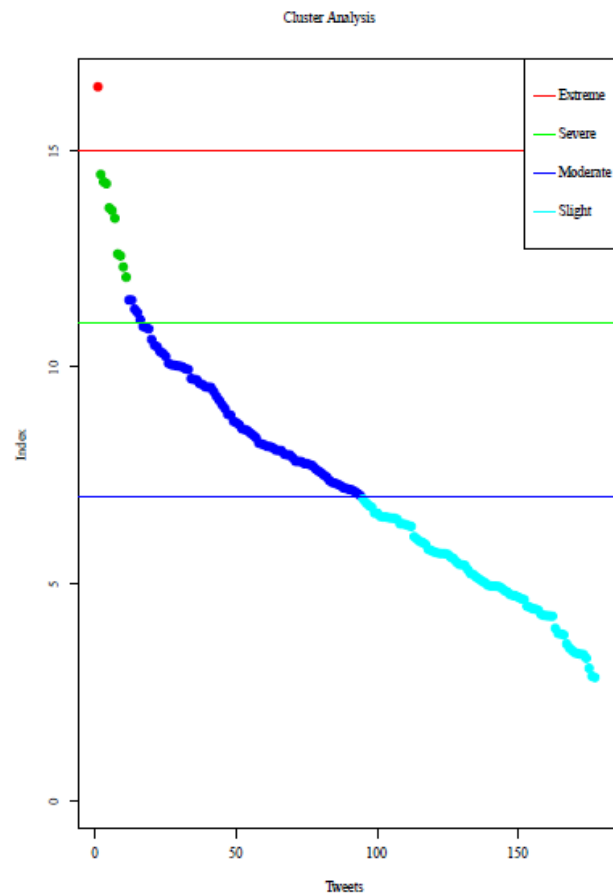
**Table 3** Example of calculation of suicide index and its classification

Source: Prepared by the authors

As we can see in Table 3, both the number of words in each emotion and its proportion are important for obtaining the index. The full results for the 177 people are shown in Annex 2. The names are omitted for privacy reasons.

Thus, using sentiment analysis and the AHP, a suicide risk index has been constructed, allowing to rank the emotions expressed by Twitter users. This will help experts to put red flags or alarms on those whose index is very high.

It is important to clarify that the classification given for the index is arbitrary and was constructed considering the hierarchy of emotions obtained from psychologists. However, to analyze the sensitivity of the result of the proposed classification, a cluster analysis was carried out, seeking to find four homogeneous subgroups among the data considering a hierarchical grouping, using the centroid as a link function and as a measure of dissimilarity to the Euclidean distance. See James G., Witten D., Hastie T. & Tibshirani R., (2017) for more details. The percentage of equal classification between the one provided by the cluster analysis and that obtained in this work is 97.17514%. See Figure 2.



**Figure 2** Classification of suicide risk index for 177 people

Source: Prepared by the authors

As we can see, a person with extreme suicide risk was detected, representing 0.56% of the total number of people. 8.47% were classified with severe suicide risk, while 44.08% and 46.89% were detected with moderate and slight risk, respectively.

4. Annexes

INSTRUCCIONES: Al analizar las pautas de un paciente de Salud Mental, se pueden identificar algunas emociones que permitirían identificar el riesgo percibido que tiene el estado de ánimo del paciente. Al continuar se presentan pares de emociones que han sido detectados en una sola pautas, considere cada par como una pautas separada. Debe de indicar que usted establezca cual de ellas considere más importante de acuerdo al juicio del paciente, para ello deberá seleccionar el número más cercano a la emoción que mejor describa la actualidad usando la siguiente escala:

- 1 igualmente importante
- 3 ligeramente más importante
- 5 notablemente más importante
- 7 demostrablemente más importante
- 9 absolutamente más importante

Por ejemplo, si usted identifica en un paciente las emociones de Enojo y Tristeza, considere que la Tristeza expresada es ligeramente más importante que los niveles de Enojo, para definir el riesgo que tiene el paciente de cometer suicidio. Entonces seleccione el número que está más cercano a esta emoción:

Emoción	Nivel de importancia					Emoción
Tristeza	9	7	5	3	1	Enojo

Por favor, realice este ejercicio con las siguientes parejas de emociones.

Emoción	Nivel de importancia					Emoción
Alegría	9	7	5	3	1	Confianza
Alegría	9	7	5	3	1	Miedo
Alegría	9	7	5	3	1	Sorpres
Alegría	9	7	5	3	1	Tristeza
Alegría	9	7	5	3	1	Aversión
Alegría	9	7	5	3	1	Enojo
Alegría	9	7	5	3	1	Anticipación
Confianza	9	7	5	3	1	Miedo
Confianza	9	7	5	3	1	Sorpres
Confianza	9	7	5	3	1	Tristeza
Confianza	9	7	5	3	1	Aversión
Confianza	9	7	5	3	1	Enojo
Confianza	9	7	5	3	1	Anticipación
Miedo	9	7	5	3	1	Sorpres
Miedo	9	7	5	3	1	Tristeza
Miedo	9	7	5	3	1	Aversión
Miedo	9	7	5	3	1	Enojo
Miedo	9	7	5	3	1	Anticipación
Sorpres	9	7	5	3	1	Tristeza
Sorpres	9	7	5	3	1	Aversión
Sorpres	9	7	5	3	1	Enojo
Sorpres	9	7	5	3	1	Anticipación
Tristeza	9	7	5	3	1	Aversión
Tristeza	9	7	5	3	1	Enojo
Tristeza	9	7	5	3	1	Anticipación
Aversión	9	7	5	3	1	Enojo
Aversión	9	7	5	3	1	Anticipación
Enojo	9	7	5	3	1	Anticipación

Annex 1 Instrument applied to psychologists (AHP)

Person	Index	Criterion	no.of words	Cluster	Classification
1	16.46437231	Extreme	52	1	1
2	14.44026556	Severe	72	2	2
3	14.27139233	Severe	43	2	2
4	14.22809603	Severe	63	2	2
5	13.66806642	Severe	53	2	2
6	13.60952041	Severe	49	2	2
7	13.43065509	Severe	53	2	2
8	12.60642571	Severe	70	2	2
9	12.56363553	Severe	47	2	2
10	12.30704281	Severe	57	2	2
11	12.07050333	Severe	60	2	2
12	11.54512905	Severe	42	3	2
13	11.54131388	Severe	49	3	2
14	11.33339163	Severe	43	3	2
15	11.25557448	Severe	29	3	2
16	11.09227	Severe	19	3	2
17	10.93261636	Moderate	44	3	3
18	10.90664769	Moderate	52	3	3
19	10.87794	Moderate	50	3	3
20	10.63340474	Moderate	38	3	3
21	10.50041143	Moderate	56	3	3
22	10.46378	Moderate	16	3	3
23	10.34987238	Moderate	21	3	3
24	10.31776778	Moderate	36	3	3
25	10.24270286	Moderate	35	3	3
26	10.08530105	Moderate	19	3	3
27	10.05030667	Moderate	30	3	3
28	10.03987	Moderate	40	3	3
29	10.02473	Moderate	22	3	3
30	10.01814077	Moderate	39	3	3

Person	Index	Criterion	no.of words	Cluster	Classification
31	9.99973	Moderate	30	3	3
32	9.954913333	Moderate	24	3	3
33	9.940979048	Moderate	21	3	3
34	9.730943158	Moderate	19	3	3
35	9.71309	Moderate	26	3	3
36	9.704547037	Moderate	54	3	3
37	9.61961	Moderate	33	3	3
38	9.596262703	Moderate	37	3	3
39	9.539871395	Moderate	43	3	3
40	9.529354706	Moderate	34	3	3
41	9.528781818	Moderate	44	3	3
42	9.432493913	Moderate	23	3	3
43	9.320565714	Moderate	35	3	3
44	9.224845	Moderate	64	3	3
45	9.124087619	Moderate	21	3	3
46	9.03949	Moderate	36	3	3
47	8.904870968	Moderate	62	3	3
48	8.888157419	Moderate	31	3	3
49	8.746415882	Moderate	17	3	3
50	8.715425882	Moderate	17	3	3
51	8.667878592	Moderate	71	3	3
52	8.573004783	Moderate	23	3	3
53	8.554465172	Moderate	29	3	3
54	8.53069	Moderate	41	3	3
55	8.47313	Moderate	50	3	3
56	8.42414	Moderate	20	3	3
57	8.365777143	Moderate	28	3	3
58	8.237961613	Moderate	62	3	3
59	8.223028421	Moderate	38	3	3
60	8.199147778	Moderate	27	3	3
61	8.16393	Moderate	22	3	3
62	8.15973	Moderate	32	3	3
63	8.13332	Moderate	20	3	3
64	8.080376957	Moderate	23	3	3
65	8.075191081	Moderate	37	3	3
66	8.067707273	Moderate	33	3	3
67	7.988098889	Moderate	45	3	3
68	7.96896	Moderate	21	3	3
69	7.968677647	Moderate	17	3	3
70	7.903912593	Moderate	27	3	3
71	7.82403	Moderate	20	3	3
72	7.820003077	Moderate	26	3	3
73	7.817166667	Moderate	18	3	3
74	7.771593077	Moderate	26	3	3
75	7.768275263	Moderate	38	3	3
76	7.744782121	Moderate	33	3	3
77	7.723231905	Moderate	21	3	3
78	7.651872174	Moderate	23	3	3
79	7.601238421	Moderate	19	3	3
80	7.562283529	Moderate	17	3	3
81	7.505373333	Moderate	27	3	3
82	7.461027143	Moderate	42	3	3
83	7.376900909	Moderate	33	3	3
84	7.33316	Moderate	25	3	3
85	7.317443333	Moderate	36	3	3
86	7.28942	Moderate	40	3	3
87	7.259757619	Moderate	21	3	3
88	7.207105854	Moderate	41	3	3
89	7.194968936	Moderate	47	3	3
90	7.173777692	Moderate	26	3	3
91	7.16004973	Moderate	37	3	3
92	7.124982759	Moderate	29	3	3
93	7.078643871	Moderate	31	3	3
94	7.029951429	Moderate	21	3	3
95	6.94425	Slight	30	4	4
96	6.864024211	Slight	38	4	4
97	6.801047273	Slight	22	4	4
98	6.76343	Slight	25	4	4
99	6.627654444	Slight	18	4	4
100	6.625444286	Slight	28	4	4
101	6.551581765	Slight	34	4	4
102	6.538346923	Slight	26	4	4
103	6.536273913	Slight	46	4	4
104	6.522699474	Slight	19	4	4
105	6.513644706	Slight	17	4	4
106	6.511258889	Slight	18	4	4
107	6.48612	Slight	20	4	4
108	6.38015	Slight	16	4	4
109	6.379241176	Slight	17	4	4
110	6.364651429	Slight	28	4	4
111	6.337802308	Slight	26	4	4
112	6.320157097	Slight	31	4	4

Person	Index	Criterion	no.of words	Cluster	Classification
113	6.082824615	Slight	26	4	4
114	6.02797	Slight	32	4	4
115	5.97112	Slight	25	4	4
116	5.950363529	Slight	17	4	4
117	5.90634	Slight	19	4	4
118	5.79138	Slight	16	4	4
119	5.7658	Slight	50	4	4
120	5.732076667	Slight	24	4	4
121	5.712487949	Slight	39	4	4
122	5.697153529	Slight	34	4	4
123	5.69508	Slight	20	4	4
124	5.68941	Slight	16	4	4
125	5.672806923	Slight	26	4	4
126	5.60813	Slight	16	4	4
127	5.577472105	Slight	19	4	4
128	5.4957	Slight	20	4	4
129	5.444047778	Slight	18	4	4
130	5.436903846	Slight	26	4	4
131	5.421333333	Slight	30	4	4
132	5.318872222	Slight	27	4	4
133	5.229688148	Slight	27	4	4
134	5.20867	Slight	24	4	4
135	5.14979	Slight	20	4	4
136	5.107161538	Slight	26	4	4
137	5.059582381	Slight	21	4	4
138	5.025801429	Slight	35	4	4
139	4.966341053	Slight	19	4	4
140	4.948511053	Slight	19	4	4
141	4.943781053	Slight	19	4	4
142	4.940972632	Slight	19	4	4
143	4.93355	Slight	25	4	4
144	4.89686	Slight	32	4	4
145	4.838891613	Slight	31	4	4
146	4.80805	Slight	26	4	4
147	4.747371176	Slight	17	4	4
148	4.727512222	Slight	18	4	4
149	4.71598	Slight	16	4	4
150	4.68481	Slight	20	4	4
151	4.647951176	Slight	17	4	4
152	4.6317	Slight	20	4	4
153	4.478691111	Slight	18	4	4
154	4.455943158	Slight	19	4	4
155	4.42102	Slight	16	4	4
156	4.413330588	Slight	17	4	4
157	4.386117059	Slight	17	4	4
158	4.287521905	Slight	21	4	4
159	4.266465217	Slight	23	4	4
160	4.258736667	Slight	24	4	4
161	4.253971818	Slight	22	4	4
162	4.248257273	Slight	22	4	4
163	3.96848	Slight	16	4	4
164	3.850892222	Slight	18	4	4
165	3.840469091	Slight	22	4	4
166	3.818285714	Slight	21	4	4
167	3.610366667	Slight	24	4	4
168	3.515431765	Slight	17	4	4
169	3.454504211	Slight	19	4	4
170	3.402535294	Slight	17	4	4
171	3.386461765	Slight	17	4	4
172	3.370748235	Slight	17	4	4
173	3.364708889	Slight	18	4	4
174	3.278131053	Slight	19	4	4
175	3.046477647	Slight	17	4	4
176	2.86458	Slight	25	4	4
177	2.83408	Slight	20	4	4

Annex 2 Classification of suicide index

## 5. Acknowledgments

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## 6. Conclusions

This paper proposed an alternative to detect suicide attempts of people through their publications on the social network Twitter.

The proposed methodology is based on the analysis of emotions and the Analytical Hierarchical Process, quantifying the importance of basic emotions. The decisions made by psychologists are perfectly acceptable, since the consistency ratio was 0.0882 for the process, as recommended by Saaty (2009). Thus, the final weights obtained by the AHP for each emotion can be replicated for future research.

In this investigation the number of words in each emotion was collected through the NCR-Word-Emotion Association Lexicon using the statistical language R, which resulted to be a friendly and easy-to-use tool.

The results obtained with respect to the 177 people considered in the study indicate that more than 90% were classified with slight and moderate risk and there was no suicidal intention in them. However, and for health purposes, attention should be given to those classified as severe and much more to those with extreme risk. The measures must be precise and on time.

Given the high rates of suicide presented in recent years, it has become a prevailing necessity to develop a tool that allows to detect in time suicidal intentions. Granted the frequent use of social media, they can become an ally for suicide prevention by incorporating them into methodologies such as the one proposed in this research. The present work proves to be an easily accessible tool in which different public organizations can replicate the methods to prevent suicide in Mexico.

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## Government, poverty and corruption in Haiti. Critical reflections on two social programs, brain drain and destination countries

## Gobierno, pobreza y corrupción en Haití. Reflexiones críticas sobre dos programas sociales, fuga de cerebros y países de destino

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### Abstract

This article aims to make a critical analysis of the performance of the last Haitian governments as well as the factors that contribute to the rise of extreme poverty in the country. It shows that corruption has a role in the violation of human rights, extreme poverty and social segregation, socioeconomic inequality, institutional mistrust and the lack of productivity of work whose situation results in the massive displacement and the brain drain of Haitians, although remittances remain the main economic source of families but also influence the national economy. Similarly, the impact of the two main social programs for combating poverty is questioned. At the end of the work, the results of the research carried out in northeast and northwest, as well as the countries most wanted by this group of Haitians to migrate, are presented. As a qualitative research, the focus groups methodology was used to gather information, perception and evaluate the study instrument. As a result, a semi-structured survey was used using a questionnaire with open and half open questions, and a structured technique as a tool for evaluating and compiling research data. Also, the participant observation allowed us to understand the daily life and the attitude of the interviewees.

**Extrem poverty, Government, Brain drain, Migratory flow**

### Resumen

Este artículo pretende hacer un análisis crítico del desempeño de los últimos gobiernos haitianos así como los factores que contribuyen en el auge de la pobreza extrema en el país. Se demuestra que la corrupción tiene un papel en la violación de los derechos humanos, la pobreza extrema y segregación social, la desigualdad socioeconómica, la desconfianza institucional y la falta de productividad de trabajo cuya situación tiene como consecuencia el desplazamiento masivo y la fuga de cerebros de los haitianos, aunque las remesas siguen siendo la principal fuente económica de las familias pero también influyen en la economía nacional. De igual manera, se cuestiona el impacto de los dos principales programas sociales para el combate de la pobreza. Al final del trabajo, se presentan los resultados de la investigación realizada en Noreste y Noroeste, así como los países más deseados por este grupo de haitianos para migrar. Por lo tanto, se utilizó la metodología de los grupos de enfoque para recopilar información, la percepción y evaluar el instrumento del estudio. En consecuencia, se usó una encuesta semiestructurada mediante un cuestionario con preguntas abiertas y semi abiertas, y una técnica estructurada como herramienta para evaluar y recopilar los datos de la investigación. Asimismo, la observación participante nos permitió comprender la vida cotidiana y la actitud los entrevistados.

**Pobreza extrema, Gobierno, Fuga de cerebros, Flujo migratorio**

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## Introduction

In the region, socio conflicts and bad governance are some events that literally reduce the ability of competition and productivity of any nation. Similarly, structural problems, extreme poverty, inequalities, corruption, violation of rights and freedom of individuals, lack of administrative ethics and incoherent public policies are some of the effects of poor performance of a government. These factors influence the democratic process and respect for human dignity.

In this regard, should we consider that democracy is under threat and human rights are almost non-existent in the region? It is emphasized that sociopolitical circumstances and the violation of human rights weaken the holistic development of the Haitian nation for several decades. However, the task becomes more difficult when intimidating, discriminatory and manipulative actions come together with impunity to negatively impact the possibilities and dreams to live in a safe and adequate environment, where the vast majority of Residents do not have the same opportunities to meet their basic needs, in a dignified and permanent way. While the state should aspire to trust and respect the rights of each member of society, ensuring not only their freedom of expression and effective public service benefits but also creating strategies for responding to their difficulties in avoiding the migration flow and the brain drain for lack of opportunities.

### **A look at the displacement of Haitians to the US and Latin America. Causes and effects**

Similarly, it can be noted immediately that extreme poverty in Haiti not only refers to a chronic socioeconomic problem but describes the social injustice and lack of commitment of the authorities, to generate significant changes in favor of the groups vulnerable in terms of fundamental rights and freedoms. Unfortunately, the authorities are unable to improve the vulnerable conditions, respect and enforce the human rights of the population. More than ever, a responsible government is indispensable and committed to the basic necessities of the inhabitants, therefore the design of public policies of sustainable development and productivity are fundamental including the awareness of each actor social.

Unfortunately, corruption, impunity, and incongruous public policies are a plague for collective well-being. For example, a public policy explaining the weakness of governments is the massive importation of first-need products that completely destroys agricultural production and the local economy because domestic production remains neglected and Little interest to the authorities, therefore there is no productivity to compete and export products in greater quantity.

As a result, 4 billion imports are recorded at 2016. The increase in agricultural imports also follows an exponential curve in Haiti. The country imports rice, sugar and chicken chunks (\$70 million); Palm oil (60 million); 110 million cooking oil; \$20 million cube broth. This is about \$1 billion in agricultural products and derivatives. On the other hand, only agricultural products and derivatives are exported for a value of \$60 million. While more than a billion dollars are produced in agricultural products in Haiti (Le Nouvelliste, 2016). But what can be said about business management and international trade policy? We recall that the objectives of an international trade policy are summarized in: improving the distribution of income and standard of living of a population.

Strengthen the development of the internal market. Comply with the international commitments entered into. Another outstanding challenge for the fight against poverty, inequality and corruption is the establishment of an impartial judicial system to strictly enforce the laws and norms. Without overlooking the shortage of electricity, bad roads that impede the arrival of food products on time but purchasing power also affects food basket, health, education and other public services due to the Lack of employment opportunities and good government management for survival. Which is obviously a violation of human rights.

For this reason, human rights offer tools to analyse causes such as inequalities, discriminatory practices and unfair power relations in society. In other words, respect for human rights is the mirror that shows the true face of a society and the ability of its representatives to lead the people.

In this sense, the lack of opportunities and the migratory flow allow us to understand the desperation and the disagreements to the conditions in which the citizens live that perceive an increase of extreme poverty and insecurity but these factors express Also the most severe disapproval of citizens towards their rulers. Similarly, democratic principles and human rights continually encourage everyone not to consider the poor as second-world citizens but as human beings with a right to a dignified life, and all human beings are equal. Unfortunately, we are faced with a reality so sensitive and complex where insecurity, hunger, social exclusion and labor disintegration force Haitians, Central Americans and Africans to move out of their place of residence in search of sleep American, particularly. So, fear of the future, wars, violence, lack of opportunity and *Homeopathy*<sup>1</sup> are the main causes of forced migration.

According to (Schulz and Batalova, 2017):

*In recent decades, the United States has become the main destination with a significant increase in Haitian immigrants. Indeed displacement has evolved in a vertiginous way considering that only 5,000 Haitians lived in the United States in 1960, Haitian immigrants began to arrive in large numbers after the collapse of the dictatorship of Jean-Claude Duvalier to late 1980s. Beyond political instability, endemic poverty and natural disasters, including a devastating 2010 earthquake, have driven migration to the United States, often by boat.*

<sup>1</sup>This term is created by the author of this article. According to him, the *Homeopathy or Patriopatía* is the suffering, hatred, fear and other psychological illnesses that the place of origin provokes due to the social and structural problems, which affects the personal, emotional well-being and the competence of resources human. It is noted that many citizens who leave their homeland, perform better, confirm their talents and get many successes because the management of talent in their country is almost non-existent. Instead, those who remain, usually suffer from psychosomatic illnesses such as: chronic frustrations, typical depressive episodes, feeling inferiority, acute conscious, low self-esteem, suicidal thoughts and acts, or autoaggressions, general hatred (personal, society and fatherland), among other symptoms. Those who despise their country demonstrate their dispossessions through negative expressions or inappropriate actions in and out of the territory. Few return to live in their home country for fear, hatred and lack of opportunity.

*In 2015, there were 676.000 Haitian immigrants in the United States, compared to 587.000 in 2010; Haitians represent less than 2 percent of the U.S.-born foreign population More than 58.000 Haitian immigrants already in the United States before the 2010 earthquake have been granted temporary protection status (TPS), which grants work authorization and deportation exemption.*

Table 1 shows that the Haitian immigrant population tripled during the period 1990-2015. It should be mentioned that in the year 2015 the immigration authorities of the United States have placed the Haitians in the fourth largest group of the Caribbean, after the Cuban immigrants, Dominicans and Jamaicans (Schulz and Batalova, 2017).

Number of Haitian immigrants	Year
92,000	1980
225,000	1990
419,000	2000
587,000	2010
676,000	2015

**Table 1** Population of Haitian immigrants in the United States during the period 1990-2015

*Source: author's elaboration with data from the U.S. Census Bureau 2010 and 2015 US Community Surveys (ACS), and 10-year census of 1980, 1990 and 2000*

The above data show how troubling Haitian immigration is. Mass displacement carries with it the hope, the social and cultural development of the communities, although remittances remain the potential economic source in the Haitian population for several decades as mentioned previously, where the Immigrants become heroes of families.

As Altamirano said:

*Although many governments see the emigration of their workers as a result of a failure of their political and economic systems, the migration of human capital is beneficial in the medium and long term. The migrant has become a little nationalist and patriotic, who abandons his family and his people, to be a national hero, not only for his courage to pass a dangerous frontier, if it is irregular, but to survive in another culture, in addition, to contribute to the macro, meso and micro economy of his country by being responsible for the second most significant income for the country after the export of oil and before tourism, export agriculture and industry (2009, p.57).*



In the same way, remittances have helped local and family development in certain countries. Legrain (2002, p. 165) quoting from Altamirano (2009, p. 57) states:

*Sub-Saharan migrants send the sixth part of their income to their families. This amount far exceeds all family income and their home tribes. The money sent is destined for family consumption, which at the same time dynamizes the economy by encouraging local, regional and national production. It is also intended for employment by allowing salaries to those who have not migrated, and therefore benefits the locals. Today, countries like Bangladesh, Pakistan, and Sri Lanka have energized their local economies thanks to remittances from oil countries.*

The truth is that if it were not remittances, the Haitian population could experience the same starving situation as some African countries. Therefore, we agree with Altamirano (2009, p. 58) "These migrants are such heroes who, in addition, with their daily hard work, their knowledge, specializations and ethics make the country of destination benefit and can be sustainable in its welfare system; Because migrants pay their taxes in these aged countries that each year include more and more retirees. "

Also, the largest Haitian migrant population settled in the United States, also in Miami, Florida there is a large community called "Little Haiti", where some streets bear the names of certain heroes of the Haitian nation, for example: Toussaint Louverture, Jean-Jacques Dessalines, among others. According to Schulz and Batalova (2017), "Between 2011 and 2015, Florida and New York were home to almost 70% of Haitians.

Counties with the highest number of Haitians were Miami-Dade county, FL; Broward County, FL; Kings County, NY; and Palm Beach County, FL. Overall, these counties accounted for about 44% of Haiti's total population in the United States. In 2015, there is a significant number of 329.000 Haitians living in the Dominican Republic, Canada (93.000 Haitians), France (74.000 Haitians) and the Bahamas (28.000 Haitians). "The massive displacement is noticed after the earthquake of 2010, by the number of Haitians who emigrate to Brazil and Chile in search of work.

"In 2016, tens of thousands of Haitians and Africans were detained by immigration authorities while heading north to reach the U.S.-Mexico border. The following is the population of Haitian immigrants in the United States between 2011 and 2015" (Metzner, 2014).

Metropolitan Area	Population of Haitian immigrants	% of the population in the metropolitan area
Miami-Fort Lauderdale-West Palm Beach, FL	213,000	3.6%
New York-Newark-Jersey City, NY-NJ-PA	165,000	0.8%
Boston-Cambridge-Newton, MA-NH	47,000	1.0%
Orlando-Kissimmee-Sanford, FL	33,000	1.4%
Atlanta-Sandy Springs-Roswell, GA	14,000	0.3%
Philadelphia-Camden-Wilmington, PA-NJ-DE-MD	13,000	0.2%
Naples-Immokalee-Marco Island, FL	10,000	3.0%
Bridgeport-Stamford-Norwalk, CT	9,000	0.9%
Tampa-St. Petersburg-Clearwater	7,000	0.3%
Cape Coral-Fort Myers, FL	7,000	1.1%

**Table 2.** Population of Haitian immigrants in the United States during the period 2011-2015.

Source: author's elaboration with MPI tabulation of the data of the U.S. Census Bureau period 2011-2015.

According to the data presented by Schulz and Batalova (2017), median family income for Haitians in 2015 was lower than that of the general population born abroad, but greater than for migrant households in the Caribbean. Households of Haitian immigrants had a median income of \$47,200 in 2015, compared to \$51,500 for foreign-born households and \$42,400 for households in the Caribbean. By way of comparison, median income for native-headed households was \$56,500. Similarly, in fiscal year 2015, 17,000 Haitians obtained legal permanent resident status (LPR) (also known as obtaining a Green card), according to national Security Department data. Of these, 91 percent did so as immediate relatives of U.S. citizens or other family-sponsored preferences (50% and 41%, respectively).

In 2015, 57% of the 676.000 Haitians residing in the United States were naturalized citizens, compared to 48% of all immigrants. Similar to the total immigrant population, 54% of Haitian immigrants arrived in the United States before 2000, 30% reached between 2000 and 2009, and 16% in 2010 or later, including those who arrived after the 2010 earthquake.

Finally, the Haitian diaspora in the United States is made up of approximately 1.1 million people born in Haiti or reported to have Haitian ancestry, according to the tabulations of the U.S. Census Bureau 2015 ACS. Similarly, remittances sent to Haiti through formal channels have multiplied almost four times since 2000, reaching \$2.3 billion in 2015, according to World Bank data. Global remittances account for 25% of the country's gross domestic product (GDP). Haitians living in the United States sent more than half of all remittances to Haiti, for a total of \$1.3 billion in 2015.

In the same way, Haiti has a great history and an attractive culture. Its rich gastronomy and delightful beaches were recognized internationally. For several decades, however, structural problems and misery expose the country to an unprecedentedly difficult socioeconomic situation. Therefore, Democratic problems and socioeconomic inequality are visible and deter human well-being. Extreme poverty, socioeconomic inequality, corruption and the violation of human rights are closely related and become a threat to the proper functioning of Haitian society. Similarly, these factors and others significantly impact human dignity and democratic processes; In the same way, consternation and desperation oblige the prepared and less qualified citizens to flee their country of origin in search of a better life, in short the justified brain drain.

It should be mentioned that not only Haitians live this deplorable situation, we have the concrete and current example of the caravan of Central Americans mainly Hondurans in the Mexican territory in the hope of crossing the U.S.-Mexico border. It is perceived that these migrants leave their place of origin because of the discriminatory events, violences and lack of opportunities.

### **Diagnosis of governance, welfare state, democracy and social rights in Haiti**

In reality democratization should limit power and rise up against inequality. In a country where the same rulers generate social inequalities for lack of political ethics to the place of working for the common good, this is unacceptable.

Wealth and public goods are dealt with in a dissimilar way and the general interests become remain individual; As much as citizens try to solve their problems by their own means, lack of opportunities and economic pressure lead them to make drastic decisions to meet the basic needs of their homes, in search of determining mechanisms for change their lifestyle, protect both the privileges and interests that the Constitution and the Declaration of Human Rights bestow on them, such as ensuring self-efficiency and family economic growth. From there, armed conflicts, the creation of criminal gangs and the repetitive and violent protests of some have arisen. It is therefore imperative that the welfare state is characterized mainly by the inclusion of social rights, by claiming a certain level of income and access to health, education and other social services.

Therefore, Pérez & Valencia (2007, p. 141) affirms that the public authorities are actively involved in the promotion of social rights through the support of welfare and social security institutions in order to cope with the vital risks (elderly, unemployment, sickness, poverty, among others).

Related to the foregoing, the application of democratic principles and specific public policies lead to issues of distribution of power to qualified people, which also implies securing skills between women and men and counteracting conflicting and unequal situations of any kind to reach and exercise power; As well as creating political strategies and social actions that respond to the social needs of the population.

For this reason, the democratic government is obliged to resolve the problems and expectations of all the inhabitants; To give concrete results to the popular emergency such as food sovereignty, safety, health and education for all, better public service benefits, agricultural savings and credit system, technological innovation and entrepreneurship, as well as the respect for the free vote of the population without exception.

Therefore, the Government must ensure the active participation of all voters to freely elect their representatives but also to respect and enforce their decisions expressed in their vote.

It is understood that elections do not become a democratic society, but that there are free elections because society is democratic. Likewise, free and democratic elections also do not guarantee the eradication of socioeconomic inequalities and extreme poverty but the implementation of public policies that respond to the real needs of the inhabitants in terms of Improving living standards, creating social and labour opportunities, public safety, equitable justice, respect for human rights and fundamental freedoms, equality, gender equity and non-discrimination are some of the characteristics of a democratic government. Certainly, good governance does not overlook concrete actions for a fairer and more equitable society, which is why it manages to fight corruption, works for the thorough observance of human rights and related regulatory provisions with environmental protection, preservation of genetic biodiversity and citizen and civil protection.

For this reason, democratic governance feeds social and economic policies that address the needs and aspirations of its people, they are aligned to eradicate poverty, expand and take advantage of the opportunities that are presented without harming the development For future generations, therefore, sustainable regional development. Therefore democratic governance is the process of creating and maintaining an environment for inclusive political agreements and processes that protect the interests of citizens (UN, 2015).

While it can be said that democracy is not only the right to vote, but goes beyond electoral processes because it is also the Government's obligation to ensure that the basic needs of the population are met through the implementation of actions congruent sociopolitical, as mentioned above. On the contrary, the malicious political attitudes recorded in recent years discourage urban and rural people, as well as indigenous peoples from various developing countries to rely on certain candidates and rulers, nor in credible and transparent electoral processes. According to Peralta-Varela (2014), democracy is more than a set of conditions to choose and be elected; It implies a way of organizing society in order to satisfy social needs, while ensuring and expanding the rights of which citizens are carriers "(p. 66).

Similarly Pérez & Valencia said:

*"The constitutionalization of social rights represents a step forward in shaping a more just and free society, because there is no freedom without equality and justice. Similarly, the process of economic slowdown that leads to the social crisis (unemployment, inequality, segmentation of the labour market, mutations and rupture of the social fabric (breakdown of social, community and institutional relations) That certain industrialized and developing countries live. These facts are known as the welfare state crisis, the consequences of which are: the state's fiscal crisis and the financial problems of the Social Security System "(2007, p. 142). Similarly, the welfare state corresponds to the whole of State institutions providing social policies aimed at improving living conditions, facilitating the integration of social groups, leveling and equalizing – although not homogenizing – Its material resources (2007, pp. 143-144).*

As a result, corrupt governments are a threat to the emancipation and strengthening of democratic societies and collective well-being. Socioeconomic inequalities impact the process of democratization, well-being and human dignity, and their direct effects are: extreme poverty, social conflict, violence, migratory flow and brain drain. In this sense, public policies implemented through many angles allow us to issue a critical analysis of socioeconomic retardation, inequalities, political and institutional constraints in Haiti.

In the same way, it is noticed the emergence of establishing and combining mechanisms and strategies to improve the precarious conditions to avoid the brain drain. In view of this, equality of opportunity and respect for fundamental ethical rights and principles are key to the promotion of the welfare state and the reduction of a complex and growing set of sociocultural problems that have led to Forced and massive displacement, therefore, have brought the worries and the fear to continue living in an unjust, unsafe and unproductive society, which will be entertaining social citizenship and participatory democracy, which are part of the development of the state of Welfare.

With regard to the task of Governments to ensure social protection and respect for the social rights of the population and referring to the welfare state, Pérez & Valencia (2007) states:

*The equality of citizens ' rights, and especially those directly related to the basic well-being of people, has made bearable the inequalities of wealth generated by capitalist systems and has mitigated the social conflicts that Inherently carry... Therefore, the welfare state has been an integral element of societies and established organic bonds with production, reproduction and consumption. Likewise, it has two objectives at the same time: on the one hand to guarantee a continuous economic growth by means of promoting the increase of consumption, and of another, to establish a guarantee of minimums of social protection to the whole population (pp. 144-149).*

Yet peoples often fail to reprove politicians, judges, and other representatives of various national sectors for their poor performance. In short, their corrupt acts and unfulfilled promises after the election provoke only public mistrust and despair in the crunchy communities. We agree with Peralta-Varela (2014) that “democratic governance systems have a very long history, through which their legitimacy and efficacy have been questioned.” At present, efficiency is linked to the ability to generate better participation but, above all, greater quality of life in the population in need, specifically in the countries considered to be in the process of development.”(p. 17). On the other hand, UNDP stated that:

*Democratic governance is a central element of human development, because through politics and not just the economy, it is possible to generate more equitable conditions and increase people's choices. To the extent that democracy makes possible the dialogue that includes the different social groups and as long as the public institutions are strengthened and more efficient, it will be possible to achieve the Millennium Development Goals, especially with regard to reducing the Poverty. In this sense, democracy is the propitious framework for opening up spaces for political and social participation, especially for those who suffer the most: the poor and ethnic and cultural Minorities (2004, p. 23).*

We also agree with Bobbio (1986) when he stated that "false promises and unforeseen obstacles have not been able to transform a democratic regime into an autocratic regime" (p. 45). Similarly, Peralta-Varela (2014, pp. 38-39) points out that "if political institutions are considered vehicles of perpetuating inequalities, or promoters of the interests of groups of minority actors, democracy is mined and conditions are created for the collapse of the state [...] The realities of poverty and exclusion linked to the inequitable distribution of wealth converge in the search for solutions to social problems by means of the intervention of the Society in public affairs. This need for participation that would contribute to the distribution and tends to avoid the increase of social conflicts, should encourage the opening of spaces of interaction between government and society to identify problems, dialogue and jointly agree forms of care. "

Depending on the foregoing, the importance of productive factors, state intervention in the economy, productivity, institutional and political ethics, the egalitarian redistribution of public benefits or services and the integration of Labour market, to guarantee a process of continuous growth, and in the same way to prevent the massive displacement, the brain drain and the social conflicts caused by the lack of opportunities and the unequal levels of income. Therefore, the welfare or social state is essentially characterized by the inclusion of social rights, which are the basis of social citizenship. Social rights, rights to claim a certain level of income and access to health and other social services have become a fundamental part of social constitutionalism (Pérez & Valencia, 2007, p. 151).

In this sense, social rights are synonymous with equal opportunities to achieve goals and/or meet basic needs from a perspective of continuous growth of the individual and the collectivity. So, the curse of the people is the deception of political parties that always promise social and political changes through programs that match social demands. In the end, social rights remain crushed, social cohesion and public security almost non-existent, the legitimacy of corruption, misery, and widespread violence, in short an absent state.

We must be well aware that the people grant political power to their representatives via universal suffrage, likewise, representatives should prioritize the common good of all communities, without exception, from the Roense theory that emphasizes the consent of the people who grant the power of sovereignty. In the same way, Roa<sup>2</sup> quoted in Beloso (2008) mentioned that:

*The Kings and rulers are thus, constituted by the people, moved by divine inspiration. And it is precisely the freedom of man and the divine concession where he sustains the foundation of why people can choose their own rulers and kings. He believes that this is very convenient and in accordance with the natural law, because individuals do not always conform to the opinion of the straight reason, unless they are directed by a warlord who is supported by the community and sufficiently endowed by nature. This is how the righteous ruler of the vulgar people can be differentiated, in which the most frequent thing is to find greed without limits and ignorance (p. 692).<sup>3</sup>*

According to Bouza-Brey (1991) "Politics is the activity of management, management and integration of social situations, an activity without which social situations do not exist. Political power, therefore, performs these functions for society, and when it does not, or society disappears and political power collapses, or political power is replaced by another to avoid social decomposition... The realization of this activity of government by the political power is a response to projects, problems and social demands, and the adoption of decisions and execution of actions in which this action of Government consists produces some results in the society, that facilitate a change of the social situation and in a transformation of the projects, problems and initial demands. "(pp. 132-134).

In this sense, social and political power come together to resolve socioeconomic and environmental issues. Therefore, the people do not grant sovereignty to the elect to act as they want. This is where the essence of access to information, transparency and accountability of the people's representatives emerges.

<sup>2</sup> It should be remembered that Juan Roa Dávila was sentenced in Spain, exiled for his contrary opinions and died in Rome in 1630.

<sup>3</sup> J. Roa Dávila, De regnorum iustitia, 8.

It is a misguided, arbitrary, and dangerous tendency for certain "democratic" rulers who think that the fact of having political power automatically means having the absolute power to decide on the future of the population without prior consultation; To have their wealth, often in order to make a fortune, until they have the right to decide on who deserves to live or die. To this effect, public servants must be sure that the way of exercising political power and unethical attitudes can be punished by the same citizens, who are the first defenders of public interests and a democratic system of the government.

With reference to the above, unfulfilled expectations of politicians during electoral periods to persuade voters intensify distrust and end progressively in the hope of many who flee their place of origin by the socioeconomic and political instability. It is audible that true democracy aims to seek and achieve the well-being of all inhabitants, with justice and full freedom. To what is mentioned here, it is not worthwhile to see almost 80% of Haitians who are in situations of extreme poverty where women, rural girls and the elderly are the most vulnerable groups. It should be mentioned that the two Haitian departments with the highest proportion of chronic poor are the northeast and northwest, later we'll touch this point more deeply.

In view of this, political and social actors are encouraged to continue to strive to change the sociopolitical landscape of the world's first independent black Republic. It is undeniable to begin to consider ethical values, civic education, the culture of legality, austerity in the public service and respect for human rights which are a few elements for good governance. According to UN (2016), the problems of governance in Haiti and the violation of women's human rights should be addressed.

### **Gender equality, extreme poverty and brain drain. Proposal for an alternative economic method and organizational policy**

According to the Inter-American Institute for Cooperation on Agriculture (IICA) (2007), "Haitian women represent 52% of the total population and in rural areas, 60%.

The priority attributed to men in the division of labour obliges these women, tireless workers, to be dependent on peasant men in terms of access to capital, which prevents them from improving, in an autonomous and permanent way, their situation socioeconomic "(p. 5).

In this context, urban and rural women and even those who were born in extreme poverty have developed favorable attitudes for social and agricultural savings and entrepreneurship, as well as the ability to make their own decisions, Social and cognitive skills to plan their community and empowerment activities.

Yet men continue to benefit more social and political privileges than women in any part of the country. The discriminatory situation experienced by Haitian women should be remedied to promote democratic status and gender equality. Since women play an important role in the generation of income and the social and family balance of the Haitian nation.

Therefore their efforts, skills and commitments with family and society through the educational, emotional and nutritional preparation of future leaders and public servants must be recognized, valued and respected by all.

Unfortunately, many girls and women face harmful situations such as unsafe and risky abortions, maternal deaths, children with malformations, HIV/AIDS, emotional, physical and sexual violence, which divert their personal development goals and Educational attainment due to a planned marriage or unwanted pregnancy linked to its precarious conditions. Sex education in school curricula is definitely essential to prevent early pregnancies and other awkward and seductive situations such as: poverty, inequality and lack of moral and ethical values within the Families, susceptible to train vulnerable and desperate people to commit certain disastrous mistakes.

This educational strategy would help young people make informed decisions based on their life projects would also reduce the number of members in poor households or with very limited resources; By the way, the latter is one of the factors that enlarge misery.

In view of this, the people exasperated and with large families move out of their place of origin in search of a new beginning. Hence, the latest migratory events clearly explain how poverty, unemployment, insecurity and gender discrimination are lowering the quality of life and productivity of the population and particularly women. It stands out that many women leave their homes or manage to move with their children regardless of risk factors.

On the other hand, the lack of opportunities as a consequence of the brain drain and the mass displacement brings with it multiple psychological and social effects, for example the mental and emotional disorders, depressive episodes typical, families Dysfunctional, juvenile delinquency, prostitution, family and gender violence, economic dependence, among others. In our civilization men are still the home providers and women are responsible for raising children and caring for the home.

This allocation of family roles impedes the labour integration of women and socioeconomic autonomy. Similarly, macho attitudes, domestic violence, and emotional problems are the result of economic dependence in many households. To improve this, women and men should benefit from the same opportunities from the perspective of gender equity and personal improvement. It should be mentioned that roles between women and men tend to change over time because there is a greater participation of women in social and political life.

However, statistics and cases of femicides and gender-based political violence demonstrate how much we must work to respect the rights to life, reproduction and freedom of women.

As a result, women need to form networks of support and solidarity to effectively combat discrimination, lack of opportunities and male *caciquism* that impact their socioeconomic, educational and political development, including their fundamental rights and freedoms as equal people.

Therefore, all peasants and indigenous people (women and men) should be organized into support groups to reclaim their rights to agricultural and rural credit<sup>4</sup> with low interest rates, economic subsidies and social protection through public policies linked to alternative development and agrarian reform programs designed by impartial and competent public servants whose commitment is to improve the quality of life of the most vulnerable groups, small and medium-sized producers.

As noted by FAO (2013), “Social protection allows for the vulnerability of rural households and plays a key role in improving food and nutritional security and reducing rural poverty. The predictability of social protection instruments allows families to better manage risks and to count more profitable livelihoods. The impact of social protection systems is greater if they are coordinated with broader strategies of food and nutritional security, rural development and poverty reduction.” The same procedure for sustainable development, follow-up and qualification would be applied to improve the conditions of vulnerability of the other inhabitants and to combat corruption, on a continuous basis.

As expressed, it is emphasized that poverty, insecurity, discrimination and other social problems hit the largest number of inhabitants in urban and rural areas of the country. Therefore, the large producers could be subject of credits under conditions of association and of support to the other producers (*Unity makes strength*). Also, small and medium-sized producers could sell their new quality food products to large producers and the state to promote the local market, who would pay the products according to the rules of transparency and justice Established by the state. Similarly, the creation of food industries with facilities, equipment for the preparation, manipulation and processing of foodstuffs would allow the processing of food of plant origin through the basic methods of food preservation, to satisfy the modern and cultural eating habits of the Haitian population.

<sup>4</sup>By definition, the agricultural and rural credit is the one that is granted to be used in the process of production of agricultural, forestry, aquaculture and fishing goods, their transformation and/or marketing and support services, as well as the one that is granted for mining, rural and ecological tourism, handicrafts, transformation of metals and gemstones, including their commercialization. See:

<https://www.finagro.com.co/sites/default/files/node/basic-page/files/credito.pdf>

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We think that the aforementioned technique would facilitate both the creation of job opportunities, the use of non-edible byproducts and the remainder of waste for other utilities, reducing the risks of environmental pollution; At the same time it would meet an internationally competitive market, but it would also reduce violence, food insecurity, and the flow of mass migration to 75%; Also foreign investment as a purpose to create a lasting interest and for economic purposes by creating agricultural, industrial and basic services companies would increase to 80%. Thus, Haiti would gain a better position in the UNDP Human Development Index (HDI) ranking.

This innovative and visionary approach would guarantee a balanced diet of local consumers and family economic growth by allowing thousands of Haitians to enjoy a dignified life by earning an average of 2 US dollars per day, this would lead to the decrease in the number of street traders, criminals and poor extremes. With respect to graduates from various universities, the state could design a program of scholarships of specialty, monitoring and management of human resources by competences and merits, national competitions of projects of innovation, growth, Entrepreneurship and empowerment for integral development and democracy.

All the contests of proposals for local, social, community and competence development will be effective as long as the whole procedure, from the registration of documents to the award of prizes, would be carried out with transparency, justice and ethics. Schools and professional institutes would be equipped and willing to access the maximum number of young people and adults who wish to learn a career or finish their studies.

Reduce the rate of unemployed and runaway graduates; promoting free and quality education, creating employment opportunities and securing social and human rights should be the government's priority. Citizens would never have the need to leave their country for lack of job opportunities, hunger and/or violent scenarios, but would travel for pleasure, as potential and respectable tourists.

Empirical observation in rural areas continues to sealed the bravery, determination, efforts and survival strategies developed by peasants and indigenous people trapped in the vicious circle of extreme poverty; Victims of discrimination and the absence of social protection in their communities to meet their basic needs. Therefore, a large proportion of people live without social protection in rural areas of developing countries; Its main source of food survival and socioeconomic reproduction is agriculture, to make a living and to resist misery.

Similarly, "Poor rural households already suffer from limited access to resources, low agricultural productivity and inadequate markets, reducing their ability to cope with the swings and economic and natural crises that threaten their livelihoods "(FAO, 2013). Similarly, the situation of extreme poverty and exclusion is more about rural people who fail to break this vicious circle.

From the perspective of organizational policy and sustainable socioeconomic development, agro-industrial and human, Haiti's misery situation can be changed as long as we opt for a strategic intervention and the goodwill of the servers Public and active citizen participation, as well as the state accompaniment of the five productive sectors that embark the essential elements for the economic and social activity of society.

These elements are involved in the Society of information, quality and promotion of agriculture to propose analytical components for the integration of peasants and indigenous people in the national and international markets in order to counteract The persistent factors of instability and economic retardation in rural areas. Similarly, some alternative conceptions are emphasized with objective probabilities and forceful attitudes towards agro-industrial extension, competition and access to regional markets that will give way to a possible improvement in the social spheres, economic and psychological of the Haitian man, considering respect for human rights, the impulse of technological innovation and access to information, as well as the creation of a transparent and ethical judicial and financial system.

Here, speaking of a transparent judicial reform, we refer to the need for a democratic state, good governance to carry out the necessary transformations for the welfare of the population, guaranteeing greater emotional and economic security in the Rural areas through resilience, the use of renewable and non-renewable resources and social, cultural and labour inclusion.

Therefore, there is an alternative to the rupture of the structural limits of development, which consists in deploying and implementing a long-term sustainable development policy that includes strategies for industrial, agricultural, scientific development, Social, ecological and, above all, combating poverty. It suggests timely policies that prioritize development education, a transparent judiciary, agro-industrial reform, and strong technological and business innovation can benefit and help improve this condition. When the boundaries of development do not break in time, structural problems are repeated periodically, and the twisted circles suffered by the national economy will continue to escalate at a disadvantage of future generations.

Therefore, in the Haitian population, employment becomes luxury for a variety of reasons, including corruption and frequent socioeconomic inequalities. It is difficult to balance all the factors that lead to the misery situation but the dire consequences are axiomatic. In this case, the economic well-being must be a right to satisfy the basic necessities of the family unit by means of the implementation of strategies and social actions destined to improve the quality of life of the inhabitants, from where they rest the whole Obligation and commitment of political actors to ensure the prosperity and sovereignty of the nation.

This last comment adds to the responsibility of Governments to promote equality between men and women in employment opportunities and adequate means of survival in these difficult times. We agree that the implementation of economic policies and rural development programmes aimed at overcoming poverty and improving the living conditions of rural women is paramount (ECLAC, 2009, p. 24).



In the same way, it is necessary to make changes and hope, to improve the living conditions in a society (Alonso, 2002, p. 39). However, corruption, nepotism, greed and impunity are some elements that can end the patience and confidence of those affected, who become victims of a corrupt political and judicial system. We add two very important components to make this significant change that we all expect, are empathy to resolve conflicts of interest and structural problems that physically and emotionally demolish the masses; The second is definitely the fair and equitable application of laws to corrupt public officials by avoiding favoritism, despotism and impunity that undermine moral values and the democratic process. Without overlooking citizen participation and the commitment of social actors, community leaders and impartial media.

All that is proposed can be achieved as long as we do it together, for love of the nation and in a selfless way. We believe that there is nothing that can not be changed by social action, unity and political ethics. From an approach of the human condition based on the right to a dignified life, freedom, peace and social coexistence, the composition of human values, solidarity, justice and the social pact are essential to foster the union, the rights and obligations of each Haitian citizen.

As a result, Haiti is on the list of countries with the greatest human rights abuses and less advanced in the world due to lack of opportunities, hunger, inefficient and insufficient public service benefits, corruption and Impunity. To remedy the situation we must confront the problem of impunity, transparency and accountability, that is to promote the culture of legality, institutional ethics and a judicial reform that implies knowing, respecting and enforcing the law, in a way Impartial and transparent. Since we all have rights to a decent life in a safe, fair, equitable and prosperous society.

To this end, it is essential to have competent, honest and ethical mandates, who will take into account the usefulness of each inhabitant for integral development, respect for human rights and fundamental freedoms and the implementation of a national plan of employment and food sovereignty.

In the same way, the obligation of the State is to generate mechanisms of prevention and protection for all its inhabitants; Create employment and business opportunities; To prevail the quality education and to conceive greater possibilities of admission to the graduates. We know that quality education is the safest investment and is never devalues, but many children are not in school due to socioeconomic inequality. As UNESCO mentioned (2017):

*"To maximize their profits and reduce income inequality, education must reach the poorest. It is important to recognize that education is key to ending poverty in all its forms and in all latitudes. ... it is eight times more likely that children from the poorest families (-20%) are out of school than the wealthiest children (+20%) in low-middle-income countries. It is nine times more likely that primary and secondary school-age children in the poorest countries are out of school than their peers in wealthier countries. He points out that education has direct and indirect implications for both economic growth and poverty. Education provides skills that increase job opportunities and income, while helping to protect people from socioeconomic vulnerabilities. A more equitable expansion of education would reduce inequality and raise the poor from the lowest rung of the scale. Similarly, UNESCO (2017) shows that about 60 million people could escape poverty if all adults had only two more years of schooling. If all adults would end secondary education, 420 million people could emerge from poverty, reducing the total number of poor people by more than 50% globally and by nearly two-thirds in sub-Saharan Africa and South Asia. "*

For his part, Oppenheimer (2010) said:

*Countries whose policies bet on education and research have made a difference, and one of the most important consequences is the dizzying reduction of poverty, driven by a "national obsession with education." This is evident in countries such as India, China, Singapore, Finland and South Korea, where economic growth is experienced at a rate that surpasses that of Latin American economies. Therefore, it is necessary to motorize from the state incentives that contribute to promote a greater commitment in the training of the new professionals, since they represent the fundamental basis of the teaching and the learning of the students.*

Provided that a policy of equitable education is required as well as an environment of peace and tranquility so that students and all citizens can carry out their daily and educational activities without fear of armed gangs or kidnappers; Similarly, the implementation of follow-up programs, scholarships and immediate jobs for recent graduates would compliment personal and collective development. It should also be considered the professionalization of teachers and the quality training of the students, future leaders of the nation.

According to Vaillant (2008) quoted by De Sousa (2011), "It is necessary to consider the importance of the professionalization of the teacher which is built from the confluence of three elements: adequate working conditions, a quality training, and a management and evaluation to strengthen the capacity of the teachers in their practice. He also points out that the key is to form good teachers, so educational improvement will only occur with social pressure from below, a family culture of education must be created, and citizen movements that pressure governments to put education at the center of the political agenda.

It is necessary to motorize from the state incentives that contribute to promote a greater commitment in the training of the new professionals, since they represent the fundamental basis of the teaching and the learning of the students. "Each one has something useful to Contribute to the construction of the rule of law. It is urgent to combat unequal social distribution, corruption, the violation of human rights, and any act contrary to the common good, social justice, food sovereignty and public security. This sociopolitical awakening must be accompanied by the will of each Haitian, likewise the leaders must work to regain the social-economic, cultural dignity of the nation.

Definitively, the extreme poverty in which most Haitians live, causing the rise of psychosomatic problems, despair, hatred, depression and stress; As a result, it is one of the causes of suicides in recent decades worldwide. As if it were not enough, poverty also directly or indirectly attacks the dignity of those who experience it, patriotic pride and national sovereignty; They also influence the identical, cultural and sociopolitical events.

This leads us to question and criticize the role of political power and credit embodied in public officials, since the current results are contrary to the aspirations of the people. Consequently, poverty terrifies and reduces these individuals to the inhuman and impotent State; Such a circumstance attacks literally with the very preservation of life and the basic freedoms of the human being, for the performance and social inclusion. As such, difficult socioeconomic conditions, violence, unemployment and lack of opportunity force the massive displacement of Haitians and cause the brain drain.

### Methodology

The research was conducted in the two poorest departments of Haiti, northeast and northwest to investigate the perception of the inhabitants on the migratory flow, the socioeconomical situation and their aspirations. As a qualitative research, the methodology used to collect data, perception and evaluation of the research instrument was focus groups. In this sense, a semi-structured survey was used through a questionnaire of 55 open and half open questions about living conditions, the perception of participants regarding social programs and their places of destination as possible Immigrants.

A structured technique was also used to save time and facilitate the collaboration of the participants. In addition, the observation of the participants allowed us to understand the daily life and the attitude of the 100 interviewees randomly chosen, who constituted the representative sample size for the two locations: Maribaroux (northeast that It has 393,967 inhabitants) and Saint Louis du Nord (northwest with 728,807 inhabitants), to study and analyse the causes and effects of the brain drain in the two regions.

It is important to mention that the 100 heads of households were selected through the T-Student process to obtain the corresponding representative sample. Taking into account the formula:  $n = \frac{NZ^2PQ}{D^2(N-1) + Z^2PQ}$  Where, the size of the population N: 1, 122,774 inhabitants, Z: value obtained by using confidence levels = 1.96, E: Acceptable sampling error limit (is considered a 5% error), P = 50% (. 5), q = 50% (. 5), D = . 5; we get a sample size 195 surveyed S for both departments.

During the sessions, a brief presentation was made of the extreme poverty conditions in which the population is located, and the real basic necessities of the inhabitants were also evident. Therefore, each person has been able to express themselves with confidence and freedom. In view of this, the groups were granted 45 minutes to give their views and discuss in a respectful manner. Subsequently, the questionnaires were distributed to the participants.

For one hour the heads of households should fill out the questionnaires, however those who do not know how to read and write were supported by the community leaders and the investigator in question. Similarly, some parents who were in the same situation received help from their children or grandchildren. At the end of the focus group sessions, participants were thanked, small coexistence was made and the leaders were paid.

Below are the results of the research that allow us to analyze the multidimensional poverty as the main component of the migratory flow and the brain drain in Haiti as well as the impact of the two social programs for the combat of the Poverty in two poor regions.

**Results**

The research was conducted with 46 men and 54 women in the two poor departments. The age of the participants of the study population is located in the range of 16 to 75 years. In the same way, the average age is 35 years, as is the distribution in percentage of the age of the participants.

With respect to the marital status of the participants, table 3 points out that 4% is single, 35% of the participants are married, 48% live in free union and 13% are widows. With respect to the degree of study, it is revealed that 3% has the degree of preschool, 35% grade of primary, 23% grade of secondary, while 1% completed the university. On the other hand, 38% said they had not had any academic preparation.

Civil status civil	%	Highest degree of studies	%
Single	4%	Kinder	3%
Married	35%	Primary	33%
Free union	48%	Secondary	23%
Widower	13%	University	1%
		Any academic preparation	38%

**Table 3** The civil status of the participants and the highest degree of studies of the interviewees

Source: author's elaboration with data obtained in field work, 2015-2016.

Also, table 4 shows that 89% of participants were starving during the last week, 3% replied that they did not suffer hunger, while 8% did not answer the question. In the same way, the number of children in the home is presented. The chiefs of household replied that 25% of households have between 1 and 3 children, 42% have between 4 and 6 children, 26% have between 7 and 10 children, 4% responded to have had between 10 and more children, while 3% said they had no children and 1% did not answer. Therefore, the results show that 47% of respondents revealed that their home has only a quarter, 39% said they live in more than one and up to three rooms, while 14% responded that their home has more than three rooms.

Has anyone in your family suffered from hunger during the last week?	%	Number of children	%	Number of rooms per house	%
Yes	89%	No children	3%	Only a quarter	47%
No	3%	Between 10 and more	4%	More than one and up to three rooms	39%
Did not answer	8%	Between 7 and 10 children	26%	More than three rooms	14%
		Between 4 and 6 children	42%		
		Between 1 and 3 children	25%		
		Did not answer	1%		

**Table 4** Number of participants who have suffered hunger in the last week, number of children and number of rooms per house, northeast and northwest

Source: author's elaboration with data obtained in field work, 2015-2016

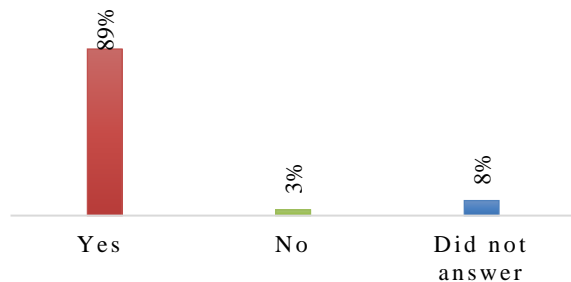
Therefore, table 5 presents the difficult economic situation of the inhabitants of the two poor regions. By using the World Bank poverty line that considers a person in extreme poverty when their daily average income (or expenditures) is less than US \$1 and, in moderate poverty, those who earn less than US\$2 per day. The results obtained in field work on average per capita income to measure the number of households in extreme and moderate poverty in these two departments show a proportion of 81% of extreme poor and 97% of moderate poor in the two departments.

Poverty line	Extrem poverty	Moderate poverty
Percentage	81%	97%

**Table 5** Percentage of households in extreme and moderate poverty in northeast and northwest.

Source: author's elaboration with data obtained in field work, 2015-2016.

Regarding the people of the study population who responded to this question about the lack of food at home in the last week before the interview, the results of graph 1 shows that 89% of respondents said yes in the last week. Some members of his family have suffered from hunger, 3% responded that no and 8% did not answer this question.



**Graph 1** Proportion of households that have seemed to starve in the last 12 months in northeast and northwest

Source: author's elaboration with data obtained in field work, 2015-2016

Therefore, the precarious situation of rural and urban areas motivates, encourages people with limited economic resources to flee from misery. With regard to people's perception of their socioeconomic situation, table 6 shows that 85% stated that they are currently in a very difficult socioeconomic situation, 14% said that their condition is difficult and only 1% stated that their situation current socioeconomic is something difficult, that presents the perception of the inhabitants on the strong juncture of deficiencies that prevent them from enjoying a dignified life in their environment.

It is also shown that 75% of the respondents want to leave the country due to their current socioeconomic status. While 23% do not want to flee the country because they are engaged in agriculture. On the other hand, 1% did not answer the question. Therefore, the countries where the participants want to emigrate in search of a better life are presented. The results show that 43% want to migrate to the United States, 20% prefer the Dominican Republic because they do not have financial resources to travel too far or pay the boat people. While 8% chose the Bahamas/Nassau. Therefore, 2% chose Canada and Brazil successively. On the other hand, 25% wanted to stay in their community.

It is important to note that the opportunities and options to migrate in Chile were few at the time of the investigation, for that reason this country is not listed. But things have suddenly changed and Chile became a good destination for Haitian and Latino emigrants. We are aware that the migratory situation of Haitians changes every moment due to their needs, therefore the data are subject to possible modifications. In addition, the cases of Haitian emigrants found in Tijuana, the border city of Mexico in southern California, were not reported here. But, this work can serve as a guide for further research on migration flow and brain drain in the region.

Perception of the socioeconomic situation	%	Do you plan to flee the country because of its current economic situation?	%	In What country would you like to emigrate because of your extreme poverty situation?	%
Very difficult	85%	Yes	75%	United States	43%
Difficult	14%	No	23%	Canada	2%
Something difficult	1%	Did not answer	2%	Dominican Republic	20%
				Brazil	2%
				Bahamas / Nassau	8%
				None	25%

**Table 6** Perception of Haitians on their current socioeconomic situation and countries of destination

Source: author's elaboration with data obtained in field work, 2015-2016.

The results mentioned in the previous table conclude that the northeast and Northwest departments are the most vulnerable and remain the regions that deserve urgent and permanent intervention where the authorities should implement a priori the major or main programs to break with misery. Day by day the poor extremes are more aware of their social, economic and cultural shortcomings; In view of this, they continually seek ways to survive by their own unattainable means and strategies. These expectations oblige citizens to ask for accounts of the funds that have been destined to improve the socioeconomic conditions of the neediest.

It is known that social programs should be executed from the local to the global for favorable results. So, if state interventions to combat poverty had been coherent, if these people were the main beneficiaries of the next two recent social programs, their quality of life would have been improved.

The concupiscence and corruption of servers and public officials are determinants of social inequalities and mistrust in state institutions. As Inglehart and Wezel (2005) points out, the individualization and disrepute of the traditional authorities motivates — especially in the new generations — a sense of distrust of political institutions. Whereas (Torcal and Montero, 2006; Moreno and Catterberg, 2005) support that the reasons that explain the distrust towards the new institutions is not the cultural change but rather the persistence of undemocratic values (evidenced by centuries of authoritarian political history and low levels of social capital among its population). According to Elliott (2001) quoted by Valdés *et al.* (2009, Pp. 21-23), "Corruption is a bad present in both developing and developed countries.

While the first decreases economic growth and impedes economic development, increasing poverty and political instability, in industrialized countries, although to a lesser extent, it also has negative effects as resources deviated are no longer available to improve living standards. Corruption occurs in the public and private sectors. Bribery incentives are created when an official has discretionary power to allocate a benefit or cost to the private sector.

Corruption will depend on the magnitude of the benefits and costs under the control of public officials. "On the other hand, Shleifer and Vishny (1993) point out that "corruption is the sale of government property by officers belonging to this entity for their own benefit. The demand for property officially owned by the government originates from private agents, allowing them to pursue economically desirable goals that would otherwise be impossible for them to achieve. Given the nature of government goods, their private prices may become very high; So the opportunity arises for corrupt officers to distribute them at a lower price and to retain the surplus for their own benefit. "We add that servers and public officials must understand that they have a responsibility to meet the social demands of the population.

Likewise, the nation's assets should not be used for petty and/or third-party interests, which accelerates social inequality, exclusion and poverty in communities. Similarly, Mauro (1995) mentions that corruption tends to negatively affect a country's economy, slowing its growth. Definitely, poor countries have fewer controls on corruption and a weak justice system that encourages impunity for corrupt officials, but this situation also has direct and indirect effects on the equitable distribution of Income. As pointed out by Bigio and Ramírez-Rondan (2006):

*The effects that corruption has on inequality are several, and these can be both direct and indirect, but all are based on the distortions that corruption creates in public management. Direct effects include exemptions and preferences in public programs that are given to the most powerful interest groups in a country and thus divert resources from the poorest. Similarly, countries with lower corruption controls have shown lower rates of growth in the country's poorest 20%; Resulting in such a way in higher Gini coefficients (greater inequality).*

Before analyzing the two social programs that sought to reduce extreme poverty, it is of paramount importance to present their technical data (See table 7). *Ti Manman Cheri* (Dear mommy) is a Haitian government social protection program that helps mothers support their families and invest in the education of their child (ren).

To be a beneficiary of the program, the mother must belong to a vulnerable home and must have her child (ren) enrolled and attend school regularly.

Country	Haiti
Beginning	2012
Classification	Money transfers
Dimension SAN	Access
Website	<a href="http://www.ede pep.gouv.ht/">http://www.ede pep.gouv.ht/</a>
Goal	Help mothers support their families and invest in the education of their child (ren).
Components and/or products	Conditional cash transfer. Monthly, the recipient mothers of the program receive a sum of money that varies with the number of children in school. If the mother has a child receives HTG \$400 (USD \$9) For two children she receives HTG\$600 (USD\$13) For tree children she receives HTG\$800 (USD\$18) Each mother is registered and approved for 6 months transfer.
Target population	Mothers from vulnerable areas who have at least one child enrolled in a school.
Scope	National
Geographic coverage	Urban and rural
Responsible agency	Office of the Prime Minister of the Republic of Haiti (Primature de la République d'Haïti)
Executing agency	Economic and Social Assistance Fund
Links to National policy	National Social Assistance Strategy

**Table 7** Technical data of the social programs "Ti Manman Cheri" (Dear Mommy) and Ede Pép (Help to the people)

Source: author's elaboration with database of the food and nutritional security platform. FAO/ECLAC, 2018. <sup>5</sup>

The following data allow us to carry out an analytical-critical reflection of political power, inequality, corruption and impunity. Because it is assumed that the *Petrocaribe* fund was intended to improve the socioeconomic conditions of the vulnerable groups as it was previously presented on the technical data sheet. In addition, in a press release dated September 5, 2014, speaking of the Help to the people "EDE PEP" program, the spokesman for the former prime Minister stated that "the Martelly/Lamothe government is fighting extreme poverty and the preferential choice for the poor, these are their Top priorities.

With the will to build a more egalitarian society, the Government has established its National social Assistance program "Ede Pép". Aimed at protecting vulnerable people living in extreme poverty throughout their life cycle, in the short and medium term, to ensure long-term investment in their human capital and offer opportunities to overcome extreme poverty. From the outset, the monthly monetary amount per family (maximum US \$18 per month) already mentioned countersaid the objective of the program that is to offer the population opportunities to overcome extreme poverty. If so, there would be no social awakening, violent conflict and allegations against the last two administrations, owing to money laundering, crime, corruption and administrative scandals by presidential families.

Similarly, the government points out that this programme continues to help vulnerable populations. Since the beginning of fiscal year 2013-2014, since then, 907,105 food packages have been distributed nationwide. Under the "Kantin Mobil" program, 912,367 hot meals were distributed free of charge in vulnerable areas. The national network "Restoran Kominotè" has 324 restaurants. Also, 2,916 jobs have been created since the launch of this project. Each structure produces 500 dishes per day, or more than 3.2 million of government-subsidized dishes each month.

The government uses innovative cash-transfer projects that allow direct injection of cash into the economy of vulnerable households. Therefore, 86.234 mothers are financed under the program as "Dear Mommy or *Ti Manman cheri*" in operation in the 10 departments of the country, in 105 cities and 830 schools. Therefore, "Kore Etidyan" continues with 31.409 students included in the project for the year 2013-2014. Five (5) months of subsidy have already been paid and 85% of the payments have been recovered by the students.

This year, with the option of Laptop, this subprogram has benefited 10.509 students. Likewise, in the agricultural sector, 4000 and 1000 kits of tools seed kits have been distributed in the program *Kore Peyizan*, which aims to improve agricultural production.

<sup>5</sup> See: <http://plataformacelac.org/programa/279>

These data allow us to reflect on the political integrity, relevance and credibility of the information because the Haitian population is infuriated against the current government which is a political continuity of the same political party (Haitian Party Tét Kale) Whose President Jovenel Moïse was elected; Frequent protest witnesses their disapproval for corrupt public officials and bad government. As a result, reality calls us as citizens and scientists to study and analyse the perception of the inhabitants of the poorest departments of the country, to measure the impact of the two social programs through the results of the research.

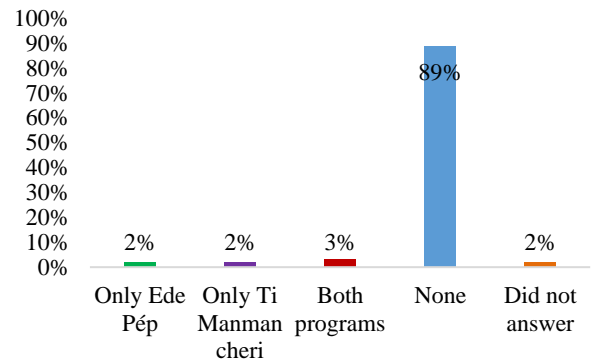
**Analysis of social programs EDE PÉP "help the People" and TI MANMAN CHERI "Dear Mommy"**

Graph 2 presents the results corresponding to the number of individuals who are beneficiaries of the program Ede Pép and/or Ti Manman Cheri of the Government of Haiti that allow us to answer this question. It is shown that only 2% responded to be benefited from the program of Ede Pép, only Ti Manman Cheri and did not answer; While 3% claimed to be a beneficiary of both programs; On the other hand, a large proportion of 89% stated that they did not benefit from any of the two major anti-poverty programmes implemented by the Government in the territories.

In this sense, the social programs EDE PÉP and TI MANMAN CHERI were not effective in identifying the population who live in extreme poverty, nor to care for them and therefore neither are they for combating poverty in Haiti. Without overlooking the diversion of the economic resources of the Petrocaribe programme aimed at combating poverty and executing public works, for political and petty purposes, as a result of corruption.

In addition, taking into account the cost of living of Haitian families, considering the food basket, we conclude that the outrageous monthly financial aid of: \$9 US Dollars or HTG \$400 If the mother has a child; \$13 US Dollars or HTG \$600 if she has two children and HTG \$800 or \$ \$18 if she has three children it is not even enough to survive for a week because the program contemplates supporting only nuclear families (formed by parents and One or more children) or single parent.

While most Haitian families are extensive (grandparents, uncles, cousins and other consanguineous or allied relatives).



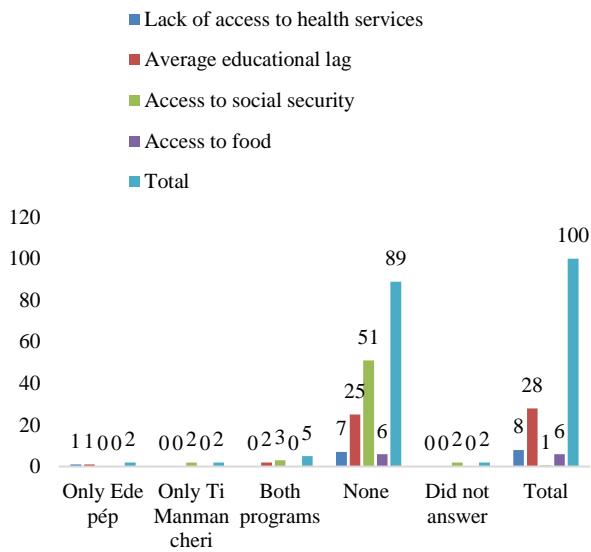
**Graph 2** Beneficiary number of the program of Ede Pép and/or Ti Manman Cheri of the Government of Haiti. *Source: author's elaboration with data obtained in field work, 2015-2016.*

Similarly, the relationship between the shortcomings and the beneficiaries of the government's anti-poverty programmes is established to determine whether these people really need this support because of their precarious socioeconomic conditions.

The results of Graph 3 show that respectively 1% of the beneficiary of only Ede Pép has deficiencies in the access to health services and educational backwardness, in total 2%. Likewise, 2% of beneficiaries of only Ti Manman Cheri have deficiencies in access to social security and access to health services, in total 4%. And even if 4% did not answer the question about social programs, they presented the same shortcomings.

Therefore, 5% of beneficiaries of both government programs, 2% are educational backwards and 3% have shortcomings in access to social security. On the other hand, 89% said not to be a beneficiary of any of the two major anti-poverty programs implemented by the Government, 7% lack in access to health services, 25% educational backwardness, 51% have gaps in access to social security and 6% have deficiencies in access to food. In total, 8% of the inhabitants have deficiencies in the access to the health services, 28% educational backlog, 58% have deficiencies in the access to the social security and 6% have lack in the access to the food.





**Graph 3** Relationship between anti-poverty and social deprivation programmes in the Northeast and northwest departments

Source: author's elaboration with data obtained in field work, 2015-2016

**Conclusions**

Ethical officials have the mission to protect and adequately serve the society they represent. If there are no good results in combating multidimensional poverty in Haiti is because we do not have responsible officials because they are those who enjoy the maximum margin of autonomy in decisions, and these decisions depend on collective welfare. Also, public ethics gives the public servant a knowledge that allows them to act correctly in every situation because it is difficult to provide criteria to find suitable solutions.

Therefore, changes in the attitudes of public servants to improve the quality of life of the population must arise from the heart, which means to get into the shoes of others (be empathetic) at the time of the design of public policies based on the Human rights and collective well-being. When public servants are ethical, they are committed to individual, family and population well-being.

With regard to Haitian reality, more than ever, ethical and democratic rulers are required to prevent the risks and consequences of bad governance because when rulers are misleading moral and state decadence, injustice, corruption, Insecurity, impunity, socioeconomic inequalities and mass displacement are evident, thus the misery of the majority of inhabitants is accelerated and the brain drain becomes a dramatic and inevitable phenomenon.

The more Haitians stop producing to have their autonomy waiting for the permanent assistance of the international community, the more the country will be trapped in the misery and the submission of other countries. It is time to take in hand the destiny of the nation. Today more than ever Haitians need to elect committed and capable candidates to implement programs that can counteract structural problems, insecurity, permanently, and reaffirm national sovereignty, long ago violated by respect for patriotic values and human rights, promotes national production, tolerance, Union and the culture of legality.

Good governance promotes equity, citizen participation, pluralism, transparency, responsibility and the rule of law, so that democracy and human dignity are effective, efficient and lasting. The greatest threat to good governance comes from corruption, violence, and poverty, all of which undermines transparency, security, social justice, inclusiveness, and opportunities to achieve goals.

**Recommendations**

Institutions must be effective and efficient in responding to the needs of the population such as: roads, schools, housing, energy networks, health, food, among others that are part of the structures that a good government should implement for collective well-being and for strengthening democratic governance and the rule of law. Transparency and respect among all the inhabitants state-society is indispensable, to build an equitable, prosperous and just society that will propel sustainable development in Haiti. All of the above refers to the political ethics that the ruler should acquire to lead a nation.

Some causes that impact good governance are: well-defined economic interests or uncontrollable greed; Group commitments; corruption; The lack of political ethics. Of course, when the laws are biased, they benefit everyone as long as each individual fulfills his obligations and rights by respecting and applying them, because no one is above the law. We are the institutions therefore, their credibility will depend on our moral behavior.



As stated by Diego (2001) quoted by Douglas North (1993), "Institutions are a human creation, evolve and are altered by humans." Well, we need to start with the individual. Because when an individual lacks ethics and wields power he is not able to measure the scope of his actions and can act irrationally and needlessly until he violates human rights to protect his interests. When unethical individuals are public officials, they corrupt institutions, violate social rights, despise the needs of vulnerable groups, and delay sustainable development. For the same reasons, the social programs that have been implemented to combat poverty are not effective, therefore, they cannot respond to the basic needs of the people, they do not even know if these programs exist in the communities.

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## Student motivation of the Surgeon Dentist Major of the Veracruz-Boca del Río Area to Study a Postgraduate Program: A Comparative Study

### Motivación de estudiantes de la carrera de Cirujano Dentista de la zona conurbada Veracruz-Boca del Río para estudiar un posgrado: un estudio comparativo

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#### Abstract

Objectives: The objective that we intend to reach is to diagnose the motivation that our students of the last semesters of the Dental Surgeon Major of Veracruz-Boca del Río have to continue with postgraduate or specialty studies. Find out causes and factors that arouse this interest of both students of public institutions such as UV and private institutions such as CME and UVM. Methodology: Elaborate questionnaires that address the sociodemographic factors of each one; interviews with a small group of students to learn first-hand what their opinion is about postgraduate studies inside or outside the university, Likert scales to know the attitude of the students regarding the importance of doing postgraduate studies. Contribution: Despite comparing two private universities with a public one, there is no significant difference in terms of motivation to study a postgraduate program. However, it is interesting to know what the study shows the concern of the economic factor, the disinformation they have of the specialties, the little information provided from their respective institutions as well as not giving the necessary importance to be a specialist in a specific area to provide better patient care.

**Motivation, Postgraduate, Students**

#### Resumen

Objetivos: El objetivo que pretendemos alcanzar es diagnosticar la motivación que nuestros estudiantes de los últimos grados de la carrera de Cirujano Dentista de Veracruz-Boca del Río que tienen para continuar con estudios de posgrado o especialidad. Averiguar causas y factores que despiertan este interés tanto del alumnado de instituciones públicas como la UV e instituciones privadas como el CME y la UVM. Metodología: Elaborar cuestionarios que aborden los factores sociodemográficos de cada; entrevistas a un grupo pequeño de alumnos para conocer de primera mano cuál es su opinión sobre los estudios de posgrado dentro o fuera de la universidad, alisar escalas Likert para conocer la actitud de los estudiantes frente a la importancia de realizar estudios de posgrado. Contribución: A pesar de comparar dos universidades privadas con una pública, no hay diferencia mucha diferencia significativa en lo que respecta a la motivación de estudiar un posgrado, pero es interesante saber lo que arroja el estudio como: la preocupación del factor económico que implica, de la desinformación que tienen de las especialidades, de la poca información brindada de parte de sus respectivas instituciones así como no darle la importancia necesaria a ser especialista en un área específica para brindar mejor atención a pacientes

**Motivación, Posgrado, Estudiantes**

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## Introduction

The general objective is to diagnose the motivation that our students in the last grades of the dental surgery major in the region of Veracruz-Boca del Rio have to continue with their graduate or specialty studies. That is to say, to find out the causes and factors that awaken this interest in students from public institutions such as the UV and private institutions such as the CME and the UVM. To do this, we suggest a correlative, comparative, and mixed study between both sectors of the university population, in order to see which population is more interested in entering a postgraduate program or specialty either in the area or outside. Education in Mexico is a controversial issue and from both the journalistic and academic point of view, it has been approached from different fields. On the one hand, major problems have been discussed, such as coverage, quality of education, adequate management, demanding access to basic education, basic education policies at the middle and higher levels, illiteracy, high drop-out rates, modernization, and public education and teacher placement policies.

On the other hand, there has been criticism of the lack of sufficient resources to equip classrooms and teachers to achieve adequate efficiency in their functioning. Thus, although the issue of quality in education is an inexhaustible source, the issue of bilingual or intercultural education with its different protagonists and actors, so it is the accessibility to postgraduate studies by our young university students. To analyze this problem, we only have some case studies and some figures that show us this problem - where the importance of the subject is evident.

Currently, the different measures regarding education in our country seek to strengthen public, secular, and free education; to ensure greater equity in access to quality education; to strengthen school management capacities; to establish a professional teaching service with rules that respect the labor rights of teachers; to foster new opportunities for the professional development of teachers and principals; and to lay the groundwork for elements of the education system to be evaluated in an impartial, objective, and transparent manner.

All of this is aimed at achieving a substantial improvement in education; having a strengthened school; an evaluation that has as its axis the merit and recognition of the teaching vocation; an inclusive education that is within reach of all and, of course, the adequate management of resources destined to education. In this order, the panorama is complicated since young people and adolescents in our country tend to leave school prematurely. Sixty-two percent of 16-year-olds are enrolled in some institutions, while 35 percent of 18-year-olds are in upper secondary education (19 percent) and higher education (16 percent). Of these, only 24% are enrolled.

Concerning graduate students, only 16 out of every 10,000 inhabitants study some specialty. For this reason, our efforts are oriented to investigate which are the reasons our young university students study or not a postgraduate or specialty. Bearing in mind that the efforts of our maximum house of studies are oriented to form highly qualified and competitive professionals in addition to the existence of different types of postgraduate and specialty programs in Pediatric Dentistry, Comprehensive Prosthodontics and Endodontics.

In the first chapter, "Approaches to the study of motivation," we address the ecological niche in which our subject is developed: education. For this reason, we will deal with the aspects related to the challenges, programs, and measures that have been taken in the field of basic and upper secondary education, to later clarify our objective: to investigate the specific aspects for which our university students in the faculty of dentistry opt or not to study a specialty or postgraduate course.

Likewise, we set out our objective after glimpsing the different schools or theoretical currents that have studied motivation. With this brief passage, we are in a position to develop our research approach, our general and specific objectives, and also to determine the importance of the subject. In the second chapter, "Theoretical and methodological framework," we review the different authors who have studied motivation, from classical authors to some more recent works to glimpse what criteria they have used to approach the study of human motivation.

With this panorama, we discern our object of study: the determinants of motivation. It is supported by the angular concepts of our research: motivation, social structure, culture, and some other sociodemographic factors that we will call variables. Later, we continue with the development of our research, establishing its characteristics, that is, we expose what is its cohort and study sample at the same time that we describe the methods and techniques used for data collection.

In the third chapter (The Mexican Educational System), we describe the structure of the Mexican Educational System (SEM), its central norms, legislation, and educational policies since it is the niche where our subject of study, education, is based. In the same way, we review some graduate or specialty programs and scholarships offered by the same system. With this section, we intend to show some options available to our students and thus contribute to their interest in studying a program.

In the fourth chapter, we describe the area from which we obtain our universe and sample of study, the Faculty of Dentistry of the Universidad Veracruzana (U.V.), Campus Veracruz-Boca del Río. In this section, we make a brief semblance of the urban area, the Veracruzana University, and the Faculty of Dentistry. There, we review their study plan, the mission, vision, objectives of the faculty itself, etc., and their educational offerings. In the following chapter, we show the conclusions we reached after the application of our collection instruments, such as questionnaires and previous interviews. With this, we intend to explain the reasons why our students are interested or not, in studying some postgraduate courses or specialty to finally conclude, with some suggestions to face this problem: the lack of motivation or disinterest in studying some postgraduate courses.

### **Development of Sections and Sections of the Article with subsequent numbering**

The interest in studying the motivational factors that drive young university students to study a specialty or postgraduate studies has its origin in two main issues.

Firstly, from experience as a teacher in both public and private universities where I have had the opportunity to share dreams, experiences, aspirations, and concerns of my students regarding their short and medium-term life projects. Among them, it is worth mentioning the experience in the labor market as well as in some specialty or postgraduate courses.

Secondly, the little or no interest it has had at the research level in the same subject. In other words, the interest in finding out what are the determining factors in the choice of postgraduate studies, particularly the motivational factors of our university community to achieve greater specialization despite the existence of various programs focused on achieving this objective. In our opinion, the problem is severe, if we consider that only 16 out of 10 thousand Mexicans enter a graduate program according to estimates by the Scientific and Technological Advisory Forum (FCCyT) in 2014.

Of this figure, it remains to be seen how many students in our Veracruz community are accessing graduate studies. On the other hand, it is essential to point out that our work has more than an academic relevance (due to the thematic gap, since only a couple of articles and documentary sources address this problem) it has social relevance in the sense of worrying about the existence of a greater number of well-trained specialists as demanded by today's society in this information age.

With this work we humbly intend to contribute a grain of sand regarding "postgraduate and education" studies in our academic community. At the same time, we hope that this work will serve as a model to analyze the demands and aspirations of our university students after completing their university careers. Likewise, our work can be considered a model not only for the academic community but also for any survey, telemarketing, or advertising firm interested in knowing the aspirations and needs of our students.

Finally and not less important, we want to emphasize that our work tries to reach two fundamental objectives: one, at a theoretical level, to propose the study of motivational and sociodemographic variables that surround the motivation-choice of our university students from any entity and academic community; whether public or private. Two, to propose within the academic body and teaching staff of our university community the development of programs, workshops, forums, consultations that help our young university students to enter a program of postgraduate studies or specialty.

The research was carried out in the urban area of Veracruz-Boca del Río. A questionnaire was applied regarding the motivation that students of the dental surgery major have to enter a postgraduate or specialty program. For this purpose, we methodologically and strategically selected three Higher Education Institutions (IES), one public school, and two private institutions. Within the first one, we have the Faculty of Dentistry of the Universidad Veracruzana (UV), Campus Boca del Río, and the Centro Mexicano de Estomatología (CME) and the Universidad del Valle de México (UVM); both belong to the private sector and the same Campus Veracruz. The specific objectives of the study were:

To prepare questionnaires that address the main socio-demographic factors of each of our university students: name, age, marital status, occupation, unit of residence, etc.;

To carry out interviews with a small group of students to find out first-hand what their opinion is of postgraduate studies within or outside the university;

To apply surveys and pilot questionnaires regarding the motivational factors that lead to the choice of such programs in other private or public faculties in the area;

To apply Likert scales to know the students' attitude towards the importance of postgraduate studies

To propose the realization of forums, workshops, consultations for a better knowledge of the educational offers after finishing their university major.

For our research, we will understand motivation as Palmero (2011), who states that any defining attempt at motivation must first include the adaptive process, i.e., the result of an internal state of an organism that is driven and directed towards action in a particular direction. That, in turn: includes the influence of both internal and external factors that activate the organism and direct it towards the achievement of some vital objective or goal". In this interactive process, the target objects are extremely relevant, along with their incentive characteristics, as well as the expectation or probability of achieving them.

The present study is of a correlational type to the extent that it responds to our fundamental needs during the research process. Its purpose is to evaluate the relationship between two or more concepts, categories, or variables in a particular context. The advantage of undertaking correlation studies is that it is possible to measure the degree of relationship between two or more variables. In other words, it is possible to quantify them and even propose some post hoc hypotheses after the research enterprise (Hernández, et al. 2003).

The study sample for our analysis will be of the non-probabilistic type since the survey applied will be of the social and exploratory type. In other words, one of the most widely used types of quantitative social research is a method of obtaining information through oral or written questions posed to a universe or sample of people who have the characteristics required by the research problem.

The population that integrates our sample is conformed by three groups of students of the Faculty of Dentistry of the UV, The Mexican Center of Stomatology, CME and the University of the Valley of Mexico, UVM- these last ones belonging to the private sector.

Each of these groups is made up of 12 and 15 students of both genders whose age ranges from 22 to 40 years old. Most of them are students in their final years and semesters, and in some cases, many of the students work or are parents as well as students.

The study was conducted through 4 axes described below.

## a) The interview

An interview is a specific form of social interaction that aims to collect data for an inquiry. It is usually the researcher who asks questions of people he or she knows can suggest data or information of interest to him or her. By establishing a peculiar and asymmetric dialogue where one of the parties seeks to collect information, and the other is the source of that information, the environment of the interview is generated. For obvious reasons, it is only used, with rare exceptions, in the human sciences. The semi-structured interview works well for those who have little time to give an interview. This type of interview helps the interviewer in the sense of having pre-established themes or questions, resulting in the interviewee knowing that he/she is in front of a prepared, competent person with full control of the interview (Ibid. pp. 76 and 77).

## b) The survey

Unlike a census where all members of the population are studied, surveys collect information from a portion of the population of interest, depending on the sample size for the study. We used a descriptive survey, the main objectives of which are: 1) to describe the distribution of one or more variables in the total or sample of the group under study; 2) to perform the same operation in significant subgroups of this group or its sample, and 3) to calculate measures of central tendency and the dispersion of these variables in the total or sample used and in the subgroups (Ibid. p. 52). The fulfillment of the first objectives allows making various comparisons between the forms of distribution and the values taken by the variables in these contexts.

## c) Observation

Observation consists of the systematic, valid, and reliable recording of manifest behavior or conduct. It can be used as a measuring instrument in a wide range of circumstances. By far, it is the most systematic and logical way to visually and verifiably record what one is trying to know; it is to capture in the most objective way possible, what happens in the real world, either to describe it, analyze it or explain it from a scientific perspective.

Observation is the elementary empirical procedure of science that has as its object of study one or several facts, objects, or phenomena of the current reality; therefore, in the case of natural sciences, any observed data will be considered as something factual, true or conclusive.

For us, this is the starting point to indicate that observation is a necessary procedure since it consists of using the senses and logic to have a more detailed analysis regarding the facts and realities that make up our object of study (Ditto). In other words, it regularly refers to the daily actions that yield data for the observer, and that, in turn, allows us to observe face-to-face aspects that would be difficult to obtain otherwise.

## d) Likert Scale

Before starting with the description of this technique, it is convenient to indicate that we propose to measure the attitude that students of the dental surgery major have regarding the motivation to continue or not with their postgraduate studies and/or specialization. That is why we suggest the application of this technique. Bearing in mind that an attitude is a learned predisposition to respond favorably or unfavorably to an object, living being, activity, concept, person or symbols (Cit. by Gómez, 2011)

This indirect measurement will be done using scales in which, starting from a series of affirmations, propositions, or judgments, we will discover what attitudes students have regarding the motivation to continue preparing themselves. The scale is made up of a set of items presented in the form of statements or judgments, to which the participants are asked to react. In other words, each statement is presented, and the subject is asked to express his/her reaction by choosing one of the items or categories indicated (Sampieri, 2010)

Each point is assigned a numerical value so that the participant gets a score for the stated statement. What Likert did for the measurement of attitudes was something that was already common in the measurement of personality traits: the sum of a series of responses to supposedly homogeneous items. That is, they expressed the same trait and placed the subject in the measurement variable.



In principle, Likert verifies unidimensionality, that is, that all the items are indicators of the same trait.

In summary, a Likert scale is constructed with a high number of statements that qualify the attitude object and are administered to a pilot group to obtain the group's scores on each item or statement where the scores are correlated with those of the group on the entire scale (the sum of the scores of all the statements). "The statements or reagents, whose scores correlate significantly with the scores of the full scale in order to select them for integration into the measurement instrument. The reliability and validity of the scale should also be calculated" (Sampieri, 2010, p. 252)

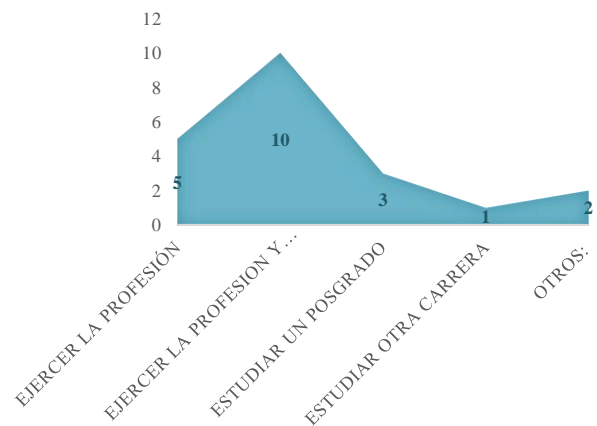
In this order, the survey applied for our research is an adaptation of the Motivations, Expectations, Values related to Learning questionnaire, MEVA 2005. A Spanish data collection tool concerning the assessment of motivational goals and orientations, expectations, and interests. It will be complemented with the measurement of attitude scales (Likert) around learning, orientation to specific goals such as school performance.

Taking into account that one of the precepts of motivation is to contemplate the process of motivation that begins with the presence of some internal or external stimulus or situation that triggers in the individual the need or desire to carry out a specific behavior. We consider it pertinent to evaluate the different activities that each student has undertaken to achieve this objective: whether or not to enter a postgraduate or specialty program.

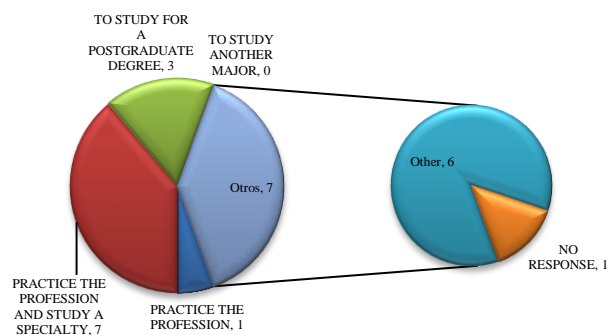
This includes sociodemographic data of each respondent such as name, age, marital status, occupation, school institution, location etc; find out the reasons why they entered the major of dental surgeon, their life expectancy, and job growth. To know the reasons why they would enter a postgraduate or specialty program and the activities they have carried out to achieve this objective, such as obtaining good grades, paying attention in class, keeping their grades and homework up to date, having a self-taught preparation outside the classroom, such as studying a language other than Spanish, for example.

For this, the applied social survey includes four sections, on the one hand, those sociodemographic data that we pointed out previously. On the other hand, three batteries where each student will answer questions about life expectations, preparation, job growth after completing their degree studies; knowledge of the educational offer, i.e., postgraduate studies, scholarships, institutes or universities, forms of admission, etc. and finally, to know first-hand what activities they have been carrying out inside and outside the classroom to achieve this objective.

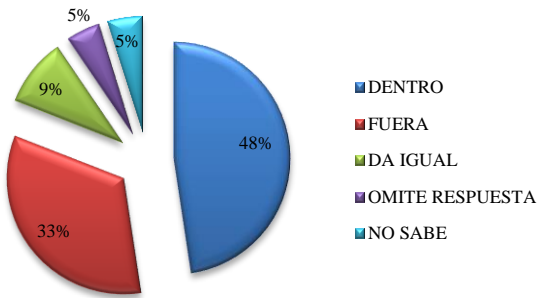
**Inclusion of Graphs, Figures and Tables – Editable**



**Graph 1** No. of U.V. F.O. students wishing to study a postgraduate degree

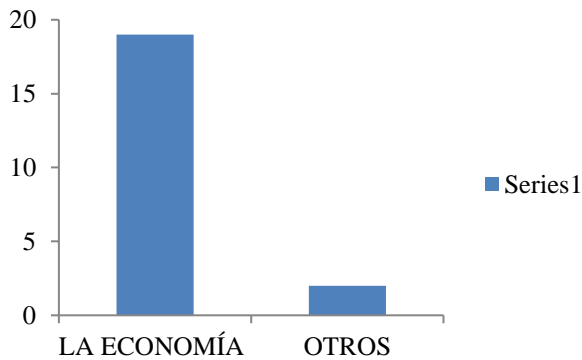


**Graph 2** No. of students wishing to study a postgraduate degree



Graph 3 Students who wish to study a postgraduate course or speciality within and outside the ZCVB

They should not be images, everything should be editable



Graph 4 Main limitations when studying for a postgraduate degree or specialization

For the use of Equations, point out as follows:

Without equations

Methodology to be developed

By means of the 4 axes explained above.

Results

As a result, the following fact is worth underlining: the short and medium-term interest of university students in entering the labor market through the exercise of their profession and studying a specialty at the same time may explain the following findings: there is little interest in studying a postgraduate course, according to the analysis of our surveys. This explains the misinformation or lack of knowledge about the requirements or procedures that must be carried out to enter a graduate program or specialty 76% for the public sector and 56% for the private sector.

The majority of those surveyed stated that the university where they study had not provided them with the necessary information on the educational offer of postgraduate studies or specialties; 76% for the case of the U.V. and 56% for the case of private universities. Since studying a postgraduate degree is not as much of a priority as working, although they consider it indispensable. Thus, it is controversial that few students spend part of their time learning a foreign language - 19% for both groups. That the performance of students in the classroom is declared to be high by very few percentage points (see Annex) and that they spend more time on activities such as work, family, and leisure.

Annexes

Annex 1 Survey of young university students of the zcvb

Motivation of dental surgery students from the conurbation veracruz-boca del rio to study a postgraduate degree

Presentation

The objective of the following questionnaire is to diagnose the motivation that students in the last grades of the dental surgery career in the Veracruz-Boca del Río conurbation have to enter a postgraduate or specialty program once they have completed their undergraduate studies. That is to say, to find out the causes and factors that awaken the interest of students from public institutions such as the Universidad Veracruzana (UV) and private institutions such as the Centro Mexicano de Estomatología (CME) and the Universidad del Valle de México, (UVM).

Sociodemographic data

Name: \_\_\_\_\_

Age: \_\_\_\_\_ Gender: \_\_\_\_\_

Occupation: \_\_\_\_\_

Marital status: \_\_\_\_\_

Semester or grade: \_\_\_\_\_

Major \_\_\_\_\_

Name of the institution: \_\_\_\_\_

Address: \_\_\_\_\_ Location: \_\_\_\_\_

## Block I

## Expectations

- 1.- Why did you enter the major of dental surgeon?
- 2.- What were your reasons for studying this major and not others?
- 3.- This degree completely fulfills your expectations of professional, personal or academic growth. Yes\_\_\_ No\_\_\_ Why?  
If you could start over, would you study another major, what would be your choice?  
Do you plan to continue preparing yourself after you finish your studies? Yes\_\_\_ No\_\_\_
- 6.- What are your life expectancies after completing your undergraduate studies?
- 7.- At what point in life do you think it is appropriate to study for a postgraduate degree?
- 8.- Making a parenthesis, are you interested in entering a course or postgraduate program or specialty after finishing your major as a dental surgeon? Yes\_\_\_ No\_\_\_ Why?  
At this point in your life, would you study for a postgraduate degree? Yes\_\_\_ No\_\_\_ Why
- 10.- What do you consider to be the main limitations or obstacles to studying a postgraduate course or specialty?

## Block II

## Educational offer

- 11.- From the following list, which of these is familiar to you or you have heard most often (It may be more than one).  
a) IES b) ANUIES c) CONACYT d) COMEPO f) SEN
- 12.- From the above list, briefly indicate what the option indicated is in charge of.
- 13.- Mark with an "X" the reasons why you would study a postgraduate course or specialty.  
To acquire more knowledge  
For further specialization  
To be more competitive  
To get a better job  
To have a well-paid job  
Another one:
- 14.- Do you currently know of any graduate programs or specialties that are of interest to you? Yes\_\_\_ No\_\_\_ If yes, please list them.
- 15.- Has the university where you are studying provided you with the necessary information about the postgraduate or specialty education offerings at your campus?  
Yes\_\_\_ No\_\_\_
- 16.- Why would I study for a postgraduate degree or specialization?

- 17.- Do you know the requirements or procedures that must be carried out to enter a postgraduate or specialty study program?  
Yes\_\_\_ No\_\_\_

- 18.- Mark with an "X" what would be the main reason you would study for a postgraduate degree  
The Family  
Self-interest  
Status  
Self-improvement  
Recognition of others  
To better perform your profession
- 19.- Would you do your graduate study in a public or private school; why?
- 20.- Would the postgraduate or specialty study take place inside or outside the urban area - this includes other municipalities and other cities, of course. Why?

## Block III

## Motivation, learning and goal orientation

- 21.- How often do you do extracurricular activities outside the classroom?  
a) Never b) Sometimes c) Regularly d) Always
- 22.- Do you think that academic preparation should only take place in the classroom?  
Definitely yes  
It probably is.  
Undecided  
Probably not.  
Definitely not
- 23.- Do you think that academic preparation is indispensable for professional development?  
a) Strongly agree b) Agree c) Neutral d) Disagree  
(e) Strongly disagree
- 24.- In a percentage of 30 to 100, how committed are you to your school performance?  
30% 40% 50% 60% 70% 80% 90% 100%
- 25.- In addition to studying, what other activities do you do after school and on weekends?  
Work  
Family  
Sport  
Fun  
Others
- 26.- When you set personal goals, do you really carry them out?  
a) Never b) Sometimes c) Regularly d) Always
- 27.- How often do you set objectives or goals?  
a) Sometimes b) Regularly c) Always d) Never
- 28.- When you set an objective, you work hard until it is achieved or you abandon it; how often?

a) Definitely yes b) Probably yes c) Undecided  
d) Probably not  
e) Definitely not

29.- As far as you are concerned, you prefer:

a) The challenges b) The easy jobs c) To please the teacher d) To be conformist e) To pass the subjects

30.- According to the following list, what do you expect from your professional training?

To pass the subjects

Getting good grades

Improve my skills and knowledge

#### Block IV

School performance activities

31.- From the following list, what activities you do outside your class schedule

Reading

Study

Learning a foreign language

Other: Please indicate which ones.

32.- During the class, I take notes on the most important points, while paying attention to what my teachers explain

a) Never b) Sometimes c) Regularly d) Always

33.- My classroom performance is higher than teachers require

a) Never b) Sometimes c) Regularly d) Always

I organize my time so that I schedule my homework and school activities to keep up with the topics seen in class

a) Never b) Sometimes c) Regularly d) Always

35.- Which of the following activities do you perform frequently?

Indispensable Very important Medium important Not very important

I do my own research,

I read encyclopedias, books, magazines, etc.

I go to the library

I surf on the internet

I go to my teachers to resolve my doubts

I attend research seminars or thesis consulting

36.- When I study difficult subjects I go over them again and again until I master them

a) Never b) Sometimes c) Regularly d) Always

37.- I attend classes regularly

a) Never b) Sometimes c) Regularly d) Always

38.- Regardless of my state of mind, my school performance is the same

a) Never b) Sometimes c) Regularly d) Always

39.- When I try to study I cannot concentrate or I am easily distracted

a) Never b) Sometimes c) Regularly d) Always

40.- I usually look for a pleasant environment to do my homework or study

a) Never b) Sometimes c) Regularly d) Always

41.- While I study or carry out my school activities I listen to music, the radio, watch television, surf the social networks (Facebook and/or Whats app)

a) Never b) Sometimes c) Regularly d) Always

42.- I participate actively in class, that is, I make comments, important questions, constructive criticism, etc.

a) Never b) Sometimes c) Regularly d) Always

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#### Conclusions

In summary, this leads us to reflect that the "desire" to call the motivation to study a postgraduate degree is not always accompanied by actions, behaviors, and commitments aimed at achieving this goal. Instead, they are aimed at more practical issues such as finishing their studies, practicing their profession, entering the labor market, and studying a specialty at the same time.

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## Factors related to overweight and obesity in the university population

## Factores relacionados con sobrepeso y obesidad en población universitaria

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### Abstract

Chronic noncommunicable diseases (CND) and chronic degenerative diseases (CDD) are current events worldwide, affecting the health and quality of life of thousands of people throughout the world. We collected information from 1696 people, 716 men and 940 women in an age range of 17 to 32 years, and performed descriptive statistics to obtain the mean  $\pm$  standard deviation of each of the determinations and measurements performed, grouped according to the year of study and by the percentage of alterations in each of the measurements. We found that, despite the national strategies created to combat overweight and obesity, and if a tendency to decrease in the percentage of alterations is found, the difference is not statistically significant, which indicates that reforms are required in the strategies for obtaining better results.

**Overweight, Obesity, CDD**

### Resumen

Las enfermedades crónicas no transmisibles (ECNT) y las enfermedades crónico-degenerativas (ECD) son el suceso actual a nivel mundial, afectando la salud y calidad de vida de miles de personas a lo largo del mundo. Se recopiló la información de 1696 personas, 716 hombres y 940 mujeres en un rango de edad de 17 a 32 años, a los cuales se les realizó estadística descriptiva para obtener la media  $\pm$  desviación estándar de cada una de las determinaciones y mediciones realizadas, se agruparon de acuerdo al año de estudio y por el porcentaje de alteraciones en cada una de las mediciones. Se encontró que, a pesar de las estrategias nacionales creadas para combatir el sobrepeso y la obesidad, y de encontrarse una tendencia de disminución en el porcentaje de alteraciones, la diferencia no resulta significativa estadísticamente, lo cual indica que se requieren reformas en las estrategias para la obtención de mejores resultados.

**Sobrepeso, Obesidad, ECD**

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## Introduction

Chronic non-communicable diseases (NCDs), according to the World Health Organization (WHO), are a series of conditions that occur over a long period, most notably diabetes (WHO, 2016). These diseases are associated with 71% of annual deaths worldwide and do not distinguish between race, gender, or region of residence. The metabolic risk factors that contribute to the appearance of these diseases are increased blood pressure, overweight, obesity, and hyperglycemia and hyperlipaemia (WHO, 2018).

In addition to NCDs, overweight and obesity are defined by the WHO as an excessive accumulation of body fat, which can be determined by the Body Mass Index (BMI), creating a relationship between the weight and height of the individual analyzed, expressed in kg/m<sup>2</sup> (WHO, 2018).

Globally, by 2016, 39% of men and 40% of women worldwide were overweight, while 11% of men and 15% of women aged 18 and over were already obese (WHO, 2018).

According to ENSANUT 2006, in Mexico, 39.9% of the population was overweight, and 30.8% was obese in a range between the ages of 18 and 40 (Córdova et al., 2008). By 2014, NCDs in Mexico caused 75% of all deaths. Also, the increase between the frequency of metabolic syndrome and obesity has been paralleled in Latin American countries, including Mexico (Dávila et al., 2014).

In a bulletin issued by the National Autonomous University of Mexico (UNAM), by 2016 in ENSANUT reports, taking into account adults over 20 years, 75.6% of women and 69.4% of men were overweight and obese (De la Cruz, 2018). According to all the information provided above, it is vitally important to evaluate all these factors in order to prevent the appearance of diseases associated with overweight, and thus improve people's quality of life, in addition to observing the behavior of the generations over time in order to assess the effect of national health programs on the affected population.

## Methodology

### Study population

For this study, biochemical and anthropometric data were collected for 2014, 2016, and 2017 generations of new students at the Universidad Autónoma de San Luis Potosí - Unidad Académica Multidisciplinaria Zona Huasteca (UASLP - UAMZH). Information was collected from 1696 students (100%) with an age range of 17 to 32 years, of which 719 were men (43.34%) and 940 women (56.66%), who were sectioned into patients who presented some alteration, both in indicators of obesity and biochemical alterations.

### Treatment of information

A database was generated in the Excel program, which included data from the medical history of each patient such as full name, gender, age, weight, height, body mass index (BMI), waist circumference (PCin), and biochemical determinations according to income generation, which were Glucose (Glu), Cholesterol (Col) and Triglycerides (Tgl).

The mean  $\pm$  standard deviation was calculated for each of the captured parameters, and a one-way analysis of variance was performed to determine if a statistically significant difference existed, using a p-value of  $\leq 0.05$  using the statistical program GraphPad Prism V6.

## Results

Table 1 shows the average concentrations and measurements obtained after the analysis. For the determination of Glu, the average values obtained in the three study groups are within the values considered normal by the American Diabetes Association (ADA) ( $>105$  mg/dL). The analysis was performed to determine if there is a significant difference between the three groups and, it was obtained that for the comparison between 2014 and 2016 the value obtained of p was 0.0010, for 2014 against 2017  $p < 0.0001$  and in 2016 against 2017 the value of p was  $< 0.0001$ , which indicates that there is a statistically significant difference between the three study groups.

This decreasing trend can be attributed to the programs implemented by the Federal Government since 2006, at the beginning of the "Checate, mídete, muévete" campaign at the Mexican Social Security Institute (IMSS), which sought to create a culture of surveillance and weight control in the population. Similarly, the "PrevenISSSTE" program was created through the ISSSTE health system, which has the same purpose as the program mentioned above. Following these campaigns, the National Strategy for the Prevention and Control of Overweight, Obesity, and Diabetes was published in 2013, with the aim of detecting cases of overweight and obesity in the population on time and thus provide early care to ensure a better quality of life.

In the case of Col, the NOM-037-SSA2-2012, For the prevention, treatment, and control of dyslipidemias, mentions that the value taken to determine hypercholesterolemia is  $> 200$  mg/dL. Table 1 shows the Col concentrations of the groups 2014, 2016 and 2017, in which it is observed that the average values are below this criterion, the analysis was performed to determine significant difference and for the years 2014 vs 2017 a value of  $p=0.0008$  was obtained, for 2014 vs 2017 the p-value was  $<0.0001$ , and for 2016 vs 2017 the p-value was  $<0.0001$ , thus demonstrating that there is a statistically significant difference between the three study groups. This shows that there is a statistically significant difference between the three study groups.

Similarly, the trend observed in the results described above can be attributed to the good management of health strategies and programs implemented by health institutions to achieve a decrease in diseases associated with overweight.

For Tgl, the values marked by the NOM-037-SSA2-2012, For the prevention, treatment, and control of dyslipidemias, indicate that to determine if hypertriglyceridemia exists, the concentration of Tgl should not be above 150 mg/dL. In the values observed in Table 1, the average concentration per study group is below 150 mg/dL.

Similarly, the ANOVA analysis was performed to determine if there was a significant difference between the three study groups. In 2014 vs. 2016 comparison, the p-value was  $> 0.05$ , which indicates that between these study groups, the difference that exists is not statistically significant. On the contrary, in the comparison of 2014 vs 2017, the value obtained was  $p=0.0148$ , and in 2016 vs 2017, the value of  $p=0.0024$ , thus observing a statistically significant difference between the study groups. It shows a significant decrease in the average values of the university population from 17 to 32 years old.

In the case of obesity indicators, the analysis was made for BMI. In the groups 2014 vs 2016 and 2014 vs 2017, the p-value was  $> 0.05$ , while for 2016 vs 2017, the p-value was  $= 0.0065$ , showing the significant difference between the groups studied.

For PCin, the analysis performed gave p values  $>0.05$  for the three groups in both men and women, which shows that there is no statistically significant difference between them.

		2014	2016	2017
<b>Biochemical Determinations</b>				
Glu (mg/dL)		92.4 ± 11.5	89.09 ± 9.89	83.90 ± 9.16
Col (mg/dL)		152.8 ± 25.4	138.6 ± 28.19	123.1 ± 23.86
Tgl (mg/dL)		115.9 ± 66.6	112.9 ± 59.51	97.55 ± 55.49
<b>Obesity Indicators</b>				
IMC (kg/m <sup>2</sup> )		25.8 ± 12.0	24.95 ± 4.82	24.06 ± 0.83
PCin (cm)	Male	87.84 ± 14.8	85.58 ± 13.30	86.79 ± 12.23
	Female	79.61 ± 13.91	81.47 ± 15.35	80.57 ± 13.10

**Table 1** General characterization of the study population (mean ± standard deviation)

Table 2 shows the prevalence of alterations in both biochemical determinations and obesity indicators in the total study population. In the case of Glu, by 2014, 15.5% presented serum Glu concentrations above 105 mg/dL. By 2016, 5.1% presented this condition and by 2017, 1.4%. For Col, the percentage of participants found to be above 200 mg/dL was 0.0% in 2014, 3.1% in 2016 and 0.5% in 2017.

For Tgl, in 2014, there was a percentage of alteration of 20.8%, by 2016 this percentage decreased to 17.7%, and by 2017, the percentage was 11.9%.

As for obesity indicators, for BMI in 2014, there was a percentage of alteration ( $\geq 25\text{kg/m}^2$ ) of 42.2%, in 2016, this percentage was maintained, while for 2017 it decreased to 35.5%. In the case of central obesity, determined by PCin, in men, by 2014 23.9% of participants had this condition, by 2016 16.4%, and by 2017 the percentage increased to 28.8%. For this same indicator in the case of women, in 2014 41.7% presented this condition, in 2016 increased to 48.8%, and in 2017 decreased to 47.4%. The analysis was performed for statistical significance, obtaining, as a result, a value of  $p > 0.05$ , indicating that there is no statistically significant difference between the groups studied.

According to Radwan et al., 2019 in their study, conducted in a population of the same age range, the indicators of obesity maintain the condition shown in this study, with decreased rates of SP and OP. However, BMI was found to be high.

As for obesity indicators, BMI decreased from 2014 (46.1%) to 2017 (34.2%). When the analysis was performed to determine whether there was a statistically significant difference, the p-value obtained was  $> 0.05$  in the comparison of the three groups, showing that there is no difference in any of the determinations and indicators. The prevalence of overweight and obesity in the young adult population is not exclusive to the Mexican population. Azab et al., in 2019, describe a 20.5% prevalence of overweight in young adult women between 19 and 25 years of age belonging to the University of Jouf in Saudi Arabia, thus showing the importance of the problem at a global level.

It is worrying to note that the proportions of the population affected by overweight or obesity remain constant in young adult subjects. This situation is worrying since both overweight and obesity are relevant precedents for chronic-degenerative diseases such as diabetes, dyslipidemia, and coronary disease, among others, which are presumed to appear at an early age in the groups studied, given the premature appearance of overweight and obesity.

2014		2016		2017		
<b>Biochemical Determinations</b>						
Glu $\geq 105$ mg/dL	n=263	15=15.5%	n=486	25=5.1%	n=561	8=1.4%
Col $\geq 200$ mg/dL	n=24	0=0.0%		15=3.1%		3=0.5%
Tgl $\geq 150$ mg/dL	n=24	5=20.8%		86=17.7%		67=11.9%
<b>Obesity Indicators</b>						
IMC $\geq 25$ kg/m <sup>2</sup>	n=263	111=42.2%	n=486	205=42.2%	n=561	99=35.5%
PCin Male $\geq 94$ cm	n=117	28=23.9%	n=214	36=16.4%	n=219	63=28.8%
PCin Female $\geq 80$ cm	n=146	61=41.7%	n=283	138=48.8%	n=304	144=47.4%

**Table 2** Population that presented alteration in biochemical determinations and obesity indicators (percentage %)

The above information was divided by gender. Table 3 shows the percentages of alterations in men. By 2014, 9.4% presented a Glu greater than 105 mg/dL; in 2016 this percentage decreased to 6.6%, and in 2017 the percentage was 1.31%. In the case of Col, in 2014 and 2017 0.0% of the participants presented hypercholesterolemia, while in 2016 3.3% did. For Tgl, in 2014 10.0% of the participants presented hypertriglyceridemia, while in 2016 22.6% showed this condition; however, by 2017 this percentage decreased to 10.8%.

In addition to the inherent problem of satisfying the health care needs of the affected populations, the economic burden that this represents on the family economy and public spending on health, leads to emerging programs for the prevention of overweight and obesity in the young adult population, as a way of avoiding overloading the health system with patients with diseases associated with these conditions.

Moore et al., in 2019, describe an increase in the BMI of the population from Australia and Macau as a function of age. Therefore, it is assumed that there will be an increase in the BMI of the study subjects included in this report in the coming years and, therefore, the early appearance of chronic-degenerative diseases such as diabetes, hypertension, cardiovascular diseases, etc. The appearance of obesity is multifactorial; Savas et al., in 2019, describe a high prevalence of hormonal factors related to hypothyroidism, presence of polycystic ovary syndrome, high birth weight, early menarche, among others, as important determinants for high BMI in subjects of  $41.3 \pm 14.2$ .

However, the WHO considers that the fundamental cause of overweight is the imbalance between the calories consumed and those spent, which is associated with an excessive intake of high-calorie and high-fat foods, as well as the marked sedentariness associated with new forms of work and transport. Therefore, one of the most critical measures for the control of overweight and obesity is the implementation of healthy eating plans, as well as constant exercise routines.

As shown in table 1, it can be observed that there is a tendency to decrease in some of the determinations and measures carried out; however, in tables 2, 3 and 4 no statistically significant difference was found between the percentages of alterations among the groups studied; some indicators such as BMI remain high, thus observing that the national strategies and plans being implemented to combat and prevent the appearance of NCD and DCS are not fully functional.

2014		2016		2017		
Biochemical Determinations						
Glu ≥105 mg/dL	n=117	11= 9.4%	n=212	14= 6.6%	n=304	4= 1.31%
Col ≥200 mg/dL	n=10	0= 0.0%		7= 3.3%		0= 0.0%
Tgl ≥150 mg/dL	n=10	1= 10.0%		48= 22.6%		33= 10.8%
Obesity Indicators						
IMC ≥25 kg/m <sup>2</sup>	n=117	59= 46.1%	n=212	89= 42.0%	n=304	104= 34.2%

**Table 3** Prevalence of alteration in biochemical determinations and indicators of obesity in men (percentage %)

Table 4 shows the percentage of alterations in women, for Glu in 2014 2.7%, in 2016, the percentage increased to 3-9%, and in 2017 it decreased again to 1.5%. For Col, in 2014 0.0% presented alteration, in 2016 2.9% and in 2017 the percentage decreased to 1.2%. As for Tgl, in 2014, 28.6% presented Tgl concentrations above 150 mg/dL, decreasing in 2016 to 13.4% and in 2017 to 13.2%.

Finally, for obesity indicators, BMI in 2014 showed a percentage of alteration of 39.0%, in 2016 it increased to 41.0%, and in 2017 it decreased again to 37.0%. In the analysis of statistical significance, the value obtained for p was >0.05, showing that there is no statistically significant difference between the study groups.

Based on reports from the Organization for Economic Cooperation and Development (OECD) in 2015, Mexico was in second place in terms of obesity, determined by calculating the BMI of different countries with a population percentage of over 30.0% (BBC, 2018).

**Conclusions**

The health programs implemented since 2013 with the restructuring of the national strategy for the prevention and control of overweight, obesity, and diabetes, have given favorable results in the trend of decreasing new cases of diabetes, dyslipidemias and overweight and obesity; however, no significant difference has been found between the percentage of participants with these types of alterations.

Although there are still measures to be taken, it is a good start to decrease the incidence of chronic non-communicable diseases in vulnerable populations, such as young adults of university age, who are exposed to forced changes in their diet and eating habits according to the study load they are facing.

However, the efforts of government organizations have not been sufficient to decrease or at least control the high prevalence of overweight and obesity. Even more worrying is the fact that this is occurring at an increasingly younger age. The cost that this represents for any health system is unsustainable in the medium term, so it is advisable to increase efforts to stop the progress in terms of overweight and obesity figures. This requires a joint effort between the government, health specialists, and the general population.

2014		2016		2017		
Biochemical Determinations						
Glu ≥105 mg/dL	n=146	4= 2.7%	n=283	11= 3.9%	n=257	4= 1.5%
Col ≥200 mg/dL	n=14	0= 0.0%		8= 2.9%		3= 1.2%
Tgl ≥150 mg/dL	n=14	4= 28.6%		38= 13.4%		34= 13.2%
Obesity Indicators						
IMC ≥25 kg/m <sup>2</sup>	n=146	57= 39.0%	n=283	116= 41.0%	n=257	95= 37.0%

**Table 4** Prevalence of alteration in biochemical determinations and indicators of obesity in women (percentage %)

For the control of overweight and obesity, a change in the patient's life habits is required, and the patient should be the first to admit the health problem he or she is facing. In the particular case of the population studied in this research, it becomes more relevant since being young adults, they perceive themselves as healthy, and they have no intention of making changes in their lifestyle. Besides, this population is subjected to high levels of stress during their university education, which invariably increases their BMI.

Another situation that should motivate the implementation of active awareness campaigns of the problem that overweight and obesity represent in the young adult population is the fact that these subjects begin their productive lives, and in case of maintaining their BMI or even increasing it, they are potential candidates to develop chronic-degenerative diseases, which at a certain time are disabling, so that their working life is shortened, affecting the family and national economy.

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# Instructions for Scientific, Technological and Innovation Publication

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### **Abstract (In English, 150-200 words)**

Objectives  
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## Introduction

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Clearly focus each of its features

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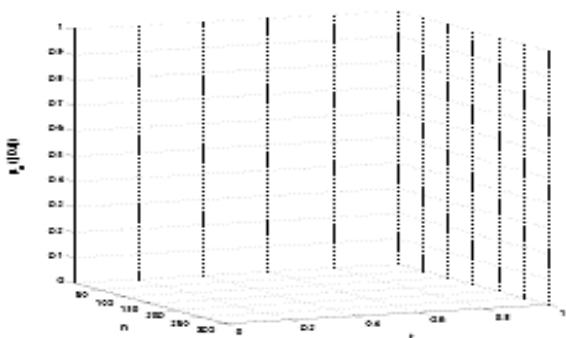
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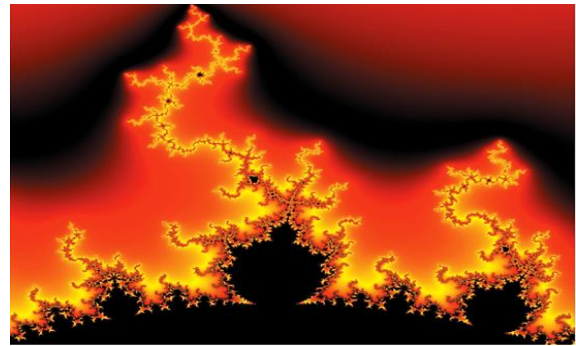
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