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Journal of Health Sciences

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Presentation of Content

As the first article we present, *Correlation between attention and memory skills by NEUROPSI in patients attending the AA rehabilitation center*, by RON-GONZÁLEZ, Osmara Valeria, ONTIVEROS-VARGAS, Angel Adrian, SOTO-RIVERA, Jesús Abraham and SALAS-NAME, Sagrario Lizeth, with adscription in the Universidad Juárez del Estado de Durango, as the second article we present, *Alcohol consumption in nursing students of a private institution*, by TOTOMOL-YOVAL, Blanca Estela, CRUZ-CORDOBA, Estibaliz, FLORES-PEREZ, Carlos and RODRIGUEZ-PUENTE, Linda Azucena, with adscription in the Universidad Veracruzana, as third article we present, *Serum albumin levels and fluid overload in patients with hemodialysis: study in a private hospital in Zacatecas*, by ENRÍQUEZ-RAUDY, Alejandra, GUTIÉRREZ-HERNÁNDEZ, Rosalinda, MUÑOZ-PÉREZ, Omar and CASTAÑON-ESCOBEDO, Juan, with assignment at the Universidad Autónoma de Zacatecas, as last article we present, *Prevalence of dental torus in patients receiving care*, by ZAPATA-MAY, Rafael, ROSADO-VILA, Graciella, OROZCO-RODRIGUEZ, Rubén and VIDAL-PAREDES, Jorge, with adscription in the Universidad Autónoma de Campeche.

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Correlation between attention and memory skills by NEUROPSI in patients attending the AA rehabilitation center

Correlación entre las habilidades para la atención y la memoria mediante NEUROPSI en pacientes que asisten al centro de rehabilitación AA

RON-GONZÁLEZ, Osmara Valeria†, ONTIVEROS-VARGAS, Angel Adrian, SOTO-RIVERA, Jesús Abraham and SALAS-NAME, Sagrario Lizeth

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Abstract

Attention and memory are the main neuropsychological functions which serve to develop learning in humans. These intellectual and cognitive faculties are essential to achieve goals or not during daily life. Objective: to identify the correlation between attention and memory neurocognitive skills, with the help of the NEUROPSI Neuropsychological Battery in patients attending "AA" rehabilitation centers. Methodology: This study is exploratory, non-experimental, observational, cross-sectional and correlational with a descriptive statistical analysis. Contribution: in the present study the following results were found: regarding Pearson's correlational analysis between attention and alcohol consumption, a moderate positive significance was found with $r=.50$, $p=.52$ and with a reliability of 0.01 which indicates that the greater the consumption of alcohol, the greater the alteration of the ability for attention and concentration. And in terms of memory, it was found that the greater the consumption of alcohol, the greater the alteration of the ability for visual memory with an $r=.53$, a $p=.55$ and with a reliability of 0.01.

Resumen

La atención y la memoria son las principales funciones neuropsicológicas las cuales sirven para desarrollar el aprendizaje en el ser humano. estas facultades intelectuales y cognitivas, son primordiales para lograr metas o no durante la vida diaria. Objetivo: identificar la correlación entre las habilidades neurocognitivas atención y memoria, con ayuda de la Bateria Neuropsicológica NEUROPSI en pacientes que asisten a centros de rehabilitación "AA". Metodología: El presente estudio es de tipo exploratorio, no experimental, observacional, transversal y correlacional con un análisis estadístico descriptivo. Contribución: en el presente estudio se encontraron los siguientes resultados: en cuanto al análisis correlacional de Pearson entre atención y el consumo de alcohol, se encontró una significancia positiva moderada con una $r=.50$, una $p=.52$ y con una confiabilidad de 0.01 lo cual indica que a mayor consumo de alcohol mayor alteración de la habilidad para la atención y concentración. Y en cuanto a la memoria, se encontró que a mayor consumo de alcohol mayor alteración de la habilidad para la memoria de tipo visual con una $r=.53$, una $p=.55$ y con una confiabilidad de 0.01.

Neurocognitive Functions, Neuropsychological evaluation, NEUROPSI, Addiction

Funciones neurocognitivas, Evaluación neuropsicológica, NEUROPSI, Adicciones

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† Researcher contributing as first author.

Introduction

The studies that have been carried out in the field of cognitive neurosciences have opened up the possibility of making great strides towards a more precise structure in terms of drug rehabilitation treatment. At the same time, this has given mental health professionals an understanding of the way in which the neurological alterations presented by drug-taking patients have gradually opened up new fields of research.

Within these studies it has been found that the problem of substance use, specifically "drugs", is extremely complex as the use and maintenance of addictions is multifactorial, meaning that different contexts are associated with the patients' lives. These factors can be: Family, work, social, emotional, medical, etc. problems.

However, in spite of the great advances that neurology has achieved, there are still several studies in progress which seek to provide answers to all these problems in order to generate an increasingly effective treatment for the rehabilitation of these patients with addictions.

The neuropsychological alterations caused by drug use are many and all of them have to do with the deterioration of memory and attention, which are executive functions considered superior because of their importance and how essential they are for carrying out executive, behavioural and decision-making functions.

For this reason, the research focuses on investigating what happens at a cognitive level when there is or has been drug use.

Rationale

Cognitive skills are essential for the challenges we face on a daily basis as human beings, since it is through them that we make decisions, interpret intentions, generate options, determine the consequences of our actions and have a broad critical thinking.

William James (1890) defined attention as "the taking possession of the mind in a clear and vivid way of several simultaneous objects or trains of thought".

If this selectivity did not exist, all this information would be of a great magnitude and would be totally disordered and therefore no activity would be possible. Within conscious activity, the selection of fundamental processes takes place.

Mnemonic processes are highly complex, as they involve a wide repertoire of neural structures in the brain, from the cerebral cortex to the cerebellum. (Portellano, 2005).

Drug use is well known to slightly or severely damage brain connections, which leads to a significant deterioration in attention and memory, for example, the use of inhalants has been shown to affect memory, concentration and motor perceptual difficulties and disorientation. It has also been found that there is a correlation between context and age for a person to start using addictive substances.

Problem

Drugs are addictive substances within which there are two main types: "legal" drugs such as alcohol and tobacco, and "illegal" drugs such as cannabis, cocaine, heroin, etc.

The effects produced by these drugs are carried out within the central nervous system and their direct effects are: Inhibitory, excitatory, narcotic or hallucinogenic. These involve the participation of neurotransmitters such as dopamine in brain functioning.

Drugs are also often classified as hard or soft, depending on their rapid addictive potential, however, this classification is no longer used today.

The World Health Organisation defines "addiction" as a global health problem due to high drug use and its repercussions (WHO. 2004).

Neuropsychological assessment helps to find and define specific characteristics in people with addictions, and makes it known that the use of addictive substances causes long-term or short-term damage. In this way, strategies for the rehabilitation of these patients are organised.

Drug and alcohol abuse is closely linked to the development of mental illnesses mainly linked to cognitive impairment leading to brain problems such as dementia especially in patients with other types of pathology.

Hypothesis

Ho: "attention and memory are not affected in drug rehabilitation patients".

Hi: "attention and memory are affected in drug rehabilitation patients".

Objectives

General objective

To find out the correlation between attention and memory using the NEUROPSI test in patients undergoing rehabilitation in "AA" centres.

Specific objectives

- To identify the current state of neurocognitive functions using Neuropsi in patients in "AA" rehabilitation.
- Prevalence of the substances most used by patients with drug dependence.
- To find out the relationship between substance use and the alteration of neurocognitive functions.

Theoretical framework

Background

The use of psychostimulants over time has been linked to a large number of problems and alterations in the Central Nervous System, which has been demonstrated in different studies.

Drugs have different classifications, but CEDRO (2018) organises them by their effects and consequences on the central nervous system: Stimulant Drugs: which are those that increase the sensitivity of the nervous system and are divided into two types; 1) Major Stimulants such as Cocaine, PBC, Amphetamines and Bronchodilators. 2) Minor stimulants: Nicotine, caffeine and alcohol. Depressant drugs:

Inhalants; Terokal, Gasoline and Benzine. Hypnotics; Sleeping pills and sedatives. Anaesthetics; Pain relieving tablets. Opiates; Heroin, Morphine and Methadone (Portugal Fáfán & Vallejos Fernández pp. 23-24).

Cognitive impairment is currently seen more and more in young people, which is attributed to the consumption of drugs and substances harmful to health, which cause damage and lesions at the neuronal and cerebral level that are irreparable.

Human beings have capacities and faculties to organise, inhibit, plan, monitor our behaviour and be flexible when faced with novel situations (Echeverria, 2017, p. 238).

However, memory and attention, which are higher cognitive functions that help us plan and organise our behaviour, are severely affected by the consumption of addictive substances. This impairment is shown as the difficulty to have an adequate behaviour hindering its inhibition (Portugal Fáfán & Vallejos Fernández pp. 23-24).

Attention

"Attention" is defined as the process of selecting information, it is the consolidation of action programmes that in a certain way are chosen and maintained.

Attention is made up of: Volume: is the number of signals that transmit and make flowing associations that can be sustained in the centre of an intelligent consciousness, establishing a dominant character.

Stability: The permanence with which salient processes retain their dominant character.

Oscillations of attention: These have to do with the cyclical character of the process by means of which we specify contents of all conscious activity, they also acquire dominant value or lose it.

And the factors that determine attention are: orientation, volume and stability of attention, and store the relationship with the structural factors of perception. Another external determinant of the sense of attention is the novelty of the stimulus.

And the internal factor depends on the subject's own activity. To this group of factors belongs the influence of the subject's needs, interests and dispositions, as they affect his perception and the course of his activity.

There are two types of attention: voluntary: this is where the human being decides what he/she wants to pay attention to. And the involuntary: this type of attention has to do with external stimuli, how intense and interesting they seem to us in order to capture our attention without first asking for permission.

Psychic processes are inherent and can only be carried out by the awake state of the cortex, which has an optimal level of activation. We have then that the activating reticular formation consists of two subtypes or levels, one ascending and one descending, where the function of the ascending reticular system is the activation of the cortex and the regulation of its state of activity. It is responsible for delivering activation information to the cortex.

This is of great importance, since it is through this system that the selective excitation systems that initiate in the cerebral cortex reach the brainstem nuclei and are the result of the higher forms of human conscious activity.

The activating reticular system is made up of ascending and descending fibres, which in turn form a neurophysiological apparatus underlying what we call the orientation reflex.

This is any kind of unconditioned reflex, manifested by a series of electrophysiological and motor reactions which are always present. It refers to the way in which we move and perform an activity and become aware of it.

Verbal instruction or verbal signalling

In order to maintain attention in an activation and for it to last for a long time, it is necessary to give verbal instruction so that the person does not lose attention in this indication, an example of a technique called mindfulness comes to mind, where the moderator or therapist gives indications and repeats them constantly, which does not allow the person to lose attention to what is being worked on in the exercise.

Aleksander Luria (1962) highlighted selectivity and permanence as essential characteristics of attention; in this way he conceived attention as the factor responsible for extracting the essential elements for mental activity, the process that maintains vigilance over the course of mental activity.

Memory

It is the imprinting, retention and reproduction of traces of previous experience (Briefs of Human Behaviour, 1994).

Memory is a neurocognitive function that makes it possible to record, encode, consolidate, retain, store, retrieve and recall previously stored information (Portellano, 2005).

Neurophysiological aspect of memory

In Breviarios de conducta humana of 1994, Lorente de No and McCulloch established the existence in the cerebral cortex of structures that allow excitation to circulate for a long time in closed circuits. One of the bases of this study was that it was already known that in the axons of single neurons there are branches that return to the body of the same neuron and connect directly with it and do so with certain dendrites of the same neuron, thus creating the basis for the permanent circulation of excitations within closed circular chains or reverberating circuits of excitation. However, there is reason to believe that in the nervous system there are also certain more complex structures of neuronal networks in which stable excitatory reverberation circles function. These structures are functional complexes of neurons, linked together by other "intercalary" neurons, where their function is to transmit excitation from one neuron to another, ensuring the long-lasting flow of excitation through networks of greater complexity or "reverberant circuits".

The neurophysiological basis of short-term memory is reverberant circuits, according to some researchers. On the other hand, ribonucleic acid makes a specific modification when the same stimulus is followed, which has served as a basis for researchers to suppose that it constitutes the biological seat of memory (Briefs on Human Behaviour, 1994).

Thus, we have that short-term memory is based on the movement of the excitation of the reverberating circuits and long-term memory on the growth of the axodendritic apparatus of the neuroglia, and perhaps the formation of new synapses, although it has not yet been demonstrated, but all the studies are directed towards this.

Short term memory

It is the process of initial retention of information for a short period of time ranging from a few fractions of a second to several minutes, although some authors place the time limit of short-term memory at 30 seconds (Portellano, n.d.).

Long-term memory

It is the ability to retain information for longer periods of time or permanently. It also refers to the ability to recall information after an interval of time in which the subject has focused his or her attention on another task. It allows us to encode, store and retrieve information and has a theoretically unlimited capacity, since throughout life we can continue to carry out successive learning processes such as riding a bicycle or learning new languages. (Portellano, 2005).

Sensory memory: this type of memory makes immediate recognition through our senses.

Short-term memory or immediate memory: this basically encodes information with linguistic characteristics. This temporary storage can last from hours to weeks.

Long-term memory: this is a permanent storage, where memories are stored. It is divided into 3 types of memory:

Semantic memory: refers to our knowledge of the world, it helps us to know the meaning of things, their function and characteristics.

Episodic memory: stores all those memories of our past.

Procedural memory: used to store the learning of specific skills, e.g. writing, walking, reading. These are behaviours that have already been assimilated by the subject and are supposed to be done autonomously without stopping to think about how to do them.

Working memory

It is made up of three components:

Phonological cycle: the material is stored according to its phonological characteristics.

Visuospatial sketch: has the capacity to store the spatial and visual properties of limited amounts of information.

Central executive: this space is where attention, coordination and filtering of information by means of long-term memory are allocated, and where information retrieval strategies, logical reasoning and arithmetic calculations are applied (Baddeley, 2000; Baddeley and Hitch, 1974).

In order to understand what memory is, it is necessary to emphasise that the following three stages are necessary to have a memory:

1.- Recording the information so that it then passes into short-term memory (Shiffrin and Atkinson, 1969).

Retention: is the association of information concepts.

Retrieval: is where information is transferred to the conscious long-term memory.

Amaral et al. (2012) carried out a study establishing the difference between cocaine and cannabis addicts, and it was determined through their evaluation that there are relevant neurocognitive deficiencies in the deterioration of attention capacity, working memory, speed of thought processing, inhibitory control and decision making, compared to cocaine addicts only, resulting in greater difficulty in mental flexibility.

Other research found that: People who consumed depressants and stimulants showed more difficulty and worse performance in activities related to decision-making, planning and mental flexibility; the results showed that this situation is closely related to the time of consumption (Álvarez, et al. 2008 p. 22).

Cognitive impairment due to drug use

The effects of drug use on people end up developing alterations in all their executive functions, which hinder the ability of individuals to inhibit themselves and avoid using drugs. However, it should also be taken into account that for a recovering addict the deprivation of these substances will bring about behavioural and physiological changes which are presented as deficits in executive functions.

According to Corral and Cadaviera (2002), neuropsychological affectations, physiologically speaking, are present in the perceptual-motor, visuospatial, memory and executive functions; these alterations occur in most cases of drug addiction and are correlated with different deficits in the structures and their functions.

There are some experimental studies with rodents described by Nestler (2001) where it has been proven that the acute administration of psychostimulants such as alcohol and opiates leads to an increase in the activity of the dopaminergic reward system, which in the most vulnerable individuals results in the onset of addiction.

NEUROPSI

Brief Neuropsychological Assessment in Spanish.

It is a tool used in neuropsychology, it is reliable and its main objective is to estimate a wide range of neurocognitive functions in geriatric, neurological, psychiatric patients, or patients with various medical problems. The application time is approximately 25 to 30 minutes.

The scoring method provides very specific qualitative and quantitative information. The data obtained independently for each cognitive ability gives an individual profile in which the few or many skills that the person has are highlighted. The areas evaluated in the test are orientation, attention and concentration, memory, language, visual-constructive processes, executive functions, reading, writing and calculation.

Likewise, this neuropsychological evaluation test has different ranges of age and schooling, the ages are from 16 to 30, 31 to 50, 51 to 65 and 66 to 85 years, and the schooling is from 0, 1 to 4, 5 to 9 and more than 10 years of study (Ostrosky, et al. 2000).

Research methodology

The present study is exploratory, non-experimental, observational, cross-sectional and correlational with descriptive statistical analysis.

The complex variables of attention and memory were analysed to determine the correlation between these neurocognitive functions, as well as the signal variables: age, gender and schooling.

Likewise, for the statistical study of the population characteristics, measures of central tendency and dispersion were used.

Inclusion criteria were considered to be patients who attended the alcoholics anonymous first of May group in Durango, Dgo, who wished to participate in the study and had signed a previous letter of informed consent, therefore those patients who did not wish to participate were excluded; as an elimination criterion, those patients who decided to withdraw their informed consent at any time during the evaluation, or those who still had active drug use were discarded; due to this criterion, 3 cases were eliminated, leaving a total of 20 valid cases.

Procedure

Participants were patients who attend a 24-hour alcoholics anonymous group called Primero de Mayo in the city of Durango. Data collection was carried out during the period of September 2020, culminating at the end of September of the same year.

Informed consent was obtained after signing the informed consent form in accordance with the official Mexican standards 004-ssa3-2012 on clinical records and 040-ssa2-2004 on information, and the instruments for data collection and interpretation of the results were applied.

For the study of neurocognitive functions in the patients, the NEUROPSI BRIEF neuropsychological evaluation was used, which is a brief, reliable and objective instrument that allows a broad spectrum of cognitive functions to be evaluated.

It consists of 6 sections that evaluate neuropsychological functions, which are the orientation section with 3 items, attention and concentration with 3 items, the memory section with its sub-sections of encoding and recall memory which consist of 5 items between the two sub-sections, the language section consists of 5 items, the reading and writing section consists of 3 items and finally the section of conceptual and motor executive functions which consists of 7 items.

Rated by the following values: high normal, normal, moderate and severe. Each item is rated according to each sub-area and according to the age range and level of schooling of each subject assessed.

The identification of the signalistic variables and academic performance (gender, age and school average) was obtained through the application of a clinical survey.

Statistical analysis of the information obtained was carried out using Excel software.

Results

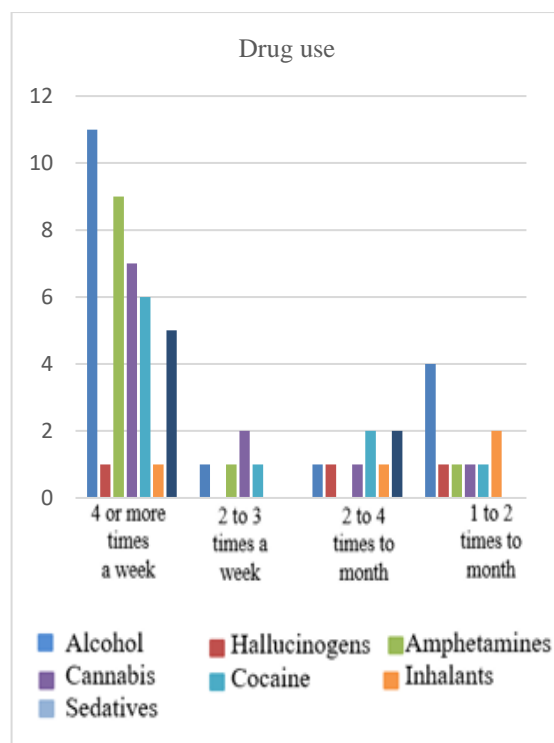
The sample consisted of 20 participants who attend the 24-hour Alcoholics Anonymous group "Primero de Mayo", of whom 3 (15 %) were women and 17 (85 %) were men. The average age of the participants was 33 years, with a minimum of 20 years and a maximum of 69 years. The educational level of the persons who participated in the evaluation was: 4 persons finished primary school, 8 persons finished secondary school, 6 persons finished high school and 1 person finished university.

In order to find out the percentage of people who used drugs and how often they were used, a survey was carried out, which was found in the clinical history, asking what type of substances each person used and how often they were used.

The results showed that the most frequently used substances 4 or more times a week were alcohol, the most used substance by 11 people, followed by amphetamines in second place, the most used substance in a week by 9 people, and the least used substances in a week were hallucinogens and inhalants.

The substances consumed less frequently, between one and two times a month by the people evaluated, continues to be alcohol, which is still in first place, with 4 people using alcohol between one and two times a month, followed by inhalants, with two people using inhalants only a few times a month, while all the other substances such as hallucinogens, amphetamines, cannabis and cocaine are all consumed less frequently.

The following graph 1 shows the drug use of the persons assessed, which was obtained from the clinical history taken before starting the assessment.



Graphic 1 Drug use

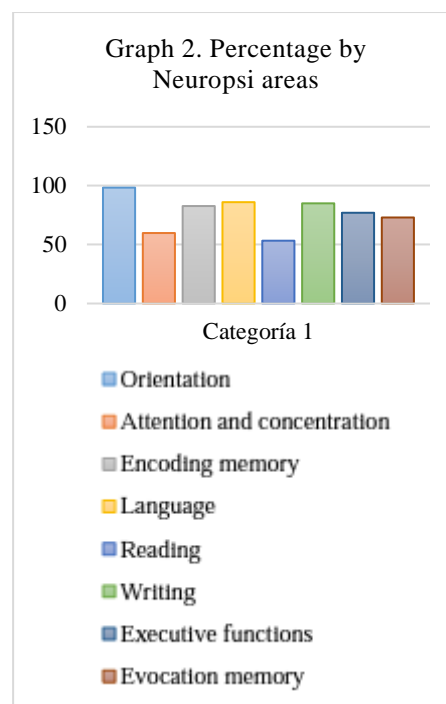
The results obtained from the NEUROPSI neuropsychological evaluation were obtained thanks to all the areas and sub-areas evaluated. We can see that the highest percentage was 40% of people with a normal result, followed by 15% with a mild result, 25% with a moderate result and finally 20% with a severe result, thus adding the mild, moderate and severe results, we have that 60% of the population has alterations of neurocognitive functions (see table 1).

	Persons	Percent
Normal	8	40 %
Mild	3	15 %
Moderate	5	25 %
Severe	4	20 %

Table 1 NEUROPSI Results

The reliability of the results obtained by means of the brief neuropsychological battery in Spanish NEUROPSI was 0.05, which is a good reliability value. Likewise, by means of the parametric student t-test used in the study, it was possible to identify the relationship between the data obtained; the greater the consumption of toxic substances harmful to health, the greater the affectation of neurocognitive functions, mainly in the areas of attention and concentration, memory, executive functions and reading.

Graph 2 shows the results obtained in the areas assessed using the Neuropsi neuropsychological battery. According to the score of each evaluation: arranging the percentages from highest to lowest score, first is orientation with 98.33 % of correct answers, followed by language with a percentage of 86 %, writing with 85 %, coding with 82.7 %, executive functions with 77 %, recall memory with 73 %, attention and concentration with 59.81 % and in last place is reading with 53.3 %.



Graphic 2 Percentage by NEUROPSI áreas

Correlational analysis

Next, regarding the Pearson correlational analysis between attention and alcohol consumption, a moderate positive significance was found with an $r=.50$, a $p=.52$ and a reliability of 0.01, which indicates that the higher the alcohol consumption, the greater the alteration in the ability to pay attention and concentrate.

	Average	Anxiety score
Correlation of Pearson		.50*
Sig. Bilateral		.52
N.	20	20
*Correlation is significant at the 0.01 level (bilateral).		

Table 3 Correlation between attention and concentration and alcohol consumption

In the following Pearson correlational analysis, between memory and alcohol consumption, a moderate positive significance was found with an $r=.53$, a $p=.55$ and a reliability of 0.01, which indicates that the higher the alcohol consumption, the greater the impairment of visual memory ability.

	Average	Anxiety score
Correlation of Pearson		.53*
Sig. Bilateral		.55
N.	20	20
*Correlation is significant at the 0.01 level (bilateral).		

Table 2 Correlation between visual memory and alcohol consumption

Conclusion

This study is related to what Cooper-Kahn (2009) mentions since he postulates that the skills that are out of control due to drug use are: inhibition, mental switching, emotion control, initiation, working memory, planning, self-control. And in this research we found that, according to the high consumption of addictive substances in this population, there is a 60% damage in terms of neurocognitive functions. Thus, it was found that the degree of consumption of toxic substances harmful to health is indeed linked to the damage it causes directly to neurocognitive functions: attention and concentration, memory, executive functions and reading.

The main consumption of addictive substances found in the "Primero de Mayo" Rehabilitation Centre was the following.

According to Pearson's correlation, it was found that the greater the amount of alcohol consumed, the greater the alteration in the superior abilities of attention and memory, where concentration is primarily affected in attention and visuospatial memory is damaged in attention.

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Alcohol consumption in nursing students of a private institution

Consumo de alcohol en estudiantes de licenciatura en enfermería de una institución privada

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Abstract

Currently, alcohol consumption is a health problem. According to the National Survey on Drug, Alcohol and Tobacco Consumption 2016-2017 (ENDOCAT), compared to 2011, an increase from 0.8% to 2.9% has been reflected, with a greater prevalence in men, but women also show high consumption. Therefore, the objective is to know the risk of alcohol consumption in nursing students. Methodology: A descriptive quantitative research study is carried out through the application of the AUDIT instrument which is applied to 25 higher education students. Results. It was found that they have a high risk of consuming alcohol, the risk is similar in men and women. Contribution through the results obtained to develop programs or strategies that reduce the risk of alcohol.

Resumen

En la actualidad el consumo de alcohol es una problemática de salud, según la Encuesta Nacional de Consumo de Drogas, Alcohol y Tabaco 2016- 2017 (ENDOCAT) con respecto al año 2011 se ha reflejado un incremento del 0.8% al 2.9%, habiendo mayor prevalencia en los hombres, pero las mujeres también muestran un alto consumo. Por lo anterior se tiene por objetivo conocer el riesgo de consumo de alcohol en estudiantes de de Licenciatura en enfermería. Metodología se realizó un estudio de investigación cuantitativa descriptiva mediante la aplicación del instrumento AUDIT el cual se aplicó a 25 estudiantes de educación superior. Resultados. Se encontró que tienen un alto índice de riesgo de consumir alcohol, el riesgo es similar en hombre y en mujeres. Contribución mediante los resultados obtenidos elaborar programas o estrategias que disminuyan el riesgo de alcohol.

Consumption, Alcohol, Nursing students

Consumo, Alcohol, Estudiantes de Enfermería

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Introduction

Alcoholism is currently a health problem that affects not only the consumer but also his or her family and social environment. As a legal drug, alcohol stimulates consumption among young people and makes it the most commonly used drug among this group (Ramírez et al., 2022). The risk is unavoidable especially when exposed to factors such as parental and family consumption, demographic factors, media advertising and the ease with which drinking can be acquired (Ramírez et al., 2022).

The harmful use of alcohol is a causal factor in more than 200 diseases and disorders (World Health Organization: WHO, 2022), which is why it is considered a health problem, due to all the secondary effects and consequences it produces, as well as being one of the factors generating morbidity and mortality worldwide. The World Health Organization estimates that every year there are three million deaths worldwide due to harmful alcohol consumption, which represents 5.3% of all deaths (World Health Organization: WHO, 2022).

Most studies agree that alcohol is a licit substance that favours its consumption, consequently, young people are more exposed to ingest this substance and go from a risk to an addiction, therefore it is of utmost importance to identify the phenomenon of alcohol consumption in the nursing student population, who in the future will be a professional dedicated to the prevention and / or promotion of health (Tejada-Rangel et al., 2023).

Alcohol consumption is a worrying social and public health problem, with an emphasis on young university students (López, 2023), and it is necessary to analyse the level of consumption of each of them, in order to know the risk and prevent addiction. In this population, it is a vehicle for socialisation and high consumption can have negative consequences for the university student (López, 2023), even to the point of not continuing their studies. This research aims to find out the level of alcohol consumption among young people, in order to provide guidelines for nursing interventions for health promotion and prevention.

Materials and methods

Classification of the research

This research is considered quantitative in nature, according to Feria (2019), and due to its gnoseological origin it is a descriptive study, as it exposes the observable and general characteristics of the phenomenon to be measured. With the aim of describing the level of alcohol consumption in undergraduate nursing students in a private institution.

Participants

Adults of indistinct sex, aged between 20 and 25 years, undergraduate students, with low-risk alcohol consumption habits, having agreed to participate and having signed the informed consent form. Those participants who do not meet the above requirements and who have a diagnosis of psychiatric disorder are excluded from the research.

Technique and instruments

Operationalisation of variables

Complex variable: Alcohol consumption

Operational definition: Intake of intoxicating beverages.

Conceptual definition: Consumption: Action and effect of consuming foodstuffs or other goods (Real Academia Española, 2022).

Alcohol: Psychoactive substance with dependence-causing properties (WHO, 2022)

Indicator: Zone I, zone II, zone III, zone IV

Simple variable: Undergraduate students

Operational definition: Undergraduate students: Individuals who are enrolled at the undergraduate academic level.

Conceptual definition: Student: Person studying in an educational establishment (RAE, 2022).

Bachelor's degree: University degree immediately below doctorate (RAE, 2022).

Indicator: Yes, no.

Instrument validation: The Alcohol Use Disorders Identification Questionnaire (AUDIT) with a cronbach's alpha of 0.828 developed by the World Health Organization was used, based on the diagnostic criteria for alcohol dependence syndrome of the tenth edition of the International Classification of Diseases (ICD-10).

Data collection: Data collection was carried out with the approval of the local ethics and research committee of the Universidad Veracruzana, in accordance with the principles of ethics and Helsinki declarations. Data collection was non-probabilistic by convenience, with a sample of 25 undergraduate students of indistinct gender who agreed to participate and signed the informed consent form. Data analysis was performed with the statistical programme SPSS 28.0.0.0.

Results and discussion

Results: 72% of the participants were female, of the total sample, 36% studied and worked, the rest only studied. In terms of marital status, 4% are married, 4% live in a common-law relationship and 92% are single. Of these, 24% live with mother and father without siblings, as well as mother, father and siblings, 20% live with mother, father, siblings and others, including uncles and grandparents, 12% live only with father and siblings, compared to 4% who live only with their mother without siblings, 4% with their mother and siblings, and 4% live alone. The remaining 8% live with their spouse. The first three questions of the test are focused on determining risky alcohol consumption, with respect to question 1 How often do you drink alcoholic beverages? It stands out that 64% drink one or less times a month, in contrast to 4% who say they do not drink at all, 20% drink 2-4 times a month, 8% drink 2-3 times a week and 4% drink 4 or more times a week.

Question 2: How many alcoholic beverages do you usually consume in a normal drinking day? The highest percentage with 36% answered one or two drinks, 28% 3 or 4, 16% 5 or 6, 12% 7, 8 or 9 drinks, 4% 10 or more and 4% did not answer as they do not consume alcohol.

The next question asked how often they consume 6 or more drinks in a single day, 36% said never, but the rest of the participants did, 28% less than once a month, 16% monthly, 12% weekly, 4% daily or almost daily and the 4% who did not consume, did not answer, so it is established that the majority of participants (58%) can consume that amount of drinks.

Questions 4, 5 and 6 address dependence problems, and these were only answered by participants who do consume alcohol, to the question, How often in the last year have you been unable to stop drinking once you had started? 72% reported never having suffered from it, 20% less than once a month and 4% monthly; the following question: How often in the last year were you unable to do what was expected of you because you had been drinking? 84% answered never but 12% did have some inconvenience in performing their activities less than once a month. Finally, in this ranking, how often in the course of the last year have you needed to drink on an empty stomach to recover after drinking a lot the day before? 92% said never and 4% said less than once a month.

Questions 7, 8, 9 and 10, ranking harmful drinking, to the question "How often in the past year have you had regrets or feelings of guilt after drinking? 68% mentioned never, 24% less than once a month and 4% daily or almost daily. To the question, how often in the past year have you not been able to remember what happened the night before because you had been drinking? 82% mentioned never having experienced it, but 16% did.

The question Have you or someone else been injured because you had been drinking? Finally, have any family members, friends, doctors or health professionals shown concern about your drinking or suggested that you stop drinking? 96% said no and 4% said yes, but not in the last year.

According to the score obtained, participants were classified according to risk level, 96% were placed in Zone I, which according to the AUDIT test application manual corresponds to alcohol education, and 4% in Zone II, in which they should already receive simple counselling by a member of the health team, which can include nurses who have the appropriate training and education.

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Conclusions

According to the results obtained, it indicates that students are constantly exposed to this substance. Considering that alcoholism is not a problem that affects only those who consume it, it is a disease that affects society and the health system in Mexico, it is not possible to establish the exact causes that lead to excessive consumption, therefore it is necessary to design strategies that include nurses who have the appropriate training and education.

Nursing cares for the person, the family and the population, prevention of risky consumption represents a wide field of work for the profession, remembering that the approach to a patient must be holistic, situations and health needs have changed over the years, we must consider more factors that can affect the intake of substances that are harmful to health.

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Serum albumin levels and fluid overload in patients with hemodialysis: study in a private hospital in Zacatecas

Niveles de albumina sérica y sobrecarga hídrica en pacientes con hemodiálisis: estudio en hospital privado de Zacatecas

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Abstract

One of the markers to evaluate health in patients with hemodialysis is the level of serum albumin, water overload is a common complication in this type of people that can affect albumin, the objective in this work was to know the levels of serum albumin and its relationship with fluid overload in patients with chronic renal failure on hemodialysis. A descriptive, cross-sectional and analytical study was carried out in a renal therapy unit of a private hospital in the city of Zacatecas, the sample consisted of 50 patients of both sexes. The variables considered were serum albumin, body mass index (BMI), water overload, anthropometry and sociodemographic factors. An intermediate negative correlation (-0.382) was found with a p of 0.003, which suggests a significant association between the two variables. These results are of clinical relevance, since maintaining adequate levels of serum albumin can contribute to the prevention or control of fluid overload in these patients, which in turn can positively impact their health and quality of life.

Resumen

Uno de los marcadores para evaluar la salud en pacientes con hemodiálisis es el nivel de albumina sérica, la sobrecarga hídrica es una complicación común en este tipo de personas que puede afectar la albúmina, el objetivo en este trabajo fue conocer los niveles de albumina sérica y su relación con la sobrecarga hídrica en pacientes con insuficiencia renal crónica en hemodiálisis. Se realizó un estudio descriptivo, transversal y analítico en una unidad de terapia renal de un hospital privado en la ciudad de Zacatecas, la muestra se conformó con 50 pacientes ambos sexos. Las variables consideradas fueron la albumina sérica, el índice de masa corporal (IMC), la sobrecarga hídrica, la antropometría y los factores sociodemográficos. Se encontró una correlación negativa intermedia (-0.382) con una p de 0.003, lo cual sugiere una asociación significativa entre las dos variables. Estos resultados son de relevancia clínica, ya que el mantenimiento de niveles adecuados de albúmina sérica puede contribuir a la prevención o control de la sobrecarga hídrica en estos pacientes, lo que a su vez puede impactar positivamente en su salud y calidad de vida.

Serum albumin, fluid overload, hemodialysis

Albúmina sérica, Sobrecarga hídrica, Hemodiálisis

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Introduction

Chronic renal failure (CKD) is a progressive disease in which the kidneys lose their ability to filter waste and excess fluid from the blood (Paucar, Asencio & Vera, 2019). Haemodialysis is a common treatment in CKD, which allows the removal of these waste products and excess fluid through an external filter (Fernández-Lucas et al., 2012).

Serum albumin is a key parameter used to assess renal function and nutritional status in haemodialysis patients. It is a protein produced by the liver that helps maintain fluid balance in the body and is also essential for the transport of nutrients and other compounds in the blood (Suárez-Llanos, 2023).

In haemodialysis patients, fluid overload is a common problem as they may have difficulty eliminating excess fluid during haemodialysis, which can negatively affect the nutritional status and kidneys of patients. This is why it is a priority to understand the effect of serum albumin levels on fluid overload in CKD patients on haemodialysis.

Pathophysiology of chronic renal failure (CRF)

The pathophysiology of CKD can be caused by various pathologies such as: diabetes mellitus; arterial hypertension; chronic glomerulonephritis; polycystic kidney disease; urinary obstruction and congenital kidney disease. These can gradually damage the nephrons (functional units of the kidneys), and as damage occurs, the ability of the kidneys to filter and remove wastes from the blood can be progressively reduced.

As the disease progresses, the kidneys become less efficient in the production of hormones and regulation of water balance and electrolytes, when this happens it can become more complicated and can lead to anaemia, electrolyte imbalances, accumulation of toxins in the blood, increased blood pressure and problems in the skeletal system (Martos & Villalba, 2021).

When the nephrons do not do their job, there are consequences in other systems of the organism, since when the levels of toxins in the blood rise, it can cause neuronal problems and thus affect brain function (de Mier et al., 2019). Likewise, electrolyte imbalances can affect the cardiac system and increase the risk of developing cardiovascular disease (Parra-Pérez & Gómez-González, 2022).

The pathophysiology of CKD also involves the activation of several compensatory and pathological mechanisms, an activation of the renin-angiotensin-aldosterone system can occur, leading to vasoconstriction and sodium and water retention, which further exacerbates renal failure, and research also mentions that chronic inflammatory processes and oxidative stress play a role in the pathophysiology of CKD (Raucoules-Aimé & Ouattara, 2023).

Treatment of chronic renal failure: haemodialysis

Treatment of CKD attempts to control risk factors and associated complications, here you can find: Converting enzyme inhibitors (ACE inhibitors) and angiotensin II receptor blockers; Hypotensives; Diuretics; Phosphorus chelators; Calcium and vitamin D supplementation; Erythropoietin; Diabetes and blood pressure control; and Dialysis and kidney transplantation (Muñoz, Fernández, Doyágüez & Magro, 2023).

Dialysis is the process that carries out the normal functions of the kidneys when they have CKD, and there are two types: haemodialysis and peritoneal dialysis. In the case of haemodialysis, the patient's blood is extracted through a catheter and filtered out of the body through a machine, which allows toxins, wastes and excess fluid to be eliminated, which helps to maintain optimal levels of electrolytes and chemicals in the blood (Jáuregui-González et al., 2023).

Function and role of serum albumin in the body

Serum albumin is a protein produced by the liver, it plays a crucial role in the body for the multiple functions it performs, one of the main ones being the regulation of osmotic pressure in the circulatory system, due to its size and negative electrical charge, albumin has the ability to retain water in the blood vessels and prevent it from leaking into the surrounding tissues. This helps to maintain adequate volume and pressure in the circulatory system, ensuring good tissue perfusion.

Albumin is also actively involved in the transport of various molecules in the blood, binding to substances such as hormones, vitamins, bilirubin, fatty acids and drugs, and transporting them through the bloodstream to different tissues and organs within the body, thus facilitating the delivery of essential nutrients and the elimination of waste products (Navarro, Alvarez & Martell, 2020).

Serum albumin is essential in the body's defence against infection and disease, as it is a protein that can act as a protective barrier against pathogens and toxins. In addition, it also binds to other immune system compounds, such as immunoglobulins, to aid the immune response and the elimination of invading microorganisms (Rugeles et al., 2023).

Another important function of serum albumin is its ability to regulate acid-base balance in the body. As a protein that can accept and release protons, it helps to maintain the proper pH in body fluids (Ferreiro, 2021).

Water overload in haemodialysis patients: causes and consequences

Water overload is a common complication in patients undergoing haemodialysis, difficulties in maintaining the proper balance of water and sodium in the body can occur, which can lead to water overload (Hurst, 2013).

There are several factors that can contribute to the development of water overload in haemodialysis patients, one of which is excessive fluid intake, either through food or drink. The consumption of sodium-rich foods can also aggravate this condition, as sodium promotes water retention in the body. Some patients may also have problems eliminating excess water and sodium due to decreased urine production (Ayús & Musso, 2008).

There are serious consequences of water overload in haemodialysis patients, one of the main ones is the risk of arterial hypertension, as excess fluid in the body can increase blood pressure, this endangers cardiovascular health or can cause strokes, this overload can also affect the lungs, leading to congenital heart failure, as fluid accumulation in the lungs hinders the ability to breathe properly and can cause coughing, shortness of breath and fatigue (Henríquez-Palop et al., 2013).

Another negative effect of fluid overload is increased stress on the kidneys. Already compromised, excess fluid can lead to kidney damage, which can worsen kidney function and make it even more difficult to eliminate waste from the body (Ayús & Musso, 2008).

In this type of patient, it is essential to monitor fluid intake and follow a balanced, low-sodium diet, and it is also important to constantly monitor for signs and symptoms of fluid overload, such as sudden weight gain, swelling in the extremities and shortness of breath (Henríquez-Palop et al., 2013) (Henríquez-Palop et al., 2013).

Previous studies: serum albumin levels and water overload in patients with chronic renal failure on haemodialysis

Yuya et al. (2023) published an article mentioning that the post-dialysis plasma level of human atrial natriuretic peptide (HANP) reflects fluid volume in haemodialysis patients. This study included 156 haemodialysis patients without atrial fibrillation and examined the usefulness of HANP level (100 pg/ml) in predicting hypoxaemia due to congestion. Patients with a HANP level ≥ 100 pg/ml developed hypoxaemia due to congestion.

In a 5-year follow-up, patients with a HANP level ≥ 100 pg/ml were found to have significantly higher rates of hospitalisation for acute heart failure (AHF), development of cardiovascular disease (CVD) and all-cause death.

In addition, a significant association was found between cardiac dysfunction and high HANP level. In conclusion, the HANP level is indicative of both fluid volume and cardiac dysfunction. A threshold HANP level of 100 pg/ml may be a predictive marker of AHF and a practical indicator for volume control in haemodialysis patients.

Also Yu et al. (2023) in their published research examined the impact of seasonal variation in peritoneal dialysis and patient outcomes. They considered peritoneal balance and peritoneal dialysis efficacy test data from all patients followed in one centre over a period of one year. In addition, information was collected on monthly deliveries from the entire centre over a five-year period.

The results showed that plasma albumin and phosphate levels were higher in summer and correlated positively with the average monthly temperature. No seasonal differences were found in peritoneal dialysis ultrafiltration or urine volume, but more use of low glucose concentration was observed in summer and less in winter. The authors concluded that albumin and plasma phosphate levels are higher in summer in peritoneal dialysis patients, and a lower glucose peritoneal dialysis solution is more widely used in summer. This may be useful for individualised treatments.

Another paper examined the effects of oral sodium bicarbonate on protein metabolism and markers of inflammation in haemodialysis patients with metabolic acidosis. 66 adult haemodialysis patients participated in the study, which was divided into two groups, one receiving daily oral sodium bicarbonate for 12 weeks and the other not given, with variables measured before and after intake.

The results showed that serum bicarbonate and pH increased significantly in the group that consumed the oral sodium, serum albumin levels and in this case serum potassium and muscle strength decreased, in the case of IL-6 levels, were lower. The authors concluded that correcting metabolic acidosis in haemodialysis patients improved serum albumin levels and the rate of protein catabolism, without causing hypokalaemia or a significant increase in interdialysis weight. These effects were more evident in patients with low IL-6 levels, suggesting that inflammation may be associated with treatment response (Rasheed, Al-Hashemi & Ali, 2023).

Authors Elías-Viramontes, Casique-Casique & Rodríguez-Loreto conducted a study in Madrid with the aim of analysing the theoretical and methodological aspects used in the design and implementation of health interventions for people with kidney disease. To do so, they conducted a systematic review using databases of publications in specialised journals. In their research, they focused on the psychological aspect, and in particular on the motivational area, as a fundamental element in achieving behavioural change in these people. As a theoretical reference, they took into account Bandura's approaches, which resulted in significant improvements in the health behaviours of patients with renal disease (Elías-Viramontes, Casique-Casique & Rodríguez-Loreto, 2020).

In the city of Majugua, during 2018, in a cross-sectional descriptive study involving people over 18 years of age. The main objective was to identify markers of kidney damage in patients with risk factors for chronic kidney disease. The indicators considered were age, sex, smoking, obesity, use of anti-inflammatory drugs, history of diabetes mellitus, arterial hypertension, and renal indicators: renal damage, haematuria, glomerular filtration rate, proteinuria, leukocyturia, cylindruria and elevated creatinine. As a result, it was found that the average age of patients who presented markers of renal disease was 64.3 years, while in those who did not present them was 62.4 years. The minimum age recorded was 49 and 46 years, respectively, while the maximum age was 74 and 73 years, respectively (Castellanos et al., 2018).

In Spain, Martínez, García & Torres (2017) conducted a monthly analysis of 52 prevalent haemodialysis patients with the aim of improving the nutritional status of patients. For this, they conducted a retrospective descriptive study where serum albumin measurements were performed and levels below 3.8 g/dl were evaluated, as well as other biochemical determinations: total protein, C-reactive protein (CRP), total cholesterol and leukocytes. In addition, variables such as age, sex, vascular access, aetiology of renal disease, time on renal replacement therapy (RRT), hypertension (HT) and diabetes mellitus (DM) were considered. The results obtained revealed that 32.6% of the sample had a mean albumin level of less than 3.8 g/dl, which placed them at risk of DPE syndrome (malnutrition, inflammation and accelerated atherosclerosis).

In 2017, in Madrid, a cross-sectional study was carried out in which 74 patients were analysed in order to evaluate the diet of a group of individuals with advanced chronic kidney disease, comparing it with the established recommendations, and its relationship with markers of nutritional status. During the study, intake, biochemical and anthropometric variables were analysed, such as the three-day dietary record. The results revealed a positive correlation between albumin levels, body mass index (BMI), and creatinine clearance (Pérez-Torres et al., 2017).

In Cuba, in a cross-sectional descriptive study, the aim of which was to identify the condition and its characteristics in people aged 18 years or older. The age, sex and skin colour of the participants were analysed, as well as the history of diseases considered risk factors for chronic kidney disease (CKD). In addition, alterations in renal damage markers such as microalbuminuria test (with pathological results) and/or pathological Addis count were assessed. The presence of functional renal damage was also determined by decreasing glomerular filtration rate. As a result of the study, CKD was diagnosed in 23.7% of the non-dispensed at-risk population, representing a quarter of that population (Martínez et al., 2016).

In the city of Granada, Spain, a study was conducted in which 90 male and female patients with CKD in a haemodialysis unit were evaluated. The aim of the study was to assess nutritional status by evaluating biochemical parameters, such as albumin, and anthropometric parameters, such as muscle mass index. For this purpose, quarterly measurements of plasma albumin and other biochemical determinations were performed, as well as anthropometric measurements of weight, height and body mass index. The result after 10 years of follow-up was that all patients experienced a significant decrease in biochemical parameters and albumin levels. However, no significant changes were observed in relation to malnutrition in terms of body mass index (Quero et al., 2015).

In Mexico City, Velarde, Pacora & Llajaruna, conducted a study in haemodialysis patients. The aim of the study was to determine the association between hypoalbuminaemia and hypophosphataemia with the VGS type C scale in patients with chronic kidney disease on haemodialysis. An analytical cross-sectional study was carried out. The Kruskal-Wallis test and the multiple comparisons test were used to analyse the data. Regarding the categorical variables of hypoalbuminaemia (≤ 3.5 g/dl) and hypophosphataemia, it was found that there is an association between type C GSV and hypoalbuminaemia and hypophosphataemia in patients with chronic kidney disease on haemodialysis (Velarde, Pacora & Llajaruna, 2020).

Balderas-Vargas et al. (2020) conducted a cross-sectional study in Mexico City. The aim of the research was to identify the prevalence and factors associated with occult renal failure in patients with type 2 diabetes mellitus and systemic arterial hypertension, two common chronic diseases. For this purpose, a measurement instrument was used with questions related to various associated factors, such as osteoarthritis, chronic disease treatment, smoking, analgesic intake, alcoholism, body mass index, physical activity and serum levels of glucose, cholesterol and triglycerides.

The results obtained in the multivariate analysis indicated that the factors associated with occult renal failure were: being older than 60 years (adjusted odds ratio (OR) = 1.96, 95% confidence interval (95% CI) = 1.22-2.49), being older than 60 years (adjusted odds ratio (OR) = 1.96, 95% confidence interval (95% CI) = 1.22-2.49), being female (AOR = 2.17, 95% CI = 1.30-2.82), having systemic arterial hypertension (AOR = 1.96, 95% CI = 1.22-2.50) and not being overweight or obese (AOR = 0.49, 95% CI = 0.41-0.8).

During 2015, in the city of Guadalajara, Jalisco, Mexico, a study was conducted in patients with end-stage renal disease (ESRD) who started peritoneal dialysis. The aim of the study was to determine the association between serum albumin levels and subjective global assessment in these patients. A cross-sectional analytical approach was used to determine serum albumin levels and to perform a nutritional assessment using subjective global grading (GSV). The results showed that 34.8% of patients were well nourished, 40.6% were at risk or moderately impaired in their nutritional status, and 24.6% had severe nutritional impairment. No significant association ($p=ns$) was found between serum albumin levels and VGS (Yanowsky-Escatell et al., 2015).

Methodology to be developed

A descriptive, cross-sectional and analytical study was carried out in a Renal Therapy Unit S. C. belonging to a private hospital located in the city of Zacatecas, using simple random probability sampling, including 50 patients of indistinct sex undergoing haemodialysis substitution treatment who came twice a week for treatment and who signed informed consent to participate in the study.

The following variables were considered: Serum albumin, body mass index (BMI), water overload, anthropometry and socio-demographic factors. To determine the socio-demographic variable, a survey was applied; for anthropometry, a SECA model 213 portable stadiometer was used with a precision of 1 mm, following the protocol established by the International Society for the Advancement of Kineanthropometry (ISAK).

For BMI, the formula weight in kg/height in metres squared proposed by the World Health Organisation (WHO) for adults aged 18-59 years was used. For water overload, a TANITA model BC533 bioimpedance scale was used, total body water was taken after haemodialysis and, finally, spectrophotometry was used to determine serum albumin.

Ethical considerations

The study complies with the principles set out in the Nuremberg Code of 1947, which requires the voluntary consent of the participant and ensures that they have the legal capacity to give consent. The results obtained in this study are intended to benefit society. Any unnecessary harm, whether physical or mental, will be avoided. Furthermore, the study adheres to the principles set forth in the Universal Declaration on Bioethics and Human Rights, which includes full respect for human dignity, human rights and fundamental freedoms as set forth in article 3. According to the General Health Law on Health Research of the United Mexican States, this study is considered low risk.

Results

In this study, the main objective was to determine serum albumin levels and their relationship with water overload in patients with chronic renal failure on haemodialysis. 50 patients were analysed, 28 of whom were men and 12 women.

	Frequency	Percentage%	Cumulative percentage
Female	22	44.0	44.0
Male	28	56.0	100.0
Total	50	100.0	

Table 1 Patients who participated in the study to draw percentages by sex

Source: Own elaboration based on data collection

As it is well known that serum albumin is a protein that is synthesised in the liver and plays a crucial role in maintaining water balance in the body, low levels of the protein may indicate a higher likelihood of water overload in patients. In relation to the gender of the patients, a significant difference between men and women can be observed, which may be related to the small sample size.

It can be said that two main groups were also found in this study, one with age ranges between 18 and 59 years, which represents more than 53% of the total number of patients, and another group of adults older than 60 years, which represents 47.7%. It is a priority to highlight that the average age of the patients was 55.1 years, with a standard deviation of 15.3 (which indicates that there is some variability in the age distribution), it also reflects that the majority were found in the older age range, which indicates that not all patients are grouped in the average age, which shows that there is a wide range of ages considered within the sample used.

As for total body water levels, the information is shown in figure 1, which shows that 63% of patients have normal levels, indicating that they are well hydrated and maintain a healthy balance of water in their bodies, also here it can be seen that 37% have high levels of total body water, of which 16.7% are female and 20% are male. This gender difference could be the result of different factors, such as differences in body composition or physical activity levels.

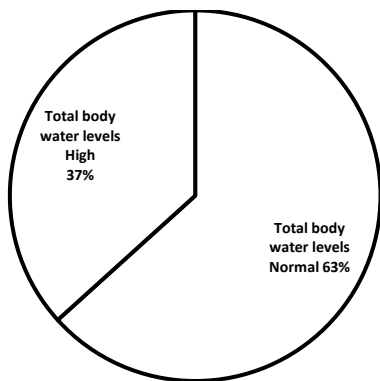


Figure 1 Total body water level
Source: Own elaboration based on data collection.

It is important to monitor total body water levels in patients, as maintaining an adequate balance is necessary for good health. In table 2, it can be seen that when analysing the BMI in patients, 46% are within the normal range, this information shows that a large majority have a BMI according to their weight and height, which is good for their health, it can also be seen that 48% of patients are overweight or obese, It should be noted that overweight and obesity are related to various chronic diseases such as diabetes, hypertension and cardiovascular diseases, and that the majority of patients have a BMI in accordance with their weight and height, which is good for their health.

	Frequency	Percentage %
Underweight	3	6
Normal	23	46
Overweight	13	26
Obesity 1	10	20
Obesity 2	1	2

Table 2 Body Mass Index in patients who participated in the study
Source: Own elaboration based on data collection

On the other hand, Table 2 also shows that 6% are underweight, which is bad for health, since it is associated with malnutrition and a weak immune system.

When analyzing serum albumin, it was found that 55% of the population has normal levels, which implies that most people have values within an acceptable range, on the other hand, 25% have a slight depletion of albumin, which indicates low levels of this protein in the body, this could be talking about a lesser capacity to transport and store nutrients, likewise it is mentioned that 15% have moderate depletion of albumin.

When an association was made between serum albumin levels and water overload, an intermediate negative correlation was found (-0.382) (see table 3) supported by a p of 0.003, which suggests a significant association between the two variables, corroborated by the correlation coefficient (r=-0.382) which indicates that there is a significant association between the two variables. 382) which indicates that there is a linear relationship between serum albumin levels and water overload in these patients, the negative relationship means that as serum albumin values increase water overload levels decrease. This relationship could be due to the fact that an increase in serum albumin may indicate an improvement in hepatic and renal function, resulting in a better ability to eliminate excess fluids from the body.

		Albumin	Water
Albumin	Pearson correlation	1	-.382**
	Sig. (bilateral)		.003
	N	60	60
Water	Pearson correlation	-.382**	1
	Sig. (bilateral)	.003	
	N	50	50

** The correlation is significant at the 0.01 level (2-tailed).

Table 3 Correlation between serum albumin levels and water overload in patients
Source: Own elaboration based on data collection.

Serum albumin levels and BMI did not present a significant correlation, this is deduced because the Pearson correlation value is 0.226, which means a weak correlation, since the BMI of the patients cannot be used as a reliable indicator when considering only albumin levels for this study (see table 4).

		IMC	Albumin
IMC	Pearson correlation	1	.226
	Sig. (bilateral)		.082
	N	50	50
Albumin	Pearson correlation	.226	1
	Sig. (bilateral)	.082	
	N	50	50

Table 4 Correlation between BMI and serum albumin levels

Source: Own elaboration based on data collection

As for sex and albumin levels, no significant correlation was found since the data yielded a coefficient of 0.227, which is low with a p of 0.082 (see Table 5). This may mean that sex is not a determining factor in the variation of albumin levels in the population; it is possible that age, general health or diet may influence these levels.

		Albumin	Sex
Rho Spearman	Albumin	Correlation coefficient	1.000
		Sig. (bilateral)	.227
		N	50
	Sexo	Correlation coefficient	.227
		Sig. (bilateral)	.082
		N	50

Table 5 Correlation Sex and serum albumin levels

Source: Own elaboration based on data collection

It can be argued that there is a positive correlation between serum albumin levels and body weight for this study, this may mean that as a person's weight increases so does the value of albumin in the blood. This correlation is supported by a Pearson correlation coefficient of 0.279, with a bilateral significance level of 0.031. This indicates that the relationship between serum albumin and weight is statistically significant, as the p value is less than the established level of 0.05 (see Table 6).

		Albumin	Weight
Albumin	Correlación de Pearson	1	.279*
	Sig. (bilateral)		.031
	N	50	50
weight	Pearson correlation	.279*	1
	Sig. (bilateral)	.031	
	N	50	50

*. The correlation is significant at the 0.05 level (2-tailed).

Table 6 Correlation between weight and serum albumin levels

Source: Own elaboration based on data collection.

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Conclusions

In this study, when considering the sample of 50 patients with CKD on hemodialysis, it was found that serum albumin levels may be related to water overload; however, further studies are required to confirm these results, and a large discrepancy was found in the age of the participants, which can be considered as a study factor for future related research.

Likewise, the results obtained indicate that most of the patients presented normal levels of total body water, which reflects an adequate hydration and healthy balance in their bodies, but it should be noted that there were also patients with elevated levels of total body water, although in a lower percentage, presenting differences between sexes, so it would be interesting to consider the evaluation of sex as a possible cause of these levels.

In addition, it is evident that a significant percentage of patients have a normal BMI, which is good for health. However, it is also observed that a high percentage of patients are overweight or obese, which indicates a health risk due to possible associated chronic diseases. On the other hand, it was highlighted that a small percentage of patients are underweight, which can be detrimental to health and is associated with malnutrition and a weak immune system, it is necessary to work on promoting a healthy and balanced diet, as well as encouraging physical activity to prevent and control overweight and obesity, and to avoid underweight and its negative health consequences.

The results suggest that the majority of the population has normal serum albumin levels, but there is a significant proportion with mild and moderate depletion. In addition, a significant and negative association between serum albumin levels and water overload is evidenced in the patients analyzed.

Likewise, the data collected indicate that BMI cannot be used as a reliable indicator of serum albumin levels in the context of this work, nor can whether they are male or female, the results of this study suggest that there is a positive correlation between serum albumin levels and body weight. This implies that as a person's weight increases, the value of albumin in the blood also increases. Furthermore, this correlation is supported by a Pearson correlation coefficient of 0.279, indicating a statistically significant relationship between serum albumin and weight. This finding is supported by a bilateral significance level of 0.031, which means that the p value is less than the established level of 0.05. These results support the idea that body weight may have an impact on blood albumin levels.

Finally, this study found a significant correlation between serum albumin levels and water overload in patients with chronic renal failure on hemodialysis. The results indicated an intermediate negative association between these two variables, suggesting that adequate serum albumin levels may contribute to the prevention or control of water overload in these patients. These findings are clinically relevant, since maintaining adequate serum albumin levels may have a positive impact on the health and quality of life of these patients.

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Prevalence of dental torus in patients receiving care

Prevalencia de torus dentales a pacientes con atención odontológica

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Abstract

Introducción. Dental torus is a benign bone growth, palatal or lingual, lobulated or nodular in shape, which generally does not present symptoms. In some cases it may represent an oral pathology, harmful to patients who need some type of prosthesis. **Objective.** To identify the prevalence of dental tori in patients from the Faculty of Dentistry of the Autonomous University of Campeche. **Methodology:** A descriptive cross-sectional study was carried out on 81 patients who attended the Clinics of the Faculty of Dentistry of the Autonomous University of Campeche. **Methods.** A descriptive, cross-sectional study was carried out on 81 patients who attended the clinics of the Faculty of Dentistry of the Autonomous University of Campeche, using convenience sampling. **Results.** 38.3% were women, and 61.7% were men. Regarding age, 87.7% are patients between 20 and 50 years old, 7.4% are over 50 years old, and 4.9% are people under 20 years old. 54.3% of the sample presented torus, being more frequent in the upper jaw 54.9%. **Conclusions.** There is a high prevalence of 54.3% of oral torus in patients who attend the Faculty of Dentistry of the Autonomous University of Campeche. These do not affect the quality of life on their own; however, when the torus interferes with the patient's rehabilitation treatment, it is important to provide information about their therapeutic options, such as surgical excision, which could be necessary when using a total or removable prosthesis.

Resumen

Introducción. El torus dental es aquel crecimiento óseo benigno, de ubicación palatina o lingual, de forma lobulada o nodular, que generalmente no presenta sintomatología. En algunos casos puede representar una patología oral, perjudicial para los pacientes que necesiten algún tipo de prótesis. **Objetivo.** Identificar la prevalencia de los torus dentales en pacientes de la Facultad de Odontología de la Universidad Autónoma de Campeche. **Metodología** se realizó un estudio transversal descriptivo en 81 pacientes que acudieron a las Clínicas de la Facultad de Odontología de la Universidad Autónoma de Campeche. **Métodos.** Se realizó un estudio descriptivo, de corte transversal en 81 pacientes que acudieron a las clínicas de la Facultad de Odontología de la Universidad Autónoma de Campeche, mediante muestreo por conveniencia. **Resultados.** El 38.3% fueron mujeres, y el 61.7% fueron hombres. Respecto a la edad el 87.7% son pacientes entre 20 a 50 años, 7.4% más de 50 años, y el 4.9% personas menores de 20 años el 54.3% de la muestra presentó torus, siendo más frecuente en el maxilar superior 54.9%. **Conclusiones.** Existe una alta prevalencia de 54.3% de torus bucales en pacientes que acuden a la Facultad de Odontología de la Universidad Autónoma de Campeche. Estos no afectan la calidad de vida por sí solos, sin embargo, cuando el torus interfiere con el tratamiento rehabilitador del paciente, es importante proveerle información sobre sus opciones terapéuticas, como la exéresis quirúrgica, que podría necesitarse al uso de alguna prótesis total o removible.

Dental torus, Oral health, Prevalence

Torus dentales, Salud oral, Prevalencia

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Introduction

Dental torus, also called exostosis or hyperostosis, is a benign bony growth, located palatally or lingually, lobulated or nodular in shape, which generally does not present symptoms. Different types of exostoses have been described; torus palatinus TP torus mandibularis TM are two of the most common intraoral exostoses, other types of exostoses affecting the jaws are less frequent, one or more torus may be present. In some cases it can represent an oral pathology, detrimental to patients who need some type of prosthesis. It is considered to evolve throughout life, and although its aetiology is unknown, different multifactorial theories have been formulated, including hereditary, genetic, functional and para-functional factors. One of them mentions that it may be the result of chronic mild periosteal ischaemia, secondary to gentle pressure of the nasal septum in the case of torus palatini, and in the case of torus mandibularis, by the action of the torsional force of the arch of the mandible or by the lateral pressure of the underlying teeth. In recent years, the prevalence of palatal and mandibular torus has been sought in patients requiring dental care in university dental clinics in Campeche. The prevalence of torus is close to 10% of the world's population. It is estimated that between 20% to 25% of the population, including Asians, Native Americans and Eskimos, have torus, with a higher incidence in men than in women in a 4:1 ratio, and with a higher frequency in patients between 35-65 years Raldi et al. In the Caucasian race there is a variation from 1 to 7%. In North America the general population is 8%, the variation in frequency of mandibular torus in the foreign literature is from 1 to 80% Arevalo 2005.

Problem statement

Exostoses also known as hyperostoses are benign bony protrusions that rise above the central lamina, frequently affecting the mandibular skeleton. Different types of exostoses have been described; torus palatinus and torus mandibularis are two of the most common intraoral exostoses, other types of exostoses affecting the jaws are less frequent, one or more torus may be present, although they are very rare in the same individual.

It is considered a slow growing anomaly throughout life, it may be the result of chronic mild periosteal ischaemia secondary to gentle pressure from the nasal septum, from the action of the torsional force of the mandibular arch or mandibular torus, from the lateral pressure of the underlying teeth buccal exostosis, but this is highly speculative Dentistry, it is sought that patients can have the maximum degree of functionality with respect to their dental services.... However, in recent years the prevalence of palatal torus has been sought in patients requiring dental services.

What is the prevalence of torus in dental care patients?

Rationale

A serious problem that occurs in patients who come to the clinics of the Faculty of Dentistry is the presence of torus palatineus, as this condition can cause problems before, during and after dental treatment. The clinical manifestations that may occur due to the presence of this lesion do not aggravate the state of oral health, however, it can cause discomfort to the patient, especially the patient who uses a prosthesis, this would be in the case that the volume of the lesion is very predominant. Palatal torus may or may not become a complication in dental treatment, as in some cases surgery may be required. Since they can present a problem, discomfort or in some cases even pain if a prosthesis is used, they are usually asymptomatic, for the most part, the aim is to get to know the prevalence of torus, in order to be able to provide a better service and offer better care to patients. It will improve prevention and, more than anything else, raise awareness of this pathology so that the disease can be spread so that patients who have no knowledge of it can learn how to treat and manage the lesion in a better way. In the event that they cannot afford surgery to remove the lesion, they can learn how to manage it or learn how to lead a better quality of life.

Theoretical framework

Since the last century, different authors, such as Fox (1809) and Danniels (1884), have tried to define torus from a clinical and histopathological point of view, while in the 1950s, Woo (1950) defined it according to its location. According to Shafer and Levi in 1983 and Stafne in 1987, they define torus as protuberances or exostoses found locally in the buccal region, while Antoniadis et al. and Sapp et al. in 1998 agree that torus are non-neoplastic excrescences, which can be located in the maxillae from the same bone. Although their aetiology is unknown, different multifactorial, but not exclusive, theories have been formulated. Torus have been classified according to their size, location and number. Small tori are no larger than 3 mm, while medium-sized tori range from 3 to 5 mm. The large ones, on the other hand, are characterised by reaching sizes greater than 5 mm Seah, 1995. Palatine torus: in the midline of the hard palate. Mandibular torus: on the lingual surface of the lower premolar region, bilateral in 80% of cases Exostosis: on the vestibular surface of the vestibular bone table of both maxillae in the premolar and molar region. Mandibular torus is a bony protrusion on the lingual surface of the mandible. It is present in 8% of the population and is of unknown aetiology but some authors report that it is produced by bone reaction in response to the stress of chewing, bruxism or as a hereditary pattern which is more common in females. Torus palatini can appear as an outward growth located in the midline of the palate and can take various forms such as flat, fusiform, nodular or lobular. Its mucosa is intact, although it can sometimes appear pale. If the mucosa is traumatized, it ulcerates easily and takes a long time to heal. The size of the protuberance can vary, ranging from those that can only be detected by palpation to those that occupy the entire palate and interfere with phonation. Their location can vary, although they are frequently observed in the central part of the midline, they can also be confined to the anterior region or the posterior part of the palate and in some cases the entire midline from the anterior palatine fossa to the end of the hard palate can be seen Stafne, 1987. Its growth is slow until the third decade of life and then stabilises.

Methodology

Descriptive, cross-sectional study of 81 patients who attended the clinics of the Faculty of Dentistry of the Autonomous University of Campeche, by means of convenience sampling. The research was carried out virtually with an online form which was completed by patients attending the dental clinic of the Autonomous University of Campeche with patients who met the inclusion criteria. Probabilistic, simple random sampling, i.e. each individual in a population has an equal chance of being chosen. Random or simple random sampling is the determination of sample size using a sample size formula for a proportion of a known population. A representative sample was taken of 81 patients over 18 years of age, of both sexes, attending the dental school clinics. Inclusion criteria were used, which included the community in general who attend the dental school as patients, of either sex, regardless of age, patients who gave their authorisation to be part of the study and signed the validly signed letter of consent. Exclusion criteria were patients, students under 20 years of age, patients and students over 50 years of age.

Results

The survey was applied to 81 people, the data, collecting form was applied in "Google forms", where the data were collected and later corrected. After we conducted the surveys we proceeded to pass all the data collection to the SPSS program. It was coded according to the study variables. Of the sample of 81 people, 38.3% were men, and 61.7% were women. Of the sample, 54.3% presented torus, with a higher frequency in the maxillary maxilla with 53.9%. Of those who presented torus, 78.3% were not suggested to undergo excision as part of a rehabilitative treatment, and 35.3% presented pain related to the lesion at some point in its development. Regarding age, 87.7% of patients were between 20 and 50 years old, 7.4% were over 50 years old, and 4.9% were younger than 20 years old. In terms of location, 54.9% are located in the maxilla and 45.1% in the mandible. In terms of quantity 47.1% have one torus lobe, 35.3% have two, and 17.6% have more than three. Time of existence 19.6% from 3 to 6 months, 31.4% from 6 months to 1 year, 37.3% from one year to 3 years, and 11.8% more than three years.

Other variables measured were: grinding, 46.6% do grind, and 53.4% do not; pain during the time of existence of the lesion, 64.7% do not and 35.3% do; use of dental prosthesis, 98.6% do not, while 1.4% do; suggestion of surgery or excision, 68.7% did not receive a suggestion by the doctor, 16.4% did, and the rest was a maybe; and pain on prosthetic use, 87.7% did not, and 12.3% did.

Conclusion

There is a high prevalence of 54.3% of oral torus in patients attending the Faculty of Dentistry of the Autonomous University of Campeche, with a ratio of 1:1.6, with a greater predisposition for the female gender. These do not affect the quality of life by themselves, however, when torus interferes with the rehabilitative treatment of the patient, it is important to provide information about the therapeutic options, such as surgical excision, which may be necessary or the use of a total or removable prosthesis..

Annexes

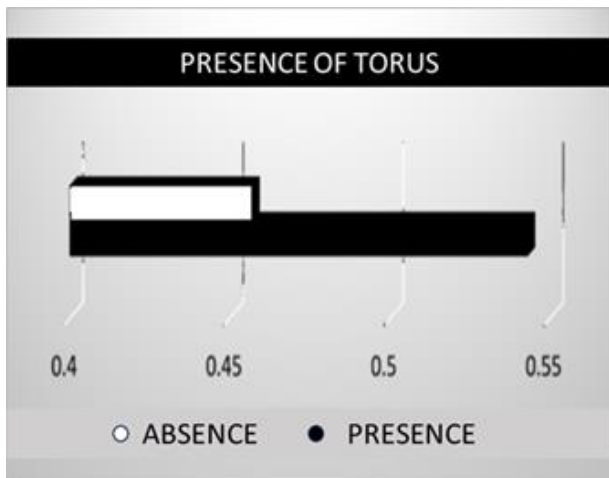
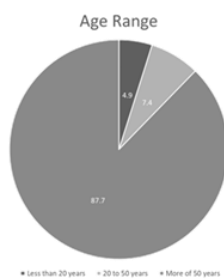
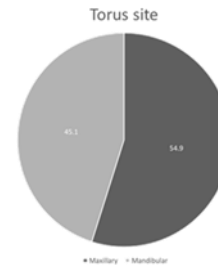


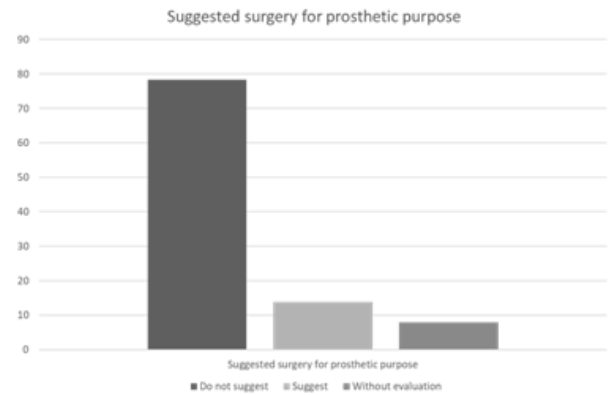
Figure 1 Presence of torus



Graphic 1 Age range



Graphic 2 Location of the torus



Graphic 3 Suggested surgery for prosthetic reasons

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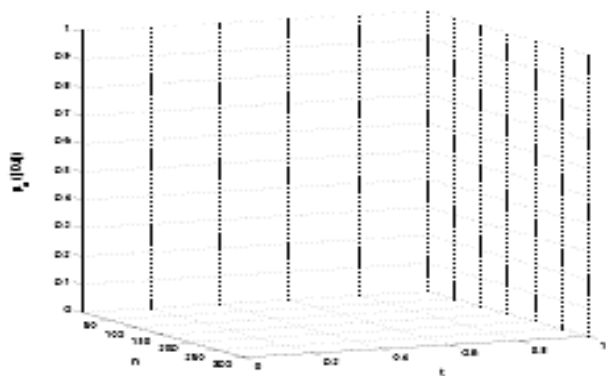
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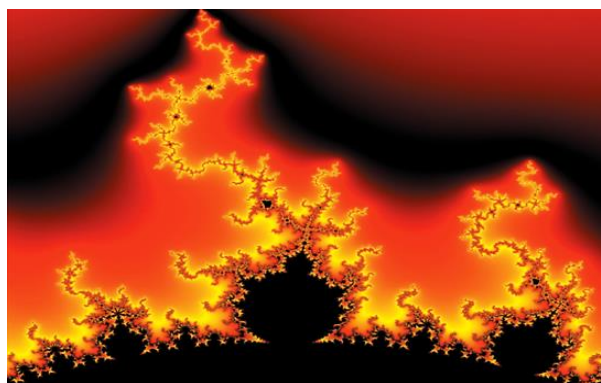


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