Poster Week 14/2020

II Virtual Poster Week

Abstract Book

Escola Superior
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Politécnico de Coimbra

SCIENTIFIC COMITEE

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INDEX

Calendário

Poster Week 14/2020

	2ªf		3ªf		4ªf		5ªf		6ªf
	14/dez		15/dez		16/dez		17/dez		18/dez
8-9h									
9-10h	Cristiano Matos Introdução à Farmácia - 11P Farmácia 1º		Paulo Matafome Fisiologia I - 8P Fisioterapia 1º	Diana Martins Morfologia e Histotecnologia - 7P CBL 3º	Helder Simões Saúde Ocupacional - 6P SA 2º				Célia Gomes Genética - 9P DN 3º
10-11h						Helena Loureiro Dietetica Clinca II - 15P DN 3º			
11-12h				Fernando Mendes Imunohemoterapia Clínico-Laboratorial II - 8P CBL 3º			Joaquim Pereira Investigação Aplicada 2 - 4P FC 4º		Cristina Santos Qualidade e Segurança Alimentar - 9P SA 3º
12-13h					Jorge Balteiro Tecnologia e Farmácia Galénica I - 11P Farmácia 2º				
13-14h			Helder Simões Introdução à Saúde Ambiental - 12P SA 1º						Ana Baltazar Nutrição - 11P Farmácia 3º
14-15h							Sónia Fialho Composição Nutricional dos Alimentos - 10 P DN 2º		
15-16h	Cristina Santos Gestão da Qualidade da Água I - 12P SA 2º							Rui Cruz Organ. Gestão e Qualidade - 4P Farmácia 3º	
16-17h		João Lima Nutrição e Saúde Pública - 11P DN 2º							
17-18h	Rui Cruz Organ. Gestão e Qualidade - 3P Farmácia 3º				Paula Agapito Citopatologia II + Estágio III - 2P CBL				
18-19h						Ana Lança Gestão do Habitat - 10P SA 2º	Fernando Mendes Oncobiologia - 8P CBL 4º		
19-20h									

PROGRAM

ABSTRACTS

PHARMACOLOGICAL TREATMENTS FOR COVID-19

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The global pandemic caused by COVID-19 has led us to an unprecedented turmoil, both in health and economic terms. This virus brought the death of thousands of people.

Given the global situation, we decided to look for answers that would clarify what the virus is and how we can treat it.

Thus, we conducted a research that encompasses the opinions of several health professionals and organizations, such as WHO - which through the “Solidarity Trial”, created an international clinical trial, that aimed to facilitate the search for the virus treatment -, which aim to create ways to combat the same.

Numerous experiments on drug combinations, already known in the market, have been carried out, and trying to find new drugs to help fight SARS-CoV-2. Tests for drugs like Chloroquine / Hydroxychloroquine, Azithromycin, Remdesivir, Lopinavir / Ritonavir among others, have been tested to combat the reduction of mortality.

According to WHO, the results obtained through the clinical trial, support the idea that the drugs mentioned above aren’t effective for the treatment of COVID-19, and they are not the only authors to share the same idea, however, there are still organizations that advocate otherwise, such as FDA.

Although there isn’t yet an effective drug form to fight the virus, these discoveries are important, because with them we can get a starting point, so that in the future we are prepared for eventual situations such as the one we are living in the present.

Keywords: Covid-19; Pharmacology; Treatment; WHO

PSYCHOTROPICS: CONSUMPTION IN PORTUGAL

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The high consumption of Psychotropic is a real problem of our society, which is a concern for the National Health System (SNS). Psychotropic are drugs that act on the Central Nervous System. According to INFARMED, I.P., they are a therapeutic group with greater weight in the consumption of the SNS in outpatient clinics, they are many used in the treatment of depression, psychosis, and hyperactivity, among others. There are three subgroups: anxiolytics, antidepressants and antipsychotics. The objective of this review is to clarify the consumption of psychotropic in Portugal. The platforms used for this search were Google Scholar®, PubMed® and INFARMED, I.P. The keywords used included psychotropic, consumption and Portugal. The results obtained were based on 7 articles and one INFARMED, I.P. magazine. According to the research, Portuguese consumption of psychotropic drugs compared to other European countries shows very high levels of antidepressant consumption, Portugal surpasses Denmark, Norway and Italy.

The consumption of antipsychotics has also increased, both in Portugal and in the Nordic countries, with similar values. The use of anxiolytics and hypnotics has stabilized in the countries mentioned above, but in Portugal, which, as is the case with Benzodiazepines, has a high degree of demand. Women between the ages of 60-69 consume the most anxiolytics and antidepressants. The consumption of anxiolytics is highest in Coimbra and the highest number of antidepressants is in Évora. Portugal has high levels of consumption due to the prevalence of mental illnesses, the enlargement of prescribed drugs and the reduction of prices.

Keywords: Psychotropic; Consumption; Portugal

NEONATAL ABSTINENCE SYNDROME

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Neonatal abstinence syndrome (NAS) is a set of drug withdrawal symptoms in the newborn, when separated from the placenta at birth. This syndrome can affect the central nervous system causing hyper-irritability, dysfunctions at the automatic nervous system, as well as affecting the gastrointestinal and respiratory systems.

In order to study this syndrome, we analised two studies related with the use of buprenorphine and methadone for treatment.

For this studies the candidats had to have no medical or other conditions contraindicating participation, had to have no disorders related to the use of other psychoactive drugs and didn't plan to give birth outside the hospital.

The main objectives were based on the analysis of the number of newborns who needed treatment for the syndrome, the peak of the syndrome, the total amount of morphine needed in the treatment, the number of days that these newborns stayed at the hospital and the circumference of their head.

Treatment was discontinued by 16 of 89 women in the methadone group and 28 of 86 women in the buprenorphine group. A comparison of the 131 babies whose mothers were followed until the end of the pregnancy revealed that the group who was treated with buprenorphine needed less amounts of morphine and a significantly shorter hospital stay as well as a shorter duration of the treatment.

The results demonstrate that buprenorphine is an acceptable treatment for pregnant women with opioid dependence.

Keywords: Neonatal Abstinence Syndrome, Buprenorphine, Methadone

PARACETAMOL, FROM SELF-MEDICATION TO INTOXICATION

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Self-medication is seen by society as a solution for the immediate relief of some symptoms, however, the improper use of medicines can lead to health consequences, such as overdose intoxication of administered drugs, mainly paracetamol, which despite being one of the most widely used drugs worldwide, isn't without risks.

This review aims to demonstrate that Paracetamol, hasn´t only beneficial effects but also harmful effects, also alerting to its safe use. A bibliographical research was made in different databases including "Google Scholar", "ScienceDirect" and "PubMed", using keywords as "efeitos tóxicos", "Paracetamol", "intoxicação medicamentosa", "dose", "poison", being chosen articles of the last ten years on the subject.

The most important factor to avoid frequent cases of intoxication is advice from the pharmacist, as he is responsible for informing the appropriate doses and treatment time.

Paracetamol is the most popular among analgesic-antipyretic drug, causes the most poisoning since its toxic dose is twice as high as the therapeutic one. In 2010, 22025 calls related to poisoning scans were verified, 54% were poisoning in adults (16 years or older), and 42% were intoxications in children.

Intoxications are manifested by nausea, vomiting, general malaise, severe sweating, pain, hepatomegaly, oliguria, increased liver enzymes, the reappearance of gastrointestinal disorders, and early signs of liver failure such as jaundice, hypoglycemia, coagulopathy, and encephalopathy. Subsequently, the body can recover or progress leading to death from liver failure.

In conclusion, it is necessary to have caution in self-medication, concerning dosage, since it can be very harmful to the health of individuals.

Keywords: Toxic Effects, Paracetamol, Dose, Poison

THE USE OF BETA-BLOCKERS AND THEIR EFFECTS ON HYPERTENSIVE PEOPLE

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Beta-blockers are drugs used in the treatment of arterial hypertension, that is, they have an action mechanism that blocks beta-adrenergic receptors present in different parts of the human body such as heart, kidneys, blood vessels of the skeletal and smooth (bronchial) muscle. An analysis of the influence of beta-blocker drugs on the tretment of hypertension is presented, including on blood pressure, pulse pressure and heart rate.

The search is based articles from the Google Scholar and Pubmed.

Based on the results of randomized studies to challenge the role of beta-blockers in the treatment of hypertension, due to the role of these drugs (for example, atenodol) in choosing as a treatment strategy for lowering blood pressure (BP) remains inconclusive.

For this studies, 84 randomized clinical trials were carried out to evaluate the effects of beta-blockers on beta-1 receptors, namely on blood pressure, pulse pressure, heart rate, comparing them with placebo / without treatment / less intense treatment (studies on blood pressure) and other antihypertensive agents in patients with or without hypertension (comparative studies). Among the blood pressure reduction tests, we consider separately tests on hypertension, tests without chronic heart failure or acute myocardial infarction and tests with chronic heart failure or acute myocardial infarction.

Compared with other antihypertensive agents, beta-blockers appear to be substantially less protective against stroke and overall mortality. However, they exhibit a substantial risk reduction capacity for all events when prescribed to reduce BP in patients with high BP, but their use as an adjunct in the treatment of arterial hypertension in hypertensive patients.

Keywords: Beta-blockers, hypertension, mechanism of action that block beta-adrenergic receptors

TOXICITY AND DOSAGE OF PARACETAMOL IN CHILDREN

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Paracetamol, is an analgesic and antipyretic used in pain and fever relief. Paracetamol is the most used medicine in the world, mainly in pediatrics, because it is highly safe when used in therapeutic dosages.

Our goal is to understand and show the negative effect that paracetamol can have on a child's body when used without proper knowledge.

Being 15mg/kg per dose, up to a maximum of 1g per dose every 4-6h, with a maximum of 60mg/kg/day, without exceeding 4g/day, the dosages recommended for children.

There are two types of intoxication, chronic (toxic dose: 150mg/day in two days) and acute (toxic dose: 200mg/Kg in less than 8h).

The clinical effects in acute intoxication are divided in 4 phases:

- (0.5-24h): nausea, vomiting, pallor, malaise and clinical exams remain the same;
- (24h-72h): Pain in the right upper quadrant and enlargement of the liver;
- (72h-96h): 1st phase symptoms, mental confusion, coma, hemorrhage, death may occur;
- (4 days to 2 weeks): recovery of liver function.

In chronic intoxication, same clinical manifestations as in acute plus renal function alterations.

Both intoxications are treated with N- Acetylcysteine (NAC), which recomposes the level of hepatic glutathione, acute intoxication can also be treated with activated charcoal within 4h after the injection.

Paracetamol overdose had an increasing trend over the last years, mainly because of teenagers. The majority had symptoms on admission, duo to co-ingestion of other substances.

In order to do that we looked for articles in scientific websites such as PubMed, google scholar, BioMed central and SciELO.

Keywords: Paracetamol; Acetaminophen; Children; Overdose; N-acetylcysteine

FOOD SUPPLEMENTS

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Food supplements are composed of substances - usually vitamins, minerals, fibers, fat acids or amino acids - that serve to supply deficiencies in the diet or simply to increase the amount of a nutrient that, under certain health conditions, is most needed.The use of dietary supplements has increased steadily over the years.

The aim of this paper is to provide an overview of current knowledge about the users and the determinants of usage of plant food supplements.

The search strategy includes references publication in English and terms such as herbal supplements, plant food supplements, botanicals, consumer attitudes and beliefs.

The consumer's main reasons for using PFS vary widely and include disease prevention, maintenance of general health, a means of compensating for an unhealthy lifestyle or treatment for specific diseases and conditions.

Although several studies have highlighted safety issues associated with taking vegetable food supplements, the regulation of supplements is much less stringent than that of prescription or over-the-counter medications.

Keywords: Food Supplements, health, disease prevention

RADIOPHARMACEUTICALS IN NUCLEAR MEDICINE

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A radiopharmaceutical is a radioactive compound used in diagnosis of diseases. They are usually given in small and single doses, thus not producing pharmacological effects.
The main objective of this research is to understand the correlation between radiopharmaceuticals and nuclear medicine.
Our work was carried out according to a search based on elements of Google Scholar® and ScienceDirect.
These chemical compounds are used in nuclear medicine, which can be defined as a medical specialty where the nuclear properties of radioactive compounds are used to carry out diagnostic assessments of anatomical and physiological conditions, and medical research. This specialty has a unique property, which is the high sensitivity in detecting changes in the function or morphology of a given organ, making use of radiopharmaceuticals there.
A radiopharmaceutical is considered ideal when it has a high ease of production, quick to obtain, low cost and a half-life short enough to decrease the rate of exposure of the patient to radiation, but long enough for the completion of image processing.
One of the radioactive elements most used in the manufacture of radiopharmaceuticals, for use in nuclear medicine, is 99mT.
Since the first registration of administration of a radiopharmaceutical in man, in 1927, there has been a development regarding the technique and use of these compounds. Despite the existence of commercialized radiopharmaceuticals that meet the necessary requirements for their use, there is still a great effort focused on finding specific radiopharmaceuticals that allow an early diagnosis for each organ.

Keywords: Radiopharmaceuticals; Nuclear Medicine

INTERACTIONS BETWEEN DRUGS AND NUTRIENTS IN HOSPITALIZED CHILDREN

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The nourishment and administration of drugs are essential in the hospitals' daily basis. However, it's interaction may provoke causalities in the nutritional lever or in the pharmacologic treatment. The goal of the study was to observe, through a bibliographic review, which interactions between medicines and nutrients and what these can induce in hospitalized children, since they have certain peculiarities. We analyzed a series from the database per example, Mendeley®, SCIELO® and PUBMED®. Among several articles we selected two which approached the more important and relevant topics of the interactions between drugs and nutrients in children. In the hospital sphere, the pharmacologic therapy and the nourishment are crucial to the recovery and stabilization of the patients. Being fundamental to be attentive of the possibility of having circumstantially interactions between medicines and nutrients, these won't affect, neither positively nor negatively, the efficacy of the drugs or the nutrients. Therefore they can oppress the nutritional status of the patient, worsen the clinical condition and, consequently increase the hospitalization period, particularly in children since they are the most vulnerable group. To sum up, at the pediatric services in hospitals, the health professionals should pay close attention to these types of interactions that may occur between the prescriptions of the medical and the nutritional teams, to the patient's safety.

Keywords: Drug-nutrient interactions, hospitalized children

FIRST ANTIBIOTICS IN PORTUGAL - THE CASE OF PENICILLIN

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The discovery of penicillin, in 1928, by Alexander Fleming, was the most memorable achievement in the history of science, medicine and pharmacy in the XX century. With this poster we pretend to demonstrate how the penicillin came to Portugal and its importance in national public health. So, we realized a bibliographic review based in studies from University of Coimbra and INFARMED, focusing in the historical data and the analysis of files from hospitalized patients in Hospitals of the University of Coimbra.

First news came to Portugal in Jornal do Médico, in 1943. Thanks to the intervention of Cruz Vermelha Portuguesa, Portugal was able to import penicillin for civil use in 1944. In 1948 started to appear the first drugs manipulated with penicillin. However, the penicillin was only incorporated in the Farmacopeia Portuguesa in 1961, and, in 1966, started its industrial production.

With this research we were able to conclude that penicillin was accepted and incorporated in medical prescriptions with a huge success. Changing the prognosis for treatment of infectious diseases and saving countless lives all around the world.

It should be noted that, even though penicillin is one of the antibiotics with less adverse reactions, there are situations where the immune system reacts abnormally.

Penicillin is the discovery of the XX century, because of the capacity to reduce mortality and morbidity in some clinical cases. This discovery originated a continuous search for more antibiotics that kill more bacterias and have less adverse reactions.

Keywords: Penicillin; Portugal; Discovery

SIBUTRAMINE, THE DANGER OF USING WEIGHT LOSS DRUGS

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Abstract: According to the World Health Organization, overweight and obesity are defined as abnormal or excessive fat accumulation presenting a risk to health. This excessive accumulation is established by an imbalance between ingestion and energy expenditure. The issue has grown to epidemic proportions, with over 4 million people dying each year as a result of being overweight and obese in 2017. The following study aims to discuss the side effects of using drug therapy, specifically the use of Sibutramina to lose weight, as well as the reason why it was removed from the markets in 2010. The research is supported by the use of the next descriptors: Sibutramina, Obesity, Lose weight medicines and dangers; through the reading of articles attached in scientific platforms like PubMed, Google scholar, SciELO Brasil, and others. In short, and taking into consideration the study, we can conclude, that appetite suppressants should not be used only for aesthetic purposes due to their associated effects, people who are overweight or obese should be clear that the loss of body fat should be done only for their own health. The use of Sibutramine and supplements with this substance, for example, should be done in a moderate and careful way. Pharmacists have a fundamental role for the correct use of this drugs, it is up to them that the population receives enough information about the correct form of use, therapeutic alternatives and also their adverse reactions.

Keywords: Sibutramine; weight-loss; obesity

HOSPITAL DRUGS DISTRIBUTIONS SYSTEMS

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Background: Inside a hospital, after a prescription, the drug will follow a complex circuit, involving numerous intermediates (human and technical) leading to drug dispensation to the patient. The traditional systems has been shown to be time consuming and subject to errors. In decentralized systems the dispensing of medications is based on the ward, in automated systems the dispensing of these takes place in automated dispensing cabinets. These systems provide storage, distribution and tracking of computer-controlled medications. In addition to these features, these systems are based on technology and robotic drug collection systems for later delivery to inpatients. There are also hospitals where centralized and decentralized resources are combined, thus resulting in a hybrid system.

Objectives: Review the automated and semi-automated drug distribution systems in hospitals to evaluate their effects on the safety, time and costs of drug treatment, compared to the others.

Methods: The researched articles were based on the electronic databases like Google scholar and the Pubmed. The research was conducted with the keywords: “hospital drugs distributions systems" and we selected 2 articles.

Results: With regard to medication errors, decentralized systems appear to be safer than the traditional dispensing system. Regarding safety, the centralized unit dose system improves patient safety, while decentralized systems improve safety and quality of care. Over time, automated distribution cabinets have enabled faster adverse events reporting, reduced pharmacists dispensing time and improved lead times.

Conclusions: In addition to the results mentioned above, other advantages were presented such as better stock control, reduction of errors in storage, degree of waste decreases, among other things.

Keywords: Decentralized systems; Centralized systems; Traditional systems; Automated systems; Medication errors; Safety; Cost; Time;

DYNAMISM IN CURRENT HEALTH TRENDS

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Background: The health status of the population reflects not only the responsiveness and quality of the health sector, but also the progress that is being made in economic and social terms. Health results from a set of social determinants and not only from investment in the provision of health care. Multimorbidity/polypharmacy is a fundamental problem for public health and health care in modern societies. Patient-centered government policies and strategies are some of the measures to follow. Advances in technology have revolutionized health contributing on a large scale to solving previously unsolvable problems. Several sociodemographic factors such as the drastic reduction in birth, the increase in average life expectancy and the increased prevalence of chronic diseases have had a significant impact on the Health System. The involvement of patients in health care was increased.

Objectives: Describe the main trends in the evolution of the health system in Portugal aimed at improving the quality of life.

Methods: A credible information search was conducted in the electronic databases: Pubmed and Google Scholar.

Results: Pharmacy initiatives will be integrated into the path of interprofessional health care, management or hospital admission/post-hospital discharge. Caregivers from different organizations/sectors will have established ways to collaborate in the best interest of the patient. Automating the various procedures will have an impact on efficacy, safety, comprehensiveness, collaboration, accessibility and integration. These are essential for promoting a good patient/health professional relationship.

Conclusions: It is concluded that trends are constantly changing, seeking to improve the quality of hospital health care services.

Keywords: Health care services; Trends; Technology.

MEDICATION ERRORS

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Background: Medication errors are common occurrences that can assume clinically significant dimensions and arise from poor professional practice or communication problems. These are likely to occur at any point in the process of the medication use. The errors are preventable, may or may not cause harm to the patient and may happen when the medication is under the control of the health professional, patient or consumer. The error occurs when a process that should function as a barrier or defense of the analysis system is not followed.

Objectives: The objective is to describe the main reasons to the occurrence of medication errors and its prevention.

Methods: The researched articles were based on the electronic databases like Google scholar and the Pubmed. The research was conducted with the keyword "Medication Errors", "Prevention Errors" and "Swiss Cheese". We selected 7 articles.

Results: Drug management is a process that include the prescription, distribution, preparation and administration of drugs, as well as monitoring their effect. Different health professionals intervene in this circuit at different times, which increases the error. The causes of medication errors must be identified to prevent and correct them. Thus, there are several strategies for the prevention and minimization of medication errors, such as written procedures and the use of systems for registering, analysing and preventing errors.

The prevention of errors must be based on the search for its determining factors, which are far beyond individual factors, so it is essential to recognize the error as an integral part of any system.

Conclusions: Only through knowledge of the real dimension of the phenomenon will be possible to intervene on it, seeking to minimize its occurrence, intercepting potential errors, creating barriers and protection strategies.

Keywords: Medication errors; Errors preventions; "Swiss cheese" model.

COMPOUNDING DRUGS IN HOSPITAL PHARMACY

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Background: According to the American pharmacopoeia, "compounding" means preparation, mixing, joining, alteration, packaging and labeling of a drug, drug delivery device or device according to the professional's prescription license, medication order or activity based on the relationship between patient and health professional during professional practice.

Objectives: Identify the most performed preparations or manipulations in the hospital context.

Methods: The bibliographic research method used consisted of the collection of scientific articles and the European Medicines Agency data source.

Results: Currently, the activity of hospital pharmacotechnics is essentially to preparation a lot of formulas not available on the market and their handling in conditions that guarantee their safety, efficacy and quality and promote correct use. These formulas can also contribute to scientific progress by being aimed at teaching, research or other studies. The whole process of handling or alteration is provided for in the product status. Most of these preparations are for hospital health care, paediatric, geriatric, oncological patients, particularly cytotoxic medicines, among others. These preparations require conditions, equipment and personnel to be prepared with maximum safety and quality.

Conclusions: Of all preparations, cytotoxic medicinal products present the main risks for healthcare professionals through air and surface contaminant aerosol particles. This contamination can result in side effects for those who manipulate them, including headache, eye irritation, nausea, among others.

Thus, the conditions of preparation must be strict and provide protection for the professional, the product and the environment.

Keywords: Compounding, Hospital pharmacy, Cytotoxic, Avonex

ECONOMIC MANAGEMENT OF DRUGS STOCKS AT HOSPITAL PHARMACY

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Background: The basic purpose of stock control is to avoid a shortage of drugs without resulting in excessive stocks in relation to the real needs of the hospital. Therefore, pharmacotherapeutic monitoring is a valuable tool for monitoring the effectiveness and safety of the therapy for the patient.

Objectives: To make known the different methodologies involved in the economic management of stocks in hospital pharmacy and their effectiveness.

Methods: The research was carried out on the scientific data Pubmed to select the desired information based on articles published from 2012 to 2020, according to our aim.

Results: Decision making regarding the timing and quantity of drugs to be purchased will depend on patient care, which involves assessing all patient needs related to the medication, establishing a care plan and the evaluation of that same intervention with consequent monitoring and also of the adopted methods. It is necessary to use methodologies that contribute to an efficient management of stocks, the most used being the order point, the ABC analysis, the XYZ criticality analysis and the economic lot of purchases. The joint use of these different methods makes stock management more efficient and also saves time, directing it to the treatment of articles or other tasks considered to be a priority.

Conclusions: The different stock management methodologies allow an efficient use of medicines. With the application of computer tools in stock management, the analysis and critical evaluation of drug consumption, the construction and analysis of activity indicators will be an asset in the management of these products.

Keywords: management; methodologies; stock; efficient; save money.

NEW TECHNOLOGIES IN THE PHARMACY MANAGEMENT: AUTOMATION

Aya Kassah; Mónica Barbosa; Rafael Fonseca

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Background: The technology and automation within medication-use system have a crucial role in efficiency and safety of healthcare professionals and patients. For analysis this area, can be divided into three categories: structure, process and results. The first is achieved by the guarantee by health professionals that the installations and equipment are appropriate, the second results from the good interaction between people and systems and finally the last measures the impact of these systems and technologies on patients' health.

Objetive: The purpose of this work is enlists automation and robotic systems that have been designed to mitigate the problems within the medication use.

Methods: The researched articles were based on the electronic databases like Google scholar and the Pubmed. The research was conducted with the keywords: “technologies”; "pharmacy" and "automation", between 2005-2020 of which we selected 3 articles.

Results: Preparation and dispensing of medication resides mostly within nursing and pharmacy staff, and frequently envolves automation mixed with human work. Many factors such as the use of Pharmacy Bar Coding, Automated Dispensing Cabinets, Automated Pharmacy Carousel Systems, Intravenous Automated Workflow Systems and Intravenous Compounding Robotics, improved arrangement and capacity for medication transations and reduce the potencial exposure for healthcare professionals to some potential hazardous medication. One of the crucial benefits of the automation in the pharmacy area is the monitoring of safety and adverse events that become easier when there's a general database.

Conclusion: We conclude that pharmacy automation and robotics systems can be successfully implemented to standardized workflows, reduce waiting times, decrease workload, improve the organization's reputation and minimize medication errors, but is essential to monitor the quality of this health services to detect adverse events.

Keywords: Pharmacy Automation; Pharmacy Bar Coding; Automated Dispensing Cabinets; Intravenous Automated Workflow Systems; Intravenous Compounding Robotics.

NUTRITION OF THE COVID-19 PATIENT IN THE INTENSIVE CARE UNIT (ICU)

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Background: Parenteral nutrition can be defined as the intravenous supply of nutrients. It can be considered partial if it provides only a part of the nutrients or total if the supply contains adequate amounts of all essential nutrients.

What happens in patients with the SARS-CoV-2 is that they develop an acute respiratory distress syndrome (ARDS) that requires urgent respiratory and hemodynamic support in an intensive care unit (ICU). There is also a gastrointestinal and hepatic involvement, this can affect the distribution of nutrition and, therefore, resort to parenteral nutrition.

Objectives: The goal of this research is to analyze the conditions of parenteral nutrition in the coronavirus SARS-CoV-2 patients in the Intensive Care Unit.

Methods: The research was constructed through scientific databases and websites, and articles were selected from the past 3 years, according to the work aim.

Results: Patients with COVID-19 admitted to the ICU are often elderly and with comorbidities, therefore, with a higher risk of malnutrition and sarcopenia. In the absence of specific nutritional data for COVID-19, parenteral nutrition is proposed under the following conditions: In case of severe respiratory infections that induce inflammatory syndrome and hypercatabolism; When food intake is highly reduced by several factors (anorexia, dysosmia, etc); In case of infection, hypermetabolism and physical immobilization that lead to rapid muscle loss.

Conclusions: The optimized nutritional care of ICU COVID-19 patients is important to maintain the function of the gastrointestinal tract, support immune defenses and prevent severe loss of muscle mass and function. Therefore, we look forward to studies on nutrition in patients with COVID-19 to enrich our knowledge about the metabolism of this new disease and adapt the nutritional support strategy.

Keywords: Parenteral Nutrition, COVID-19, UTI

FOOD INSECURITY AND OBESITY: RELATION WITH COVID-19

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Introduction: Food insecurity happens when people lack food access/availability, resulting in cheaper/unhealthier food purchases, contributing to malnutrition/obesity. Obesity is a chronic disease in which body fat increases, affecting health/well-being. The Covid-19 pandemic has affected thousands of people worldwide, impacting on food insecurity. These circumstances have important implications for individual's obesity/lifestyle behaviours.

Objective: This study aimed to analyse the relation between food insecurity and obesity, highlighting the Covid-19 pandemic situation.

Methods: A literature review was conducted. The research was performed in PubMed and Academic Google databases, using the key words "obesity", "food insecurity", "public health", "nutrition", "AND", "covid", considering papers published in the last 10 years. We obtained 19 articles and 15 were selected after reading the title, abstract and integral text.

Results: Data shows an association between food insecurity and obesity, due to an unbalanced diet with high processed products rich in fat and with low fruit/vegetables intake. Families with fewer financial resources and educational level are predisposed to make less healthy food choices, resulting in greater risk of having food insecurity/obesity. The impact of Covid-19 increased food insecurity and weight gain, due to the individual's long-time homestay, dietary intake and physical inactivity habits.

Discussion/Conclusion: There is a relation between food insecurity and obesity. Coronavirus intensified both, leading to social/economic instability, such as discontinuous of education and unemployment. National strategies are needed to reduce food insecurity and educate people to adopt healthier food choices. Future studies are needed to understand covid impact and ensure food/nutrition security for all.

Keywords: obesity; food insecurity; public health; nutrition; covid.

PERCEPTION AND PROMOTION OF FOOD IN ACADEMIC ENVIRONMENTS

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Introduction: College can be a defining period to stablish opinions and change eating habits that may cause an unhealthy diet for life.

Objective: Understand how college entrance impacts student's diet and how universities can influence those changes through food environment.

Methodology: A review of several articles was conducted on PubMed, Google Scholar and Science Direct with the key-words "food", "environment", "promotion", "college" and "healthy food" with the determinant "AND" from the last 10 years and 219 articles were obtained. The papers were firstly selected by the titles, then an abstract analysis was made, only 14 being chosen. Lastly, by full reading, 12 articles were included.

Results: Students gain weight after their first year of college. Lack of time, absence of cooking skills and facilities, financial instability, and easy access to fast-food are contributors to poor nutritional choices. Males tend to eat more fast-food than females, who usually consume more fruits and vegetables.

Conclusion: The university campus may consist of a privileged scenario to incentivize health-promoting strategies, including interventions aimed at student autonomy.

Keywords: "perception"; "promotion"; "food environment"; "college"

VITAMIN B12 AND B9 DEFICIT IN THE ELDERLY: A PUBLIC HEALTH PROBLEM?

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Introduction: With aging, nutritional problems in the elderly population increase.
Changes in nutritional status become frequent due to factors that limit food consumption and the use of nutrients. Low consumption of vitamin B12 and vitamin B9 seems to be prevalent in this group.
Objective: Understand how the effects of vitamin B12 and B9 deficiency may constitute a public health problem, simultaneously relating the development and prevention of diseases in the elderly population.
Methodology: Literature review conducted between 26 and 31 October 2020, in the databases "GoogleScholar", "Pubmed" - with keywords: "vitamin B9", "elderly", ‘’deficit", "diseases" and "public health" , in Portuguese and English, in the period 2010-2020. After applying the exclusion criteria, 15 articles were selected for analysis.
Results: The RDA for vitamin B12 is 2.4 µg and for vitamin B9 is 400 µg. The elderly have median consumption of vitamin B12 and B9 below the appropriate values. The prevalence of these deficits in industrialized countries is approximately 20%. The lack of these vitamins contributes to the development of psychomotor diseases.
Conclusion: The lack of these vitamins is a public health problem with a tendency to become worse. Thus, to minimize the effects of this adversity, it is relevant to create strategies accessible to all, from a political and socioeconomic point of view. It is important that tests are done for an early diagnosis, allowing an efficient treatment, mitigating the damage caused by the lack of these vitamins.

Keywords: ‘’Vitamina B12’’, "vitamin B9"; "seniors"; “deficit”, “disease”, “public health”.

ULTRA-PROCESSED FOODS: A PUBLIC HEALTH PROBLEM?

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Introduction: Processed foods are food items that have undergone secondary processing until they are readily edible, with greater commercial profits than fresh or minimally processed foods, which have become a dominant part of the global food system.

Objective: Acquire greater knowledge about ultra-processed foods and understand the impact that this type of foods has on the general population.

Methods: The literature review was carried out through the Pubmed database, using the expression "ultra-processed foods" and “public health problem”. The selection of articles was made based on the year of publication (2010-2020), where 41 articles were obtained. Choice of the title that fit the theme and subsequent full reading, 13 articles were selected.

Results: The term “ultra-processed food” was developed in a new proposal for the classification of foods, the NOVA classification, in which its strategy is to recommend that ultra-processed foods be avoided. The consumption of these foods is associated with an increased risk of non-communicable diseases, representing a challenge for public health. Health food procurement policies can have several positive effects, such as improving food availability and increasing sales and eating healthy food options.

Conclusion: Promoting healthy lifestyles, including diet, and disease prevention measures should be a priority. The global concern is that factors such as urbanization, rising consumerism and shortages of time, are contributing to an increasing proportion of consumption of processed foods.

Keywords: “ultra-processed foods”; “public health problem”

HEALTH PROMOTION IN TYPE II DIABETES MELLITUS

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Introduction: Diabetes Mellitus is one of the most prevalent chronic diseases worldwide, affecting certain citizens of different age groups. Type 2 diabetes is characterized by insulin resistance. Health promotion actions prevent the development and worsening of pathologies.

Objective: Analyze the importance of awareness strategies at health promotion level in the prevention of type 2 diabetes mellitus.

Methods: Literature review was conducted through PubMed and Science Direct databases, using the expressions "Type 2 Diabetes Mellitus ", "Health promotion" and "Public Health". It was obtained hundred and ten articles published in the last sixteen years. After reading the titles and abstracts, eighteen articles were selected. Of these, eleven were selected for full reading.

Results: Type 2 diabetes is more prevalent in adults and the elderly, with individuals over 45 years of age, obese and/or with family history. The adoption of a healthy lifestyle, a balanced food intake and a correct control of blood glucose values is comprehensive to preventing future pathologies.

Conclusion: Diabetes prevention and health promotion are relevant to improving the individual´s quality of life and well-being.

Keywords: "Type 2 Diabetes Mellitus"; "Health promotion"; "Public Health"

SALT CONSUMPTION IN CHILDREN WORLDWIDE: A HUGE PROBLEM

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Introduction: Sodium is the most abundant extracellular cation, only obtained through diet. The role of sensory properties of food in children's eating behavior is fundamental. Salt intake, above the recommended, among children leads to the same complications in adults: high blood pressure and obesity. The difficulty in achieving nutritional salt recommendations can be attributed to eating habits formed during childhood.

Objectives: Understand the influence of salt consumption in children internationally and the impact of salt reduction in preferences and food intake.

Methodology: For the research, scientific databases such as Pubmed, Science Direct and Scielo were used, with key words: Salt, children, estimated salt intake, public health. 60 articles were analyzed, first by title and then by abstract. Subsequently, 7 articles in English, published since 2011, were full analyzed.

Results: The preference for a salty taste cannot be generalized to all foods. Children enjoy foods with a modified flavor, which is due to the addition of salt instead of its taste. Children's salt intake can be influenced by family members. However, it is not recommended to remove sodium from the child's diet as the lack of this mineral may have consequences.

Conclusion: It is relevant to adapt the salt reduction to a specific type of food, since its content has a different impact on food preferences in children. The less contact the child has with salty foods, where the parents have a great influence, the less their taste will be developed. Overall there’s few children who achieved the recommended salt intake.

Keywords: Salt, children, estimated salt intake, public health

FOOD WASTE AS A PUBLIC HEALTH PROBLEM: NUTRITIONAL IMPLICATIONS AT HOSPITAL LEVEL

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Introduction: Food waste in hospitals consists in all the food, prepared and confectioned that remains undistributed and those that are distributed but not consumed. Food intake has an important role in the patient's condition, so a deficient nutritional intake can lead to malnutrition which is associated with adverse clinical results.

Objectives: Understand the association between food waste and its nutritional implications in hospitals as a public health problem.

Methods: Literature review was conducted in Pubmed, Sciencedirect and Scielo databases using the expressions "hospital food waste", "nutrition". Fifty articles were analyzed, by title and by abstract. Subsequently, twelve articles in English, published since 2010, were analyzed in full.

Results: Most of the hospitalized patients don't attend the daily energetic needs. The decrease in appetite, problems in chewing, symptoms of diseases and their catabolic processes, lead to high levels of dish waste and consequent malnutrition.

Maybe the time between meals and food offer not according with individuals preferences, leads that food prepared is not consumed. Better quality and variety of menus, adequate nutritional knowledge and greater control of portions are factors that prevent food waste.

Conclusion: A high percentage of waste is problematic, as it may be associated with inadequate nutritional intake, reason why could be analyzed as a public health problem. Therefore, causes of wastage must be studied so that strategies can be implemented to reduce it without compromising the patient's nutritional needs. It would also be opportune to change the food service and increase the supervision by nutritionists.

Keywords: hospital; food waste; nutritional implications; energy intake; food service;

HOW FOOD PRICES INFLUENCES DIET QUALITY AND HEALTH

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Introduction: Poverty has been one of the greatest determinants of public health, with the main consequences being hunger and malnutrition. The cost of food and economic inequalities influences the diet quality and determines health inequalities.
Objective: Understand how food prices influence food choices and health of individuals.
Methods: Literature review was conducted in the databases PubMed, ScienceDirect and Scielo with the keywords: “food prices”, “healthy habits”, “malnutrition”, "low-income" and “public health”. Afterwards articles were selected by title, then abstract and finally by full reading, obtained 30 articles with some interest and selected 16 articles that respond to the objective of this work.
Results: Ultra-processed products are common as food resources in developed countries and the consumption of these products is increasing quickly in developing countries, because of the fact that they are less expensive. In developing countries, malnutrition rates are very high, since many people do not have access to adequate food due to low-income. In contrast, in developed countries, where income is higher and food is more available, obesity rates have been increasing.
Conclusion: Healthy diets, composed mainly of non-ultra-processed foods, are increasingly expensive compared to unhealthy ones, therefore individuals food choices affects their health negatively. The readjustment of the price of unhealthy foods would be indicated as a political action capable of influence the advance of the desnutrition and obesity epidemic, respectively in developing countries and developed countries.

Keywords: food prices; healthy habits; malnutrition; low-income; public health

GESTATIONAL DIABETES MELLITUS, ASSOCIATED RISKS AND IMPACT ON PUBLIC HEALTH

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Introduction: Gestational diabetes mellitus refers to a degree of glucose intolerance beginning or first identified during pregnancy.

Objective: Understand the impact of gestational diabetes mellitus in terms of public health, in the causes of the level of fetal development, as well as the possible increase in the morbidity of the mother and the fetus / newborn. Analyze the nutritionist role in this pathology.

Methods: Literature review was carried out through the PubMed and Science Direct platforms using keywords "gestational diabetes mellitus", "fetus impact", "Diabetes mellitus", "gestational diabetes" "Predictive factors", in English and Portuguese, in review articles or systematic reviews published in the last 20 years. Articles were selected by title, then by the summary and finally by full reading. 25 references were used with 15 being used in the end that went against the objectives of our work.

Results: This pathology seems to have an impact on fetal development with important impacts on public health, with increased morbidity of the mother and fetus / newborn. It is therefore urgent to monitor risk groups in order to reduce the impact of it in individual and collective health. The role of the Nutritionist is fundamental and indispensable, contributing unequivocally to the health status of the mother and fetus, and nutritional therapy is the first line of treatment for this pathology.

Conclusion: Gestational diabetes mellitus has a important impact on public health, and the nutritionist have an import role in terms of treatment but also during prevention.

Keywords: gestational diabetes mellitus, fetus impact, Diabetes mellitus, gestational diabetes, predictive factors

ACCESS TO FOOD DURING THE PANDEMIC

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Introduction: COVID-19, a disease caused by a new virus, has become a global threat and has become a pandemic [1]. This presents a challenge with profound social and economic consequences [2], including food insecurity which is a condition defined by limited or uncertain access to sufficient and nutritious food for an active and healthy life [3].
Objective: Study the access to food during the pandemic.
Methods: A literature review was conducted on the PubMed and ScienceDirect database with the key words: COVID19, Food Insecurity, Access to food during the pandemic. In addition to the literature review, it was applied a psychometric questionnaire “Methodological Proposal for the Assessment of Food Insecurity in Portugal” previously developed, to access the impact of pandemic situation in the access to food.
Results: The majority of individuals that answered the questionnaire has Portuguese nationality and is in the age range of eighteen to forty years, with the predominant female gender. Through the data collected we studied food insecurity in households with children. Thus, we observed that fifty-three of the respondents have slight food insecurity, two moderate food insecurity and only one person in the sample has severe food insecurity.
Conclusion: Through our questionnaire, we found that the pandemic did not compromise household access to food.

Keywords: Pandemic, food, access, food insecurity

COUNTRY INCOME AS DETERMINANT OF CHILDREN MALNUTRITION: A REVIEW STUDY

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Good nutrition is essential for children to have a balanced and healthy development. Malnutrition has a negative influence on children's future in low, middle- and high-income countries and it refers to deficiencies, excesses, or imbalances in a person's energy and nutrient intake.

The objective of this work is to study the relationship between children under five years malnutrition by comparing undeveloped countries with developed countries' data and to predict how these numbers will vary in the future.

A literature review was conducted in PubMed and ScienceDirect. This research was restricted to research and review articles, published in the last 10 years, using the keywords "malnutrition", "children", "developed countries" and "undeveloped countries". After title and abstract analysis of 100 articles, it was selected 30 and from that, after full reading it was included in this study 10 articles.

Malnutrition includes micronutrient deficiencies or insufficiencies, overweight and undernutrition which is divided in stunting, wasting and underweight. Stunting and wasting have higher prevalence in lower-middle income countries while overweight has an equal prevalence in upper-middle income countries and lower-middle income countries. The determinant factors that contribute to malnutrition are higher paternal educational status, maternal nutrition, breastfeeding, safe foods in early childhood and a healthy environment.

Income is a decisive factor for the type of malnutrition in children under five years old that exists in developed and undeveloped countries. Improving children's nutrition requires multi-sectoral nutrition programming over the long term, although the different initiatives, we are far from reaching a world without malnutrition.

Keywords: "malnutrition"; "income"; "children"; "undeveloped countries"; "developed countries"

PHISIOLOGY OF BONE REABSORPTION AND BONE CELLS

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The bones of our body can be classified as long, short, flat and irregular. Not being static organs, they are constantly in formation and destruction. This process is done continuously and is called bone remodelling which is divided in two processes: bone resorption and ossification.

Bone remodelling is executed by bone-forming cells, the osteoblasts, and bone-destroying cells, the osteoclasts, which in homeostasis are in equal activity, making the calcium movement in and out of the bone tissue the same, helping determinate the blood levels of this ion.

The blood concentration of this ion is regulated by the parathyroid hormone (PTH) and calcitonin that play opposite roles. While PTH secretion increases the osteoclasts activity stimulation, going against the decrease of blood calcium, the increase of calcitonin produces the opposite effect, inhibiting the activity of the osteoclasts resulting in a decrease of this ion in the blood.

Also, the increase of PTH stimulates the vitamin D formation in the kidneys and for instance stimulates calcium absorption in the small intestine.

The PTH links with the receptors present in osteoblasts and when they respond, they produce RANKL. This protein and their two receptors RANK (present in osteoclasts) and OPG also intervene in the process of calcium quantity regulation, being responsible for the activation/ inhibition of osteoclasts. Therefore, when the RANK/RANKL connection is established the activation of the bone-destroying cells are stimulated, and when RANKL and OPG interact the stimulation is inhibited.

Keywords: Osteoblasts; Osteoclasts, PTH, OPG, RANK-RANKL

NEURODEGENERATIVE DISEASES: PARKINSON AND ALZHEIMER

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Neurodegenerative diseases are incurable and debilitating conditions that result in progressive degeneration and/or death of nerve cells. This causes problems with movement (ataxias) – Parkinson, which affects more than 10 million people worldwide – or mental functioning – Alzheimer, representing 60-70% of dementia cases.

Parkinson's disease is characterized by the death of dopaminergic neurons present in the substantia nigra, due to the formation of Lewy bodies, composed mainly of aggregated α-synuclein. Normally, these neurons produce dopamine, an important neurotransmitter, which acts as a messenger between the parts of the brain and nervous system that help control and co-ordinate body movements.

On the other hand, in Alzheimer's disease, the two pathologic hallmarks are the formation of senile plaques, caused by beta amyloid deposition, and intracellular neurofribrillary tangles, caused by an abnormal phosphorylation of the tau protein. This protein stabilizes microtubules, contributing to the proper function of neurons. The initial symptom of this disease is characterized by the progressive loss of recent memory.

While there is no cure for both pathologies, there are drug and non-drug options that may help treat symptoms. Among the medication indicated for Parkinson's disease, the most effective are Levodopa, dopamine agonists (pramipexole, ropinirole) and MAO-B inhibitors (rasagiline, selegiline). For Alzheimer's disease, the main medicines are Acetylcholinesterase inhibitors (AChE) and Memantine. In addition, the physiotherapy approach has demonstrated effectiveness in improving health, delaying cognitive decline, treating symptoms, controlling behavioral changes and providing comfort and quality of life for the patients and their family.

Keywords: Parkinson, dopamine, Alzheimer, senile plaques, neurofribrillary tangles

MUSCLE ADAPTATIONS TO PHYSICAL EXERCISE AND REGULATION BY THE AUTONOMIC NERVOUS SYSTEM

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Physical exercise results in various physiological adaptations on neuromuscular, cardiovascular, and respiratory levels. Those adaptations improve our performance. During those adaptations, the overload principle stands out. Our musculoskeletal system will gradually adapt to muscle overload, generating an enlargement of the muscular fibers leading to hypertrophy and hyperplasia. There are two types of fibers: type I and type II. Type II fibers divide into IIa and IIb. Physical exercise can be either aerobic or anaerobic. Aerobic exercise enables muscular mitochondria to increase ATP production, meaning a better efficiency in capturing and using oxygen. During exercise, it will occur voluntary muscular contractions in our musculoskeletal tissues. Those contractions can be isometric or isotonic (concentric and eccentric).

Our body will react through physiological responses that are acute, subacute, or chronic. If we get injured, satellite cells will intervene. However, during exercise, our body warms up, and to regain its natural temperature needs the autonomic nervous system to maintain homeostasis. Our autonomic nervous system integrates our sympathetic nervous system and parasympathetic nervous system, and they complement each other balancing our activities. In those systems, there are receptors such as nicotinic receptors and muscarinic receptors that connect with acetylcholine, a neurotransmitter that regulates our cardiovascular system despite the extrinsic factors that destabilize it. There are three stages: warm-up, resistance training and cool down. We conclude by saying that there is a strong link between our muscles and our autonomic nervous system.

Keywords: Adaptations, fibers, contractions, autonomic nervous system, homeostasis.

PINEAL GLAND

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The pineal gland is an endocrine gland, shaped like a pinecone. It develops from an invagination in the wall of the third cerebral ventricle and is located in the epithalamus.
This gland is responsible for the production of melatonin, which regulates sleep, besides other actions. These actions are mainly suppressive, regarding the immune system and the metabolism of the reproductive system.
The pineal gland is activated in the absence of light and inhibited in its presence. The light, which enters through the retina, generates a stimulus that produces an action potential. This potential is transmitted to the hypothalamus before it goes to the pineal gland, via sympathetic routes. This inhibits the production of melatonin, which increase the secretion of GnRH by the hypothalamus, for example.
The regulation of the pineal gland serves as a recovery mechanism, helping with important endocrine functions that contribute to the body's homeostasis. The sleep cycle revolves around circadian rhythms and depends on the production of melatonin. This hormone regulates the quantity of hours and the quality of sleep that will influence the sleep latency period.
The pineal gland calcifies with aging, being completely calcified by the age of 60, on average. This process is explained by the decrease of pinealocytes and it will affect the functionality and production of melatonin, which will have serious negative impacts on the sleep-wake cycle.
Furthermore, when the pineal gland does not function correctly, it can cause several pathologies such as neurological diseases, cancer, stress, hypertension and psychological disorders.

Keywords: Melatonin, luminosity, circadian rhythms, homeostasis

CHRONIC PAIN

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Pain has been a known symptom for a long time.There are two distinct types of pain: chronic and acute. While acute pain causes a temporary sympathetic response, chronic pain allows adaptation to this situation. Chronic pain persists for a long period of time (over 6 months), without any symptoms associated.

The most prominent risk factors are depression, anxiety, smoking, alcoholism, obesity, feminine gender and age. This leads to physical, psychological and social problems. Hyperalgesia, Dysesthesia, Fibromyalgia and Phantom Pain are a few examples of chronic pain.

In the spinal cord there is a mechanism responsible for, under basal conditions, suppressing the pain - the gate mechanism. The inhibitory neurons produce an inhibitory synapse (post-synaptic inhibition) blocking the passage of the painful signal to the cortex. When this stimulus is strong enough the threshold of stimulation is exceeded, so the gate mechanism is temporarily inactive and we feel pain. Thus, chronic pain presupposes a functional alteration of this mechanism.

There are several treatments to moderate chronic pain, like analgesics, morphine or opioids that target the nociceptors, mostly concentrated on the trigger points, but there is no cure. These therapeutic compounds act on the nociceptors releasing inhibitory neurotransmitters that restore the normal function of the gate mechanism, so the pain signal is blocked. There are also other options, such as physiotherapy, hypnosis and behavioral therapy.

Chronic pain is one of the most frequent diseases and also one of the most limiting in daily life, with few investigations in this area.

Keywords: chronic pain, gate mechanism, suppress

ELETROCARDIOGRAM AND IF CURRENTS

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Electrocardiogram (ECG/EKG) is a simple test that measures your heart's rhythm and electrical function when resting. Sensors attached to the skin (wrists, ankles and chest) are used to detect heart signals.

It also can detect cardiac cavities increasement, arrhythmias, coronary pathologies, myocardial infarction and other diagnostics.

Beyond resting ECG, there is Exercise ECG and Holter monitor (the electrodes are connected to a small portable machine so your heart can be monitored at home for some days).

The heart muscle is responsible for pumping blood throughout our body, that only happens because of electrical impulses (generated in the sinus node) that pass through the nerves inside the auricles and ventricles. These impulses cause depolarization and consequently the contraction of the heart, and later, in repolarization, this muscle prepares itself for a new depolarization.

There are six waves that can be recorded in the ECG but in this work we will only focus on P, the QRS complex and the T waves. The first waves of the cardiac cycle are the P that correspond to auricle depolarization, then the QRS complex activates the ventricles and finally the T waves that correspond to ventricular repolarization. It can also exist a chain lock that decreases the heart frequency. There are 3 types of ECG derivations: bipolar, unipolar and precordial. The bipolar ones create the "Einthoven triangle" and record the voltage between two electrodes in different members.

There so the ECG has several clinical applications that allow detection of numerous pathologies.

Keywords: electrocardiogram, heart's rhythm, electrical signals, waves, derivations

DEMIELINATING DISEASES

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Myelin is a lipid substance that forms the myelin sheath, which surrounds the axons, protecting them, accelerating the propagation of the nervous impulse, and decreasing the energy expenditure when it occurs. It is formed by oligodendrocytes, in the central nervous system, and by Schwann cells in the peripheral nervous system.

Throughout life, myelin can suffer damage, being able to repair itself, restoring all of its nervous functions. In some cases, this regeneration does not occur, causing irreversible damage conditions leading to demyelinating diseases.

Demyelination has several causes, such as pathogens, chemicals, lack of B12 vitamin and genetic causes, which, depending on the age group, can cause different types of disease, such as Adrenomyeloneuropathy (adults) and Adrenoleukodystrophy (children).

Adrenoleukodystrophy and Adrenomyeloneuropathy are characterized by generalized demyelination that causes behavioural problems, visual and hearing impairments.

Most children end up dying after 3 years or have a permanent disability. As for adults, on the other hand, there may be a weakening of the legs and loss of control of the sphincters.

There are other demyelinating diseases, such as multiple sclerosis and acute disseminated encephalomyelitis.

These diseases are sometimes difficult to diagnose and the diagnosis involves magnetic resonances, electroencephalography and analysis of the cerebrospinal fluid.

There are still no specific treatments for these diseases, only preventive behaviours which we may adopt to attenuate the situation.

Keywords: Myelin, Demielinating diseases, diagnosis, prevention

HORMONES OF THE MUSCLE AND BONE: OSTEOCALCIN AND MIOKINES

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The musculoskeletal system, mostly composed by bone and muscle, plays a crucial ole in the locomotion, stability and structure of the human being. Its functioning can be regulated by the action and production of hormones.

Myokines, a type of cytokines, are proteins produced and released in the muscle tissue by specialized cells, myoblasts. In response to muscle contraction, present in physical exercise, the increase in the production of myokines induces metabolic, immunological, endocrine, paracrine and autocrine effects in order to maintain homeostasis.

IL-6, IL-8, IL-15, irisin and myostatin are some types of myokines, each one with specific functions. However, most myokines are not yet sufficiently characterized as to their activity and biological function.

Osteocalcin is a bone protein produced by osteoblasts, dependent on vitamin K for its carboxylation. Non-caboxylated osteocalcin is released into the bloodstream and acts on beta-pancreatic cells and adipose tissue.

The active hormonal isoform, a decarboxylated form of osteocalcin, constitutes benefits in secretion and sensitivity to the insulin. This, alongside leptin, regulates the secretion of osteocalcin, so that the skeleton becomes an endocrine organ. After the release of osteocalcin, it is exposed to several splicing events, in order to be easily transported in the circulation.

So, when we look at the skeletal muscle system, we realize that in addition to its essentiality in movement, it is extremely important in the functioning of the organism as a whole.

Keywords: Osteocalcin, myokines, hormone, bone, muscle

PANCREAS: FROM THE ORGAN TO THE MICROSCOPE

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The pancreas is an accessory digestive gland found retroperitoneally and it's located in the upper abdomen, with the duodenum on the left and the spleen on the right. It's divided in head, neck, body and tail, and it's externally coated with a thin capsule of translucent connective tissue.
It has both endocrine (release of insulin and glucagon) and exocrine (synthesis and release of digestive enzymes) functions. The exocrine pancreas is an acinous gland composed of numerous lobes. Endocrine pancreas consists of lightly stained, spherical or elongated, cell groups - the islets of Langerhans, consisted of alpha, beta, delta, PP, serotonin, D1 and enterochromaffin cells.
The most common exocrine pancreatic disorders are acute pancreatitis, with reversible function if the cause of inflammation is removed, and chronic pancreatitis where the parenchyma is irreversibly damaged. There is also pancreatic adenocarcinoma where mutations in the mucosa cause specific precursor injuries that lead to malignancy invasion. It is hard to diagnose because of non-specific symptoms, when detected it's already in an advanced or metastatic state (due to the proximity of major blood vessels). When it comes to endocrine pancreatic disorders the most common is insulinoma (usually benign and causes hypoglycemia).
The specimens that arrive at the anatomy laboratory are obtained from duodenopancreatectomy, pancreatectomy or biopsy. The following parts must be oriented, described and painted. Then, we must proceed to the dissection, description and collection of samples. And finally, the fragments will be fixed and enter the histotechnical processing until it reaches a visible microscopy lamina.

Keywords: Pancreas; pancreatitis; Insulinoma; pancreatic adenocarcinoma; pancreatectomy

EPIDERMODYSPLASIA VERRUCIFORMIS

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Epidermodysplasia Verruciformis (EV) was first described by Lewandowski and Lutz in 1922. It is a genodermatosis that is usually associated with autosomal recessive transmission. However, there are a few cases of autosomal dominant, X-linked inheritance and sporadic incidents reported.

Recent literature indicates that the major prevalence of this pathology has been observed in Eastern Europe, Poland and Latin America. EV is most frequently manifested during childhood and adolescence.

Mutations in the EVER1 and EVER2 genes are detrimental for the development of EV and lead to a bigger vulnerability to persistent infections by Human Papilloma Virus (HPV).

During the benign phase, the most common macroscopic features consist of flat, squamous, red-brown macules and pink-red plane papules on the face, neck and body. In most cases there is a progression to malignity, which is especially associated with sun exposure and reveals a higher rate of polymorphism, displaying papillomatous lesions that resemble verrucae or lesions with a seborrheic-keratosis pattern.

The diagnosis involves skin biopsy (punch or shave) for posterior microscopic evaluation, in order to identify common histologic findings such as slight hyperkeratosis and acanthosis, with keratinocytes displaying cytopathic effects (perinuclear halos and hyperchromatic and irregular nuclei), typical of HPV infection.

Another approach includes molecular screening, with the purpose of finding EVER1/EVER2 gene mutations, through in situ hybridization, and using polymerase chain reaction (PCR) to identify the HPV subtypes involved.

There exist no effective treatments for EV. Still, there are a few promising therapies. It’s also recommended sun exposure protection and a tight follow-up.

Keywords: Epidermodysplasia Verruciformis; HPV; Mutation; EVER; Genodermatosis

FAMILIAL ADENOMATOUS POLYPOSIS

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Familial adenomatous polyposis (FAP) is an inherited disease of an autosomal dominant character. Children of the affected individual will have a 50% risk of inheriting the gene.

The incidence of FAP at birth is about 1:8,300 and equally manifests in both sexes. The prevalence is higher in the European union, about 1:11,300 - 37,600.

Symptoms such as rectal bleeding, anemia, change in bowel habits, constipation or diarrhea usually only show up when the adenomas are large and numerous enough to cause them.

In the majority of cases, genetic tests are required for risk families. However it can also be done if an individual presents more than 10 adenomatous polyps in a single colonoscopy, that depends on the individual's age and familial history.

The most searched genes are: *APC* (FAP classic variant and Attenuated FAP variant) and *MUTYH* (MUTYH Attenuated FAP variant).

FAP patients are categorised in stages (0 to IV) according to the Spigelman classification indicating the severity of the condition, risk of carcinoma development, patient surveillance periodicity and effective treatment.

This disease is responsible for less than 1% of colorectal cancer cases but only if the patients are treated.

Treatment strategies may vary depending on the patient's personal history and a colectomy or a prophylactic proctocolectomy are the most recommended treatments to reduce the risk of colorectal cancer. They can also be subjected to chemoprevention.

The American Gastroenterological Association recommends an annual sigmoidoscopy for risk family's patients. It's also essential genetic counseling as a way of prevention.

Keywords: FAP; adenomatous polyps; colorectal cancer; Spigelman classification; prophylactic proctocolectomy

HISTOLOGY/CYTOLOGY DICHOTOMY IN THE DIAGNOSIS OF BREAST PATHOLOGY

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Histology and cytology comprise two different but interlinked areas that, together, contribute to a reliable and specific diagnosis of breast pathology, playing an important role in diagnosing malignant tumours of the breast. Breast carcinomas are the most commonly occurring cancer in women and the second most common cancer overall.

The best cytological technique for identifying alterations linked with breast pathology is fine needle aspiration (FNA). It has proven to be very reliable and is a clinically convenient method used in the recognition of malignant tumours with subsequent histological confirmation as the final diagnosis.

If malignancy criteria are observed through cytology, the tumour will be excised for histological study.

Breast carcinomas are classified into subtypes by the anatomopathological exam, according to the histological type, the histological degree and TNM. The molecular classification also complements the diagnostic and has an important role in defining therapy.

Despite focusing on different aspects, histology and cytology complement each other for a diagnosis, since the former focuses on tissue architecture and the second only on cells without stroma.

Keywords: Breast carcinoma; fine needle aspiration; histology; cytology

GIST: FROM CLINIC TO DIAGNOSIS

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The gastrointestinal stromal tumour (GIST) is the most frequent mesenchymal neoplasm of the gastrointestinal tract and is generally characterized by the subexpression of the tyrosine kinase KIT receptor and a c-KIT proto-oncogene mutation, manifesting themselves through diverse anatomic structures, having macro and microscopically associated features. Its most common symptoms are gastrointestinal bleeding, abdominal pain, gastric ulcer and abdominal mass.

Regarding incidence, it is estimated to be approximately between ten and twenty people per million a year. Over 90% of GISTs occur in adults of both genders with an average age of 65 years.

For diagnosis, conventional endoscopy is not accurate for tumors without ulceration (GIST). Nowadays, endoscopic ultrasonography guided by fine needle aspiration (EUS-FNA) is the most efficient method in immunohistochemical diagnosis which can determinate the presence of GIST findings: KIT or CD34, and histologic features like spindled-shaped cells or epithelial cells. According to these histologic features there are 3 types: spindled, epithelioid or mixed.

Differential diagnosis is very wide and include extra-gastrointestinal tract compression, varicose veins, ectopic pancreas and tumour like leiomyoma, shawnoma and lipoma.

Treatment consists of two different ways: surgery in cases of metastasis free tumours or imatinib (c-KIT inhibitor oral agent) administration in cases of metastatic tumours. However, there is a general clinical and scientific interest in this pathology due to the need to identify the main pathogenetic imperfections and to develop a GIST specific molecular inhibitor.

Keywords: GIST, tumour, differential diagnosis, c-KIT, gastrointestinal.

DICHOTOMY HISTOLOGY/CYTOLOGY ON THE DIAGNOSIS OF THYROID PATHOLOGIES

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The thyroid is a small gland that produces hormones that regulate important functions in the human body. Changes in its normal functioning cause pathologies, which can result from changes in its structure (benign or malignant nodules) or in its function (hypothyroidism and hyperthyroidism). Thyroid dysfunctions when not diagnosed opportunely can carry the risk of developing several diseases.

In the last years, the incidence of thyroid cancer has been rising worldwide, having been attributed to over-diagnosis. The biggest number of cases were diagnosed in women, the most common histological type being papillary thyroid cancer.

When it comes to the diagnosis of thyroid diseases, it usually starts with a fine needle aspiration (FNA) for cytomorphological studies followed by thyroidectomy to proceed with morphological histopathological studies.

FNA cytology is a diagnostic procedure that allows us to collect cells for analysis under a microscope, eliminating or finding a definitive diagnosis in suspected cases of malignant thyroid disease. It is considered the gold-standard test, providing a fast and specific diagnosis with minimal complications and has an important role in treatment since some patients can be subjected to surgery.

Total thyroidectomy shows benefits in multinodular goiter, Grave's ophthalmopathy, Hashimoto's thyroiditis and can be considered in some benign thyroid diseases. The thyroidectomy will be subsequently treated until we have a histological slide which, after being analyzed, will indicate the final diagnosis.

The histopathologist and cytopathologist have been and continue to be at the forefront when it comes to diagnosis, prognosis, and targeted treatment of thyroid pathology.

Keywords: Thyroid, Pathology, Cytology, Histology, FNA, Diagnosis

PAGET'S DISEASE

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Paget's Disease of the Breast (PDB) is a rare cancer, corresponding to about 1 to 4% of new cases, characterized by eczematous changes in the nipple-areola complex. It is associated with in situ or invasive glandular carcinoma and affects mainly postmenopausal women in their mid-60s, although it is also found in younger women, and more rarely in men. Its real cause remains uncertain.

Its incidence has decreased over the years (about 45% between 1988 and 2002) in relation to other breast cancers, despite the increase in diagnosed cases. It is estimated that half of the patients have a palpable mass in the breast and the majority (85 to 98%) eczema of the nipple with flaking and itching. It is also shown that the incidence of clinical disease is low and symptoms are easily mistaken for benign disease, resulting in delays in diagnosis. The diagnosis of PDB can be done from wedge biopsy (more frequent); superficial biopsy in shave of the epidermis or biopsy by puncture, for later histopathological examination.

Mammography, ultrasound, or magnetic resonance exams can also be requested, as well as immunohistochemical study in order to obtain a more reliable diagnosis, thus showing positivity for the markers: CK7, EMA, CEA e HER-2.

The microscopic findings are Infiltration in the epidermis of large cells, with clear and abundant cytoplasm, nuclear hyperchromasia, and prominent nucleoli (Paget cells), which along with the size of the tumor are essential for early diagnosis and treatment.

Keywords: Paget disease, breast, biopsy, Paget cells, HER2

EMERGING VIRAL INFECTIONS IN TRANSFUSION SCIENCE - HUMAN HERPES VIRUS-8 (HHV-8)

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Human Herpes Virus 8 (HHV-8) belongs to the herpesviridae family, Gammaherpesvirinae subfamily and Rhadinovirus genus.

It is the etiologic agent of all forms of Kaposi Sarcoma (KS) and for that reason is also known as Kaposi's Sarcoma herpesvirus (KSHV). The worldwide distribution of HHV-8 infection rates varies according to the prevalence of Kaposi Sarcoma in certain geographic areas.

Most individuals infected with this virus are asymptomatic. However, in cases of organ transplantation or immunocompromised systems, there are various clinical manifestations and it can progress to a KS.

Although it is unclear how HHV-8 is transmitted, patients often have HHV-8 in saliva and genital secretions, that associated with certain risk factors can become a transmission route. KSHV is more common in homosexual/elderly men. It is also predominant within immunodeficient patients and iatrogenic immunosuppression.

MIFA for lytic antigens and combined peptide EIA seem to be the ones with better sensitivity for the diagnosis.

In geographic areas with high-prevalence of HHV-8, there's a higher chance of seroconversion when transfused with HHV-8 positive. In comparison, regions with a low prevalence of infection found no connection when linking positive-donor/negative-recipient. This means that transmission risk is rare, not being necessary to implement various safety measures for its prevention.

Drugs that can inhibit HHV-8 replication like ganciclovir and nelfinavir are in wide clinical use and can be used to reduce KS. The amount of HHV-8 DNA in samples can be useful to demonstrate the type or duration of therapy.

Keywords: Herpes Human Virus 8; Kaposi Sarcoma; Immunosuppression; KSHV.

EMERGING VIRAL INFECTIONS IN TRANSFUSION SCIENCE - BLUETONGUE VIRUS

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The Bluetongue virus (BTV) is an Orbivirus that belongs to the Reoviridae family. It's a double-stranded non enveloped RNA virus with 24 serotypes reported worldwide, that causes deadly haemorrhagic disease in domestic and wild ruminants. It is not known to affect humans, so there's no impact in transfusion sciences.

It is transmitted mostly by the bite of Culicoides, but it can occasionally be transmitted by seminal fluid, vertical transmission, from mother to fetus, and horizontal transmission by direct contact.

The clinical signs may vary between sheep and cattle, but they are essentially the same. It includes fever and edema; hemorrhages and ulcerations of the oral and nasal mucosa; inflammation of the coronary band; weakness and depression; diarrhea and vomiting; pregnant ewes may abort and have abnormal wool growth.

The BTV can be found worldwide, but mainly in climates where the competent Culicoides species vectors can survive. Therefore, the endemic areas are Africa, Europe, the Middle East, North and South America and Asia, as well as on numerous islands.

For the diagnosis of the virus, there is the use of techniques such as competitive ELISA, serum neutralization assays and virus isolation from blood or semen. However, reverse transcription polymerase chain reaction (RT-PCR) and real time PCR (RT-PCR) are most commonly used.

For the treatment and prevention of this virus there is the use of conventional vaccines, which contain the attenuated or inactivated virus. However, the advance of molecular techniques has allowed the development of more effective vaccines.

Keywords: Bluetongue virus, Reoviridae, Culicoides, ruminant animals, vaccines

EMERGING VIRAL INFECTIONS IN TRANSFUSION SCIENCE - HUMAN PARVOVIRUS B19

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Human Parvovirus B19 (B19V), a nonenveloped single-strand DNA virus, belongs to the Parvoviridae family and comprises three major genotypes: Worldwide; Europe and the Americas; North and West Africa. Its genome encodes a nonstructural protein (NS1), that grants high stability and is cytotoxic, and two structural viral proteins (VP1 and VP2). B19V infects cells that express antigen P in their surface, but it only replicates in erythroid progenitor cells both burst-forming unit-erythroid (BFU-E) and colony-forming unit-erythroid (CFU-E) cells. Once the virus has replicated, the host cell goes through apoptosis. Transmission can also occur during transfusions. This virus has been associated with the fifth disease, in children, and arthralgia in adults. While most infections are asymptomatic or display mild symptoms and do not pose a threat to a healthy individual life, resolving by itself, the same cannot be said for anaemic or immunocompromised patients. The B19V can cause aplastic crisis such as pure red cell aplasia (PRCA), requiring red-cell transfusions or passive administration of IgG antibodies against the virus. During pregnancy, infected mothers can transmit the virus to their offspring, possibly culminating in hydrops fetalis. One approach to improve prevention is to raise awareness within the clinicians and to follow closely more susceptible patients. No vaccine or antiviral treatment is available. B19V infected blood donors usually go unnoticed, therefore, and to avoid transfusion-transmitted B19V (TT-B19V), blood products undergo screening for virus DNA. Besides this screening, during the process to obtain plasma derivates the virions can be inactivated or removed.

Keywords: Parvovirus B19; transfusion; blood donors

EMERGING VIRAL INFECTIONS IN TRANSFUSION SCIENCE - MAYARO VIRUS

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Mayaro virus (MAYV) belongs to Togaviridae family, genus Alphavirus, species Semliki Forest virus being an icosahedral enveloped positive-strand RNA virus containing two open reading frames. In 1954 it was isolated for the first time in Trinidad and it has highest prevalence in South America, in countries such as Brazil, Peru and Ecuador. The transmission of MAYV occurs trough female mosquitoes, mainly belonging to the genus Haemagogus, that obtain blood from an infected host. There is no evidence of another type of transmission. The virus has been detected in several vertebrate hosts other than humans.

MAYV disease can be asymptomatic or characterized by fever, arthritis, and maculopapular rash. These symptoms are common to other alphaviruses infections given the pattern of coinfection and co-circulation in endemic areas.

There are no specific tests for MAYV, therefore combinations of techniques are important to obtain a differential diagnosis.

The transmission of emerging viruses through blood transfusion has become a major public health problem, thus many procedures to remove MAYV from plasma/blood products have been studied. Some examples are pasteurization, solvent/ detergent treatment, nanofiltration and precipitation with ethanol.

All steps in the cycle of replication of the alphavirus can be potential targets in antiviral development. There are various antiviral strategies including virus-targeting inhibitors and host-targeting inhibitors. The host-targeting antiviral have advantages, such as their broad spectrum against alphavirus and the lower probability that the virus develops resistance. However, caution must be taken because of the side effects.

Keywords: Mayaro virus (MAYV), Alphavirus, Togaviridae, Semliki Forest virus, South America, Haemagogus.

EMERGING VIRAL INFECTIONS IN TRANSFUSION SCIENCE - CHIKUNGUNYA VIRUS

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Chikungunya virus was first reported in West Africa in 1950. Two years later, it was isolated for the first time in humans in southern Tanzania. It is a (+)ssRNA virus with about 12000 nucleotides, enveloped. It belongs to the family Togaviridae and the genus Alphavirus.

The main route of transmission is horizontal, effectively from two cycles: sylvatic (animal-mosquito-human) and urban (human-mosquito-human).

CHIKV infection is diagnosed as an arbovirosis (infections transmitted from arthropods) and makes a differential diagnosis with other arboviruses, namely Zika and Dengue virus.

The main symptoms are: high fevers, inflammatory arthralgia, edematous arthritis and severe pain in various joints.

In the first five days of infection, the best laboratory test is reverse transcription polymerase chain reaction (RT-PCR), in order to identify the viral genome. In addition, immunoenzymatic assays (ELISA) may be used to detect anti-CHIKV antibodies of IgM and/or IgG class, depending on disease stage. Currently, there is no vaccine available for this virus and, therefore, prevention, mainly in endemic regions, plays a major role. The treatment is directed towards the attenuation of symptoms, using anti-inflammatory drugs and analgesics.

In the context of transfusion medicine, in endemic areas and/or regions with active outbreaks, it is crucial to screen the blood units, in order to detect possible asymptomatic CHIKV fever donors, who constitute the higher risk of transmission because they are likely not aware they are infected.

Keywords: Chikungunya Virus, Virus, Arbovirosis, Transfusion, RT-PCR

EMERGING VIRAL INFECTIONS IN TRANSFUSION SCIENCE - VARIANT CREUTZFELDT-JAKOB DISEASE

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Variant Creutzfeldt-Jakob disease (vCJD) is an acquired prionic disease, first described in 1996, in the United Kingdom. vCJD is caused by the exposure to same agent that causes bovine spongiform encephalopathy (BSE), which originates in misfolded protein.

This agent is transmitted through human consumption of food products obtained from infected bovine. There were, however, 3 recorded cases of transmission via blood transfusion from asymptomatic donors, which led to a ban on donations from individuals who had been in places with recorded cases of the disease during the peak of the epidemic. It's believed the infecting agent is able to survive the storage conditions of blood donations.

Early clinical manifestations appear 6 months before neurological symptoms (psychiatric prodrome). After the first 6 months, other symptoms appear, which include: cognitive dysfunction, dysesthesia, cerebellar dysfunction and involuntary movements. The average age of the individuals diagnosed is 27 years old.

Preventive measures were implemented, namely a ban on using processed animal protein (PAP) as animal feed and banning the use of milk and dairy from cattle infected with CJD. So far, no association has been made with occupational hazard, drugs, immunological agents or surgical material (including animal gut sutures).

Magnetic resonance imaging (MRIs), cerebrospinal fluid (CSF) biomarkers, radiological characteristics and the detection of PrP Sc in urine (not yet clinically available) are essential for diagnosing this condition.

Keywords: Variant, Creutzfeldt-Jakob, prionic, encephalopathy, bovine, transfusion.

EMERGING VIRAL INFECTIONS IN TRANSFUSION SCIENCE - HUMAN T-CELL LYMPHOTROPIC VIRUS

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In 1980 it had been discovered the primary human retrovirus isolated from a patient with cutaneous T-cell lymphoma. This is often now referred to as human T-cell leukemia virus type-1 (HTLV-1).

Since then, several HTLV subtypes were discovered: HTLV-2 was first identified in a patient with hairy cell leukemia, while HTLV-3 and HTLV-4 were discovered in bushmeat hunters in Africa.

It is estimated that this virus infects 10-20 million people worldwide, but the true number is difficult to accurately estimate due to the shortage of systematic serological testing.

The HTLV-1 and HTLV-2 are the foremost well-studied subtypes of HTLV.

These two subtypes require cell-to-cell contact for efficient transmission and both viruses use the envelope glycoprotein-mediated cell binding and entry, they encode the structural and enzymatic proteins shared by all retroviruses and therefore the regulatory proteins Tax and Rex and have an RNA transcript and protein derived from the negative-sense strand of the viral genome.

There are three primary modes of transmission: vertical (during parturition or breastfeeding), parenteral (transfusion of contaminated blood products, transplantation of infected organs, or intravenous drug use), and sexual.

It had been realized that transfusion was related to high rates of transmission due to the infusion of infected lymphocytes. This virus can cause chronic infection in humans, so antibody screening has been performed in many countries. It is likely that filter leukoreduction of blood products reduces the transfusion risk of HTLV.

Keywords: HTLV-1; HTLV-2; transfusion; transmission; regulatory proteins.

EMERGING VIRAL INFECTIONS IN TRANSFUSION SCIENCE – ST. LOUIS ENCEPHALITIS VIRUS

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St. Louis encephalitis virus (SLEV) is an arbovirus, maintained in nature in transmission cycles between Culex mosquitoes and birds, with humans considered dead-end hosts. It belongs to the Japanese encephalitis serocomplex, in the Flavivirus genus of the Flaviviridae family. Therefore, it is composed of capsid, a host lipid envelope and a single-stranded, positive-sense RNA genome that codifies three viral structural proteins, and seven non-structural proteins.

Since the first identification of SLEV in St. Louis, Missouri, in 1933, many outbreaks occurred in the United States and southern Canada, with most cases in the eastern and central United States.

SLEV causes the neuroinvasive disease known as St. Louis encephalitis, which affects mostly the thalamus and substantia nigra, with symptoms ranging from febrile illness to severe encephalitis. There is no evidence of transmission by transfusion, but it is considered to have the potential to be a blood safety concern in the future.

The primary diagnosis is serologic ELISA testing to detect SLEV specific IgM antibodies, associated with the patient's medical history. Molecular testing and antibody detection in cerebrospinal fluid can also be performed. When the IgM SLEV test result is positive, a confirmatory Plaque reduction neutralization test (PRNT) should be done since similarity between other Flavivirus proteins and SLEV proteins can cause cross reactions and false-positive test results.

There is no vaccine or antiviral therapy available for SLEV beyond supportive care. Therefore, the key to control this infection is prevention of mosquito bites with protective clothing or repellent, when in endemic areas.

Keywords: St. Louis encephalitis virus; Flavivirus; Encephalitis outbreak; SLEV antibodies; Plaque reduction neutralization test (PRNT)

COVID-19 AND THE ENVIRONMENTAL POLLUTION

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It is common knowledge that the COVID-19 virus has had/has great influences in the world, not only in populations, but also on Planet Earth. Pollution is currently considered a serious environmental problem, but on the other hand the appearance of this virus has brought both positive effects and negative effects to our planet.

All over the world, while people were isolated at home to avoid coronavirus contamination, the planet Earth showed significant improvements in air quality. With people at home, there began to be less movement of vehicles/ means of transport and the emission of CO2 and other gases has drastically reduced, improving the air quality.

On the other hand, the need to wear a mask as a preventive measure has also led to an increase in the pollution since there are people who throw their masks on the ground. These masks will end up in coastal areas, which poses both public health problems and problems with marine life. A surgical mask takes about 300 to 400 years to decomplace, this is a strong contributor to the increase in marine pollution.

Keywords: Covid-19; Pollution; Improvements; Problems; Environment

CIRCULAR ECONOMY - THE INDIVIDUAL ROLE IN A GLOBAL POLICY

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A circular economy is the one that actively promotes efficient use and productivity of resources that it has been deduring, through products, processes and business models based on dematerialisation, reuse, recycling and recovery of materials, In this way, it seeks to extract economic value and usefulness materials, equipment for as long as possible, in energized cycles renewable sources. the materials are preserved, restored or reintroduced into the system in a cyclical way, with economic advantages for suppliers and users and environmental advantages arising from less extraction and import of raw materials, reduction in the production of waste and associated emissions.

In this context, environmental health technicians express a very important role, because they're the ones that somehow allow this circular economy possible through, for example, water analyses to locate any polluting sources and to eliminate or at least reduce such pollution. These technicians together with companies can also find solutions that benefit factories and all the surroundings, such as the use of renewable energies that brings benefits in long term and the use of mechanisms that reduce pollution of the air with the adoption of towers that treat the air before it go to the outsider environment.

Keywords: Dematerialization, business, economy

LOSS OF BIODIVERSITY AND HUMAN HEALTH

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The planet's biodiversity is threatened and the main culprit is the one who depends most on it: the human being. As we invade nature and deplete vital habitats, a growing number of species are at risk, including mankind.

One of the functions performed by the Environmental Health Technician for the preservation of biodiversity and consequently the preservation of the health of the populations is to know the diversity of species, map and identify the factors that lead to the destruction of biodiversity by attenuating or correcting these same factors, performing actions of monitoring and health surveillance of factors of the biophysical environment (water, air, soil, food, habitat, among others).

The loss of biodiversity is the reduction/disappearance of biological diversity, that is, the variety of living beings that inhabit the planet, their different levels of biological organization and their genetic variability.

According to studies published before the pandemic, deforestation and loss of habitats are associated with the appearance of infectious diseases that have appeared in animals. Pandemics are increasing as human activities put more pressure on the environment, and as close contacts between humans and wildlife also increase.

Biodiversity is the basis of the planet's health and has a direct impact on the lives of us all. We must work to preserve biodiversity and to achieve the goals of Sustainable Development.

"We cannot continue to destroy the diversity of life. It is our responsibility to future generations".

Keywords: biodiversity, environmental health technician, health, human being, infectious diseases, sustainable development

NEW CHALLENGES FOR ENVIRONMENTAL HEALTH PROFESSIONALS

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Environmental Health addresses the aspects of health and quality of human life, is the part that encompasses the problems resulting from the effects that the environment exerts on the physical and mental well-being of the human being as part of a community. This area aims to protect the well-being and preserve the health of individuals and the community, to identify and evaluate risk factors capable of jeopardizing the well-being of populations and to collaborate with the competent entities providing information to the general public.

An Environmental Health technician acts in Public Health, Hygiene and Food Safety, Risk Assessment and Control, Methodologies for Environmental Management, Occupational Health, Occupational Safety, Hygiene at Work, Organization and Emergency Intervention, among many others. Their participation is a key element for the implementation of preventive measures within the scope of COVID-19, of containment of possible effects of the pandemic, through cooperation with health authorities, management of potential risks, planning ways to reduce contagion and transmissions, participation in contingency plans, among others, being therefore a new stage, a path to be expanded and as such a major challenge for these environmental health professionals. With the growing population density and consequent increase in the satisfactory needs of this population, the Environmental Health technician has seen himself responsible for providing security in the various branches of his work, keeping together a balance of resources (sustainable development).

Keywords: Environmental Health, Environmental Health Technician, Public Health

THE IMPACT OF GLOBAL WARMING ON HEALTH

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Global warming is the process of changing the average global temperature of the atmosphere and oceans. The accumulation of greenhouse gas concentrations in the atmosphere blocks the heat emitted by the sun and traps it in the earth's surface, most of the infrared radiation does not come out, and will cause an increase in the temperature of the planet.

The subsequent climate changes of global warming increase the impact of extreme weather events, cold or heat. These events, in addition to having an impact on the environment, such as the flora, atmosphere, ocean, geochemical and geophysical environment, will have harmful effects on human health. Over time we have noticed an increase in respiratory problems, which can be explained by the worsening of air quality due to gases sent to the atmosphere.

Indirectly, climate change affects human health, as it can lead to malnutrition, poor working conditions and also mental stress. There are species sensitive to changes in environmental conditions, such as temperature and humidity, which leads to their disappearance, causing an unbalance in ecosystems. These changes are very visible in tropical forests, polar ice caps and coral reefs.

In a logic of mutual reinforcement, environmental policies and greater ecological responsibility, environmental health professionals will have an impact in terms of health benefits, while the objective of more health provides increased prevention of environmental degradation. An example of the performance of these technicians is the analysis of water with the increase of gases in the atmosphere and consequent change in the water cycle.

Keywords: Global warming; human health; climate change; unbalance in ecosystems; pollution

DEFORESTATION: A PROBLEM OF (FOR) ENVIRONMENTAL HEALTH?

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Deforestation means precisely the massive destruction of ecosystems, at rates that will lead to their disappearance, with the objective of getting certain products (wood, charcoal) or free areas (for the practice of agriculture or urbanization), by and for man. The term deforestation was much more intense and pertinent, due not only to the immense size of the deforested areas, but also to the fact that deforestation is not accompanied by reforestation, and often the damage produced is such that even the natural mechanisms by which nature regenerates natural ecosystems are intentionally blocked, for example, by the paving of soils (roads).

Deforestation is one of the most serious environmental problems. In addition to the destruction of forests and natural resources, it endangers the ecosystem, the economy and society itself. Forests are essential to our survival, they give us the air we breathe, they purify the water we drink and they are home to millions of plants and animals. Also, they protect us from disease and absorb carbon emissions from the atmosphere. Currently, the European Union allows the entry of products related to deforestation and habitat destruction into the European market. This means that, even without knowing it, we are consuming our forests.

Environmental health professionals are essential to perceive the impacts of massive deforestation, as much for the environment as for human beings.

Keywords: Deforestation, destruction, Carbon emissions, ecosystem

ENVIRONMENTAL HEALTH IN AN AGING SOCIETY

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It should be noted that the basis of our problems may lie in the lack of interaction between man and the environment, and the study of these two factors is central to improving quality of life.
The transition from childhood to adulthood is considered a process of maturation. When one reaches the third age, individuals are the result of all the characteristics developed in this process together with their relationship with the environment in which they live. In this way, the aging process is natural and can occur in a healthy way or be accompanied by some disease. This process, natural or not, added to the relationships of individuals with aggressive environmental agents favor premature aging, today a world reality.
Portugal is considered an aged country, and the causes are attributed to extremely low fertility rates as well as the emigration of the Portuguese in recent years due to factors such as pressure on professional careers, minute salaries, among others.
These factors end up making it impossible to multiply individuals, thus causing the age group to increase.
When one thinks of the causal network that has favored premature aging, one cannot rule out the analysis of environmental agents that are aggressors in our environment more closely related to our lifestyle. The approach of these agents may include pollution that favors the increase of diseases of the respiratory system. As a result, the increase of the ozone layer and global warming create favourable conditions for the development of the life cycles of pathogens which, in turn, can lead to increased transmission of diseases by water and food. All this generates direct and/or indirect impacts on human health, especially on more advanced age groups, where the organic condition hinders the process of fighting these aggressor environmental agents. There is therefore an urgent need to realise that the basis of our problems lies in the lack of human-environmental interaction.

Keywords: Aging, Environmental Health, Pandemia, Covid-19

THE CONTRIBUTION OF THE 17 SDGS TO GLOBAL HEALTH

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Our planet faces enormous economic, social and environmental challenges. Aware of these weaknesses, the United Nations (UN) implemented Agenda 2030 in September 2015, which is based on 17 Sustainable Development Goals (SDGs).

SDGs are a global agenda adopted during the United Nations Summit on Sustainable Development consisting of 17 goals and 169 targets to be achieved by 2030, some of which are: clean water and sanitation, renewable and affordable energy, decent work and economic growth. The topics can be divided into four main dimensions: social, environmental, economic and institutional.

Health is full physical, social and mental well-being and not only the absence of disease, but also all environmental changes. Thus, all the changes that occur on the planet (global warming, excessive exploitation of resources,...) have a direct impact on the health of the planet and of populations given the interaction between all ecosystems.

Thus, the 17 objectives (SDGs) have a significant influence on the proper functioning of the "health of the planet", since they aim to protect the planet from degradation through sustainable consumption, production and management of natural resources by taking measures to slow down climate change, such as ensuring that all human beings can enjoy a prosperous and full life and that economic, social and technological progress occurs in harmony with nature.

In conclusion, the proposed measures are intrinsically linked to the adequate development of the planet and should apply sustainable practices in order to minimize disturbances to the environment.

Keywords: Earth, SDGs, United Nations, Sustainable Development, Populational Health

SUSTAINABLE MOBILITY - RESOURCE MANAGEMENT AND POLLUTION

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Sustainable Mobility - resource management and pollution

Sustainable Mobility is the ability to meet the needs of society in move freely access communicate transaction and if freely, access, communicate, transact and establish relationships, without sacrificing other human and ecological values today and in the future.

In the elaboration of the diagnosis of the existing situation we have the identification and characterization of the main problems to the development of a sustainable mobility (either at presente or medium term), covering: Matching supply and demand for transport and distribution modal; Impacts of transport on the environment, in particular with regard to quality from the air, to noise and accident. In addition, it is also present the typification of the problems according to the aspects that more condition or contribute to their solution: Economic (employment and motorization); Demographic (evolution of the population, its age structure, and family size); Social and cultural (habits and ways of using the city); and Transport system (offer and relative attractiveness of the different modes).

In the Definition of Objectives and Concept of Intervention we find the identification of the specific objectives to pursue in terms of sustainable mobility in the study area, namely in the following areas: Accessibility to jobs, schools, commerce and services; Parking; Public space and its allocation to different modes and functions; The quality of the environment is also verified, in particular with regard to air quality and noise; Travel safety, especially in residential areas, the pedestrian movement and access to schools.

The environmental health technician acts in the sanitary control of the environment and is responsible for detecting it, prevent and correct environmental risks to health.

Keywords: Sustainable Mobility, environment, transport system, environmental health technician

COVID-19 AND WORKING CONDITIONS

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The first cases of infection by coronavirus (Covid-19) began in a market in the city of Wuhan, circumscribed in China.

The Sars-Cov-2 virus is considered to have bat species and pangolin as hosts, both of which are consumed as exotic food in certain regions of China.

Host-to-host transmission comes during close exposure to the infected subject, through the spread of respiratory droplets emitted when a contaminated individual coughs, sneezes, or speaks. These particles can be instilled or settle into the mouth, nose or eyes of people who are nearby.

In order to prevent further spread of the virus, certain countries worldwide have gone into lockdown. In fact, the solution found by companies in order to avoid economic stagnation was telework. Thus, teleworking is considered to be a provision of labour services which can be accomplished remotely.

We get advantages and disadvantages of this solution. Workers have now the supremacy to choose the place where they want to work, benefit from greater flexibility of time, are enabled to a great freedom and autonomy and their expenses are considerably reduced, since its now possible decrease travel and meal costs. On the other hand, the human beings are now subject to a greater workload, social isolation, blocking of creativity, possibility of expanded working hours, less productivity, mixing of personal and professional life, shortage of motivation and higher susceptibility to disagreements and discussions due to the lack of regular contact so distance communication has to be well worked.

In short, we understand that "Telework gives the feeling that you have never worked so hard in life, it is much heavier and much less efficient" than face-to-face work. (Castro Caldas,J.)

Keywords: Covid-19, telework, isolation, flexibility, autonomy

ECOLOGICAL FOOTPRINT, CONSUMPTION PATTERNS AND THE FUTURE OF HUMANITY

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The ecological footprint is linked to the growing global demand for consumer goods, which puts the planet's main natural resources at risk. Industry and consumers are often unaware of the level of impact this requirement can have on the environmental balance. The ecological footprint is currently used worldwide as an indicator of environmental sustainability.

Consumption patterns are specific models to which consumption obeys, depending on the conditioning factors (time, space, income and culture). Our ecological footprint depends on the lifestyle we lead. The way we feed ourselves, the products we buy and how we move around in our city are some important points when assessing our impact on the Earth. The Ecological Footprint is almost always associated with carbon dioxide emissions, but this is only the second most relevant component. Food is the main cause of the Ecological Footprint.

The food consumption of citizens in Portugal has led to an increase in the Ecological Footprint. Few still care about how their food choices contribute to increasing their Footprint. If everyone in the world had the same eating habits as the Portuguese, it would take about 2.5 planets to replenish the natural resources expended by May.

In response to environmental pressure, the Environmental Health Technician, who acts in the health control of the environment, is responsible for detecting, identifying, analysing, preventing and correcting current and potential environmental health risks that may be caused by natural phenomena or human activities.

To reduce our footprint, we must re-evaluate our daily habits and adopt lifestyles that help the environment, we can consume less water and energy, reduce the use of cars, always preferring public transportation, bicycles or even a walk, produce less waste, reuse and recycle products, among other attitudes that can make a difference.

Keywords: ecological footprint; consumption patterns; food choices

CLIMATE CHANGE AND RESPIRATORY DISEASES

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Climate change represents an unprecedented emergency. Never before has destruction been so great and so swift, and governments and the international community are failing to combat the climate crisis. Climate change worsens respiratory diseases. Desertification and burning lead to an increased risk of natural disasters. These climatic consequences can aggravate these kinds of diseases. Climate change, particularly global warming, will gradually contribute to a spread of respiratory problems.

The main gases in the atmosphere are nitrogen and oxygen. Together they make up about 99% of the atmosphere. There are other gases, in small quantities, among them greenhouse gases (GHGs). The greenhouse effect is a natural process that determines the Earth's climate and makes the Earth's temperature higher than it would be in the absence of the atmosphere.

The increase in atmospheric concentrations of atmospheric pollutants, promote airway aggression and consequent development of inflammatory processes that will also be involved in the increase of cardiorespiratory morbidity and mortality.

Due to the growing evidence, it is important to recognize the impact that climate change has on public health, assessing its importance in the incidence of respiratory pathologies, the increase of chronic conditions and mortality of populations.

Therefore, it is crucial to infer possible strategies that can reduce the vulnerability of populations through the implementation of prevention and adaptation measures aimed at reducing lethality and social dysfunction associated with the effects of climate change.

Keywords: Climate change; greenhouse effect; natural disasters; respiratory diseases.

WORK-RELATED DISEASES

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According to the Directorate General of Health (DGS), Occupational Health is an area of intervention that values the workplace as a privileged space for the prevention of occupational risks, the protection and promotion of health and the access of workers to health and safety services. A work-related illness is the set of several illnesses that can cause changes in the health and well-being of the worker, preventing extrinsic factors of the professional environment such as atypical respiratory problems, musculoskeletal injuries, eye problems, etc. The origin of this is not only from the working environment, since it can develop independently of the contribution of the labour factor to its contraction.

The goal of this work is to identify the various illnesses that originate in the workplace, to make the population aware of which professions are most at risk of developing these illnesses, and which preventive measures have been taken by an environmental health technician related to them, and to distinguish between occupational illness and occupational disease.

Finally, work-related illnesses can have a major impact on the health of professionals, so an environmental health technician does not participate actively in the treatment of the illness, but rather provides training in order to pass on the appropriate knowledge to workers and indirectly prevents its emergence.

Keywords: disease, work, prevention, professionals, occupational health

PSYCHOSOCIAL RISKS AND OCCUPATIONAL STRESS

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This work aims to address psychosocial risks as well as its prevention, mental health, burnout concepts, occupational stress and the role of the technician in this area. A healthy mind is an important tool in the world of labor, and the changes that constantly occur in it have strong impacts, both at the physical and psychological levels of the workers.

Mental health is the basis of general well-being, since "there is no health without mental health". When we consider mental health we are referring to: ability to adapt to new circumstances, to overcome crisis, to recognize limits and signs of unease, to develop a critical sense, to establish satisfactory relationships with other members of the community and to have life projects.

Psychosocial risks are the result of dysfunctions in the conception, organization and management of work, which can have psychological, physical and/or social repercussions. These can be anticipated without considering the size or type of a company. As such, they can be solved in the same manner as other health and safety risks in the workplace.

Occupational Health has as its main purpose the prevencion on occupational risks and the promotion of workers' health. The performance in this domain implies an interdisciplinarity between professionals from two areas: Health at Work and Safety at Work.

The methodology used in this work was a pre-existing bibliographic review. With this research we concluded that greater attention to the promotion of mental health and the prevention of psychosocial risks is necessary to improve workers' performance and profitability.

Keywords: psychosocial risks, occupational stress, mental health, burnout, occupational health

OSH BENEFITS

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Occupational Health is a specific sector of the large area of health, which is responsible for the prevention of workers' diseases. This area is focused on the quality of life of the worker, offering employees a physical, mental and social well-being in a favorable work environment. In this way, it is possible to prevent the possible risks to which the worker is exposed in the work environment where he carries out his activities.

One of the areas of Occupational Health is Occupational Safety and Health (OSH) this concerns a series of standards and procedures that are legally required of employees and the company.

During this work we will address the advantages that are the result of a correct application of the measures proposed by Safety and Health at Work.

Currently, it is possible to state that any company obtains considerable benefits from the investment in OSH. Simple improvements can increase the competitiveness, profitability and motivation of workers, which makes their performance when performing a job better and better. The application of a good OSH management system ensures an effective framework to prevent or minimize accidents and health problems. A company where accidents and health problems are minimized is a company that shows greater safety to potential investors thus increasing their success.

Keywords: Occupational Health, Health, Safety, Work, Prevention

WOMEN AND SAFETY AND HEALTH AT WORK

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Health at Work is integrated in a more comprehensive concept of Occupational Health or Health and Safety at Work, which aims at the prevention of occupational risks and the protection and promotion of workers' health. While Health at Work has as objective the prevention and diagnosis of professional diseases and the promotion of health, Safety at Work implies the development of activities that aim at the identification/evaluation of risks to which workers are exposed and the organization of prevention and protection measures.

The participation of women in Safety and Health at Work is as important as that of men.

Normally, in companies, men and women have different characteristics and therefore occupy different jobs, but this is not enough to determine the performance of the functions. It is necessary to evaluate communication, leadership, experience, training and skills that are independent of gender.

It is increasingly common to find female workers in construction, road transport, aviation and even in the army, sectors in which traditionally the male sex prevails.

The first thing to be done is to value female professionals. Indeed, women collaborate positively for the continuous improvement in work safety. In general, they can act in Safety and Health at Work in two ways:

- in leadership positions ;
- in operational involvement and participation.

Women in operational positions contribute to the improvement of the work environment, from the assessment, planning and control of risks.

Keywords: Occupational Safety and Health, Worker, Health Promotion, Woman

GREEN JOBS

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The concept of "green jobs" concerns several types of professionals, from the most diverse areas. These are jobs capable of contributing to the preservation and/or recovery of the environment, the objective being that the jobs become sustainable and provide good working conditions and safety to their workers.

For the realization of this article, a bibliographical research on the subject was carried out, gathering all the most relevant information in order to share it with the population.

The main objectives of this work are to acquire knowledge about the concept of green employment, to perspective the future evolution and to emphasize the importance of safety and health at work and also to approach possible measures to turn pre-existing jobs into green jobs.

Nowadays, it is essential that there are people and professionals who are increasingly aware, trained and informed about the importance of protecting the environment. Therefore, it is necessary the existence of Economy-Environment an relationship, as balanced as possible. Green jobs then become an effective bet for the preservation of the environment, adopting more sustainable measures and starting to think before adhering to any action that may negatively affect our planet. We hope that, in the future, this reality will reach more comprehensive proportions and that all the jobs that already exist will get closer and closer to the reality that are the green jobs, if, entirely, it is not possible.

Keywords: Green-jobs; environmental health; Economy-Environment; future; sustainable

MUSCULOSKELETAL INJURIES

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This work was carried out within the curricular unit of Occupational Health where the theme of Musculoskeletal Injuries (MSDs) is addressed, specifically on the causes, risk assessment, action plan and prevention, research on MSDs related to work and European legislation. These diseases are syndromes of chronic pain that occur in the exercise of a given professional activity, and therefore are called Work Related Musculoskeletal Injuries (Whiplash) and are the most common in Europe.

Work-related MSDs mainly affect the upper limbs but can also affect the lower limbs, depending on the area of the body affected and the risk activity that has been developed. The pain varies from mild pain to more severe clinical situations, where dismissal from work or medical treatment is necessary.

Despite the fact that they are currently widely spoken and the various actions related to the aspects of their diagnosis and prevention, they are not acting in a planned manner in the development of the best strategies regarding the working conditions from the perspective of their prevention. Despite a very high cost for the employers, fighting the MSDs helps in the improvement of the workers' lives, and is fully justified from an economic point of view.

Keywords: Professional activity, Work related musculoskeletal injuries, Musculoskeletal injuries

OVERWEIGHT - A CASE STUDY

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BACKGROUND: A man, resources technician, with 39 years old, measures 1.81m and weighs 92kg attended a nutrition clinic appointment. He does not practices any type of physical activity. The subject presents a BMI of 27.9kg/m2, corresponding to overweight, a complex chronic and recurrent disease of physiological, psychological and social origin.

The main therapeutic objective is weight loss and prevention of pathologies associated with being overweight, so the prescribed diet aims to reduce weight by about 10% (± 6 months) and improve the metabolic profile.

CASE DISCUSSION: The prescribed diet was hypocaloric, hypolipidic, free of added sugar and rich in fiber. To calculate the TEE we use the current weight that corresponds to 3029 kcal to which applies a deficit of 500 kcal, resulting in 2529 kcal (TEE), 348g of carbohydrates (55%), 126g protein (25%) and 70g of lipids (20%).

The nutritional intervention focused on the identification and correction of dietary deviations, promoting changes in eating behavior also known as food education. With weight reduction it will be important to set realistic goals in order to adapt the rate of weight loss. It is recommended the intake of 1.5L of water, chew slowly learning the flavor of food and the practice of regular exercise (for example, walking 30-45 minutes daily).

CONCLUSION: Considering the individual's current condition, with this therapeutic proposal, weight reduction is expected, afterwards it is important to avoid weight gain in the long term, being extremely important the self-control.

Keywords: "Overweight"; "Case study"; "Food education"; "Hypocaloric diet"

MALNUTRITION AND HYPERTENSION- A CASE STUDY

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Background: This is a 73 year old male with a current weight and height of 55kg and 1,78m. He was admitted to the Continuing Care Unit, diagnosed with malnutrition and hypertension, who is completely dependent with chronic alcoholism. Due to the fact that he has a very deteriorated dentition, he ends up having pain in chewing solid foods and, lately, he has frequent choking episodes, combined with difficulties in the swallowing of liquids. The main therapeutic objective is to treat malnutrition, increase weight and avoid episodes of choking and chewing pain.

Case Discussion: For the calculation of basal metabolic rate the Harris-Benedict formula was used, complementing with the calculation of estimated energy requirement, taking into account that he is a hospitalized patient and that, therefore, thermic, activity and disease factors enter. The basal metabolic rate result was 1497,2kcal/day, giving a estimated energy requirement of 1796,6kcal/day. A mechanical soft, hypercaloric and hyperprotein diet was applied. Based on this, the distribution of percentages by macronutrients was: 20% protein, 25% lipids and 55% carbohydrates.

Conclusions: It is expected that this subject increases weight, without pain in chewing and frequent choking, while managing to make the necessary intake of all nutrients. This way, the patient will no longer be malnourished and will be able to overcome the loss of muscle mass.

Keywords: malnutrition, dysphagia, alcohol consumption, choking episodes

CROHN'S DISEASE – A CASE STUDY

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A female patient, 70 years old, retired and with a current weight of 65 kilograms and 1,81 meters height (BMI 19,8 kg/m2), presenting low values of pre albumin (8mg/dl) and increased reactive C protein, checked into the Medical Service I, where she stays hospitalized after the confirmation of the diagnosis of Crohn's Disease (CD). CD is an inflammatory bowel disease that can affect any part and any layer of gastrointestinal tract, with formation of ulcers, that may be continuous or discontinuous.

The main goal was to improve patient's nutritional condition, decrease/mitigate the symptoms providing her an improvement in the general condition. Nutritional Risk Screening Tool 2002 was applied, obtaining three points meaning "patient in nutritional risk".

A mechanical soft, low residue, high protein, hypercaloric diet was prescribed. This consisted of NET=2126,9 kcal/day, according to the distribution of 55% carbohydrates (304,6g), 25% lipids (61,5g) and 20% proteins (110,8g).

The diet was implemented and after five days, the nutritionist re-evaluated the patient. It was verified an upgraded in symptoms with a decrease of dejections number, absence of liquid stools, less frequent epigastric pain, replacement of electrolytes and hydration and improvement biochemical parameters (higher levels of pre-albumin) leading to a better general condition and weakness.

After the nutritional assessment, the patient was discharged from hospital. It was provided a list of prescribed and outlawed foods in order to prevent a recurrence. A nutritional appointment was scheduled for three months later, expecting waiting for the acute phase to be overcome (improvement of symptoms).

Keywords: Crohn's Disease, diet, inflammatory bowel disease

OBESITY – A CASE STUDY

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A 55-year-old female patient, with height of 1.61m and weighing 104.8kg gained weight after pregnancy and was diagnosed with obesity class III, holding a BMI of 40.4 kg/m2. Previously, she attended Natural House but with no results. The patient has a family history of obesity and metabolic syndrome, has intestinal constipation and does not practice physical activity. The analytical results showed upper limit glycemia values and high total cholesterol and triglycerides, which contribute to the risk of cardiovascular diseases.

The aim was gradual weight loss, by changing eating and behavioral habits, and improving symptoms, comorbidities, biochemical parameters and encouraging the practice of physical activity.

The nutritional intervention that we selected was based on the calculation of BMR and TEE through the real weight of the patient by using the predictive equations of Harris-Benedict and we obtained, in accordance, 1692.4 kcal and 2606.3kcal. Then, 500 kcal were subtracted from the TEE in order to generate a caloric deficit and a realistic and achievable diet plan. Therefore, a total energy value of 2106.3 kcal was established and its distribution by macronutrients was: 55% carbohydrates, 20% protein and 25% lipids. The diet prescribed was hypocaloric, hypolipidic, free of added sugars and high in fiber. The main recommendations were increased physical activity practice (3x/week walks), increased water intake (1.5-2L/day), reduced saturated fats and added sugars.

A gradual weight loss, about 0.5-1.5kg/week, an improvement of constipation symptoms, an improvement of biochemical parameters and a change in eating habits are expected. The next appointment should be scheduled within 2 weeks to one month.

Keywords: obesity, constipation, dyslipidemia, nutritional intervention, recommendations, diet

OBESITY - CASE STUDY

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Background: The case study reports to a 48-year-old male that has been experiencing severe knee pain and overall tiredness, besides he refers that he has gained weight since he stopped smoking. His clinical condition indicates overweight, becoming necessary to implement a nutritional intervention.

Obesity is a chronic disease associated with many comorbidities and has a multifactorial etiology, involving factors such as diet, environment and genetics. This disorder has several lifestyle implications and should be corrected as soon as possible.

The main therapeutic objective is weight loss and prevention of pathologies associated with obesity, consequently improving eating behavior.

Case discussion: To determine basal energy requirements the Harris-Benedict equation for males was applied, using the current weight (100 Kg), resulting in 2055 Kcal. To predict the total energy requirements (TER), an activity factor of 1,55 was considered, since the patient has an active job as a mechanic and dance classes twice a week, resulting in 3504 Kcal. Considering that the patient was in a pre-obesity state (IMC= 28Kg/m2), we decided to withdraw 500 Kcal of his TER, so that a calorie deficit can be applied. Therefore, the meal plan was recommended to reach 3004 Kcal, being 55% of the total Kcal value to carbohydrates, 20% to protein and 25% to lipids. The diet was implemented and recommendations for healthy habits were given, like increase water intake and vegetable consumption, and reduce fried/processed foods and alcoholic beverages.

Conclusion: It is expected that the patient will reduce his weight by about 10% (± 6 months), improving the metabolic profile, quality of life and preventing acute and chronic complications associated with obesity.

Keywords: “Obesity”, “Hypocaloric Diet”,

OBESITY - A CASE STUDY

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A 55 year-old woman with a family history of obesity and metabolic syndrome reported weight gain after pregnancy, constipation and lack of time to practice physical ativity (PA). The patient was diagnosed with class III obesity (IMC = 40.4 Kg/m2), an excessive accumulation of body fat with a negative impact on health. The lab results showed borderline glycemic values, as well as hypertriglyceridemia and hypercholesterolemia, responsible for increasing cardiovascular risk.

The aims were to achieve a gradual weight loss and to improve associated symptoms and comorbidities, preventing acute and chronic complications, as well as to promote nutritional literacy and the regular practice of PA.

Basal energy requirements were 1692 Kcal, calculated using Harris-Benedict equation considering the current weight of the patient (104.8 Kg). Total energy requirements (TER) were estimated in 2606 Kcal (PA factor 1.4). Energy intake was determined subtracting 500 Kcal to the TER, resulting in 2106 Kcal, distributed 20% to protein, 25% to lipids and 55% to carbohydrates.

The prescribed diet was hypocaloric, hypo lipidic, low in added sugars and high in fiber. In addition to the dietary plan, it was also recommended a reduction in the consumption of saturated fats and added sugars, as well as an increase in the daily water intake (between 1 and 1.5 L) and PA (30 min walking 3x/week).

It is expected a gradual weight loss, as well as an improvement in the biochemical parameters and constipation symptoms. The plan will be updated according to the motivation and evolution of the patient.

Keywords: Nutrition, Obesity, Dyslipidemia

MALNUTRITION IN THE ELDERLY- A CASE STUDY

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Background: A 82-year-old female patient, weighing 42 kg and bedridden was admitted to urgency service. Her height was 1.67m and the vital signs were: blood pressure - 118 / 78mmHg; temperature - 38ºC and oxygen saturation - 87%.

She showed breathing difficulties, with feverish temperature for about 2 days, and a type III pressure ulcer was detected in the sacral area.

The biochemical results revealed that pre-albumin, albumin, total protein and creatinine are below wich reveals a low protein intake and C- reactive protein is high wich reveals an infection. Protein depletion was confirmed with the state of malnutrition identified through the nutritional risk assessment tool, MNA (score: 13.5).

Also was diagnosed a bilateral bacterial pneumonia that corresponds to an inflammation of the lung parenchyma characterized by the proliferation of microorganisms.

The therapeutic objective is that the patient recovers from her infection state and improve her nutritional status.

Case Discussion: In order to initiate a nutritional intervention, the reference weight was calculated, corresponding to 63.8 kg.

Basal metabolic rate of 1183kcal was determined using the Harris-Benedict equation. To the estimation of total energy requirements (TER), 1.2 was assigned to activity factor, 1.3 to disease factor and 1.1 for thermal factor, which corresponds to 2030 kcal. The percentages attributed to macronutrients were: 55% of carbohydrates, 20% Proteins and 25% Lipids of TER.

Conclusion: Based on these data and calculations, an adequate diet plan was developed for the patient in order to improve her nutritional status in the long term.

Keywords: malnutrition; nutritional risk; mini nutritional assessment; pneumonia; nutritional intervention

CROHN'S DISEASE- A CASE STUDY

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Backgound: MT is a 77-year-old female patient with a current weight of 65 kg (usual weight of 70-72 kg), height of 1.81 m and missing some dental pieces, admitted to the medical service I. The patient shows epigastralgia, diarrhea with 7 days of evolution, liquid faeces and asthenia.
During hospitalization she was diagnosed with Crohn's disease, characterized by a chronic inflammation, which can appear anywhere in the intestine with inflammation from mucous to serous.
According to the diagnosis, the main therapeutic objective was to reduce the chronic inflammation and improve her nutritional status.
Case discussion: This patient showed a BMI of 19.8kg/m2, a reference weight of 74.1kg, a basal energy requirments of 1330.5kcal and total energy requirements (TER) of 2328.4kcal, considering 1.25 as activity factor and 1.4 as disease factor. TER were distributed by macronutrients: protein 20%, lipids 25% and carbohydrates 55%.
It was intended to re-establish electrolytic levels and rehydrate. A very low-residue diet, hypercaloric, hyperprotein and hypolipidic (with MCT) and a supplementation of vitamins and minerals was implemented. The patient was advised to take several meals a day in few quantities.
Conclusions: The restoration of a good nutritional status, a decrease of the gastrointestinal inflammation and the regaining of the usual weight are all expected after nutritional intervention, providing the patient with a better quality of life.

Keywords: Crohn's disease, very low-residue diet, gastrointestinal inflammatory disease.

CLINICAL CASE: CELIAC DISEASE

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Background: A male patient, 22 years old, with 1.71m height and currently weighing 62kg is presented. Since October 2019, he started to show symptoms such as watery diarrhea without blood loss and weight loss of 8 kg in a month. He was admitted to the Gastroenterology Unit, where he performed several exams and laboratory analysis, being diagnosed with celiac disease. This disease is an autoimmune disease of the intestine, that causes a state of poor absorption resulting from exposure of the small intestine to gluten.

The main therapeutic objective will be to improve the patient's symptoms and nutritional status, prescribing a completely gluten-free diet.

Case Discussion: BMI (21.2 kg / m2) and the reference weight (65.7 kg) were calculated. Basal (1671.6 Kcal) and total (2607.8 Kcal, TER) energy requirements were determined. Regarding the distribution of macronutrients, 20% protein, 50% carbohydrates and 30% lipids, were considered, from TER. A plan of 130.4 g of protein, 326 g of carbohydrates and 86.9g of lipids was prescribed. Thereby, a general gluten-free diet was developed, divided into 6 meals throughout the day, taking into account his preferences but also the importance of including better eating habits.

Conclusions: After the implementation of the diet, a new assessment of the patient was made, verifying that he no longer had symptoms and that he had recovered his weight lost. Thus, dietary education was carried out, providing him a list of foods permitted, prohibited and dangerous, as well as the different forms of cross-contamination and the respective recommendations in order to avoid it.

Keywords: “Celiac disease”, “Gluten-free diet”, “Autoimmune disease”

CELIAC DISEASE - A CASE STUDY

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Background: A male patient, 22-year-old, with 1.71 m, student in Coimbra, was admitted to the emergency service of the hospital. The patient had watery diarrhea, joint pain, edema in lower limbs and 8kg weight loss in a month, weighing 62kg. After testing, he was diagnosed with celiac disease, a chronic autoimmune disease that arises following the ingestion of gluten in genetically susceptible people. It is characterized by the progressive destruction of the mucosa of the small intestine. Celiac disease is a common pathology that interferes with the quality of life of patients. This is often confused with other gastrointestinal symptoms.

The main objective is to encourage the adherence of nutritional therapy by the patient to improve the symptomatology and metabolic alterations through a balanced diet and adequate to celiac disease.

Case Discussion: A dietary plan consisting of a gluten-free and low-fiber diet was implemented. This consists of 2711kcal/day, 89g lipids, 336g of carbohydrates, 135g of proteins and 52.2g of fiber, according to the distribution of macronutrients and the appropriate energy needs for the good nutritional status of the patient. The proposed food plan was divided into 6 meals.

It is recommended to the patient to avoid as much as possible exposure to foods containing gluten, such as flour, oats, rye and wheat. Thus, it should adopt responsible behaviors and attitudes, such as the careful reading of labels, as well as create habits that prevent cross-contamination.

Conclusions: After intervention, the patient revealed a gradual improvement in his food intake from a nutritional point of view, metabolic and associated symptomatology since he excluded gluten and decreased fiber consumption from his daily diet.

Keywords: "Gluten-free diet", "Celiac disease"

MALNUTRITION AND INFLAMMATORY STATE - A CASE STUDY

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Elderly female, 82 years old, 42 kg and 1.67 cm with BMI = 15.1 kg/m2, bedridden with home support. Was admitted to the Emergency Unit with breathing difficulties and feverish temperature. Also presents type III pressure ulcers in the sacral zone and bilateral pneumonia. After nutritional assessment the patient was diagnosed with malnutrition and inflammatory state.

Nutritional therapy was adapted to the treatment of infections in order to reconvert the inflammatory process and improve the patient's general condition. It's important to highlight that the prescribed diet was adequate to the patient's tolerance and preferences, taking into account the Total Energy Requirements (TER) and correction of nutritional deficiencies.

The diet plan designed was hypercaloric, hyperproteic (1.5-1.7 g/kg reference body weight), using hypercaloric and hyperprotein supplementation. The Basal Metabolic Rate (BMR) of 1183 kcal was predicted using Harris-Benedict equation, which was multiplied by an activity factor of 1.2 (bedridden), a fever factor of 1.1 (38ºC) and a stress factor of 1.3 (moderate infection/soft tissue injury) to determine the TER (2030 kcal). A macronutrient distribution was designed with 50% carbohydrates, 25% proteins and 25% lipids. Was intended to guarantee an increased number of meals and a better distribution of macronutrients throughout the day, giving priority to proteins of high biological value.

After a week of diet therapy in an hospital context, an increase in weight is expected, and a consequent improvement in the general condition of the patient, namely a improvement of the inflammatory process.

Keywords: bilateral pneumonia, malnutrition, inflammatory status

MALNUTRITION - A CASE STUDY

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Background: A male patient, 73 years old, was admitted to a Continuing Care Unit. Moves around in a wheelchair, being totally dependent on third parties. He has a deficient natural dentition, which not only hinders adequate chewing but also causes a severe decrease in food intake. The patient has hypertension and is malnourished, with 15 points on the MNA scale.

The main objective of the therapy is to reverse the clinical state of malnutrition and to control the already prevalent hypertension.

Case Discussion: The reference weight calculated (55Kg), and the basal (1497,2Kcal) and total energy requirements (1871,5Kcal) were subsequently obtained. The total caloric value was distributed among the various macronutrientes, of which, 93,6g of protein, 233,9g of carbohydrates and 62,4g of lipids and the food plan was elaborated, taking into account the patient's food history, deficient dentition and difficulty swallowing fluids. A mechanical soft diet was implemented due to the difficulty in chewing and swallowing some food consistencies.

Conclusions: Towards this therapeutic proposal, it is expected to reverse the patient's malnutrition, as well as to control the condition of hypertension.

Keywords: Malnutrition; mechanical soft diet; hypertension

OVERWEIGHT – A CASE STUDY

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Background: Mr. JS is a 39 years old man and works as a human resources technician. He weighs 92 kg and doesn't practice any type of physical activity. About five years ago, he stopped smoking and gained 20 kg since then. He has always presented normal analytical values. The patient has overweight with a body mass index (BMI) of 28.1 kg/m2, which represents an excessive accumulation of body fat mass.

The main goal of the therapy is weight loss, based on education for the adoption of healthier eating habits.

Case Discussion: To calculate the patient's energetic needs, we used the equation of basal metabolic rate (BMR) and total energy expenditure (TEE). Thus, to calculate BMR (1967 kcal/day) and TEE (3029 kcal/day), we used the patient current weight and, to the value of TEE, a restriction of 750 kcal was applied, obtaining 2279 kcal/day. Subsequently, the percentages of each macronutrient to be eaten daily were defined, obtaining the following values: 20% proteins = 114 g / 25% lipids = 63.3 g / 55% carbohydrates = 313.4 g.

Finally, the meal plan was designed based on the preview calculations and the new table of food equivalents. Along with the plan were the following recommendations: stop adding sugar in coffee, drink water throughout the day and at mealtime, choose fruit as a dessert, practice physical activity at least three times a week and try to avoid eating out by choosing to take healthy lunch boxes to work.

Conclusions: Is expected the adherence from the patient to the prescribed plan and recommendations in order to achieve a weight that allows him to obtain a healthy BMI.

Keywords: "Overweight", "Caloric deficit", "Healthy eating", "Meal plan"

OBESITY DISEASE: A CASE STUDY

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Background: Our patient is a mechanic, with a very irregular work schedule, working an average of 10 hours a day, with no lunch break established. He showed at the appointment with severe knee pain and tiredness. He also told us that he started to increase his weight since he stopped smoking and that his father was already overweighed. Physical activity was light. After checking the biochemical analysis, he showed high total cholesterol (220mg / dl) and triglycerides (251mg / dl). He has 100kg and 1,89m, has a body mass index of 28.0kg/m2, and is therefore overweight. The essential objective was to promote adherence to nutritional therapy by the patient to improve the metabolic alterations through a balanced diet.

Case Discussion: The most effective method of decreasing energy and consequent weight loss is presenting an energy restrictive diet. This consisted of 2484.5kcal/day, 69g (25%) lipids, 341.6g (55%) carbohydrates and 124.2g (20%) protein. Taking into account that he has no food intolerance, a variated and balanced diet to provide the necessary nutrients was applied. On the other hand, knowledge about the best food options was improved.

Conclusion: We expect that the patient reveals a decrease in weight and gradually changes his food and lifestyle habits.

Keywords: Obesity, overweight, dietary plan, hypocaloric diet.

CELIAC DISEASE – A CASE STUDY

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Background: A 22 years old male patient, with 1,71 m and 62 kg of weight is discussed. His usual weight is 70 kg and he reported to his family doctor the loss of 8 kg during last month along with bloodless watery diarrhea, with at least 10 puffs per day. He also mentioned feeling pain in his knees and ankles joints, with edema in the lower limbs. Due to the severity of the presented symptoms he was sent to the emergency service of the Hospital, where he underwent tests (serological, endoscopic and histological) and was diagnosed with celiac disease. According to the literature, celiac disease is a chronic autoimmune disease with a genetic predisposition, triggered by the ingestion of gluten.

In order to reverse the acute state of celiac disease, a customized diet plan was proposed, appropriated to the patient's condition.

Case Discussion: After an anamnesis and nutritional assessment, BMI, reference weight and total energy expenditure (TEE) were estimated. Based on the data obtained, it was possible to verify that the patient was eutrophic (BMI = 21.2 kg / m2), that his reference weight was 65.7 kg and his TEE was 2607,8 kcal. According to the WHO guidelines, the following macronutrient distribution was prescribed in the dietary plan: 20% protein, 30% lipids and 50% carbohydrates (of TEE).

Considering the information available, a balanced diet was proposed, customized to the patient´s needs, free from gluten and lactose, thus reversing the clinical condition. Before discharged from the hospital, the patient received nutritional guidance about his pathology, so that there is no recurrence of symptoms.

Conclusions: The patient adhered to the suggested diet therapy leading to the reduction of symptoms until they ceased, recovering a good nutritional status. Several nutritional guidelines, a gluten-free diet with special attention to the food labels were mentioned to the patient, in order to maintain the absence of symptoms and prevent future crises.

Keywords: celiac disease, gluten-free diet, case-study

GALENO

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Cláudio Galeno was born in Pérgamo in 129 and died between 199 and 216, with no confirmed date. He started medical studies at age 16/17 in Alexandria, Egypt, where completed medical studies. During the trip down the Nile he contacted with various pharmacological practices of the East, but his stay in Egypt allowed the initiation and training in diagnostic and therapeutic methods.

Galeno based on Hippocratic medicine to create a complex system of pathology and therapy. As a doctor of Emperor Marco Aurélio in court, he made discoveries in anatomy and wrote 500 treatises in Greek on several areas. With his most important work, "On the Use of Body Parts", he established the best ancient treatise on anatomy.

During the provision of care to gladiators, he began anatomophysiological investigations of the gastrointestinal tract, studied the mechanics of breathing, conducted research on the nervous system and hygiene as a profession. He demonstrated that the kidneys processed urine proved that the arteries contained blood instead of water and found a few infectious diseases and how they propagate.

In Rome he performed medical and pharmaceutical activities, having developed pharmacological preparations and formulated doctrines.

He gave importance to the methods of preserving and preparing drugs, categorizing them into three groups: Simplicities, Composite and Purgatives or Vomiting's.

He was the "Father of Pharmacy" for being one of the most prolific authors describing various substances of natural origin, formulas, methods of manipulation and obtained numerous preparations of vegetable substances, being born the name "Galenic Pharmacy".

Keywords: Galeno; Anatomy; Medicine; Pharmacy; Drugs.

PHARMACOPOEIAS

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Pharmacopoeias are official books that follow the scientific and technological evolution of knowledge related to medicines, ensuring the update of their quality.

The term pharmacopoeia first appeared in Basel, Switzerland, in 1561, by Dr. A. Foes, but it was only in the early seventeenth century that it came to be in common use.

In Portugal, the 18th century was the period of pharmacopoeias, the first one was the "Pharmacopea Lusitana" (1704), produced by D. Caetano de Santo António. Currently, there are 49 pharmacopoeias worldwide.

Its mission is to protect Public Health, by preparing monographs of raw materials, active substances and excipients used in their manufacture. They contain specific monographs of the finished product, whether it be medicines or several sanitary products, texts that aim to standardize techniques described in the different monographs, texts concerning some packaging materials and brief references to the materials used, as reagents, in the execution of the different tests .

The Portuguese Pharmacopoeia Commission is an INFARMED advisory body responsible for the preparation, review, updating and interpretation of the Portuguese Pharmacopoeia.

Regarding the frequency of updating and revision, it is very variable, however, pharmacopoeias should, as a rule, have a new edition every three years. The strategies of individual pharmacopoeias differ in geographical terms and for economic reasons.

It is concluded that the main objective of a pharmacopoeia is to promote Public Health by guaranteeing good manufacturing practices for medicines and the quality of its components.

Keywords: Pharmacopoeias; Public health; Medication; Monographs

PORTUGUESE GALENIC FORM

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The Galenic Portuguese form is an official book with the first edition in 2001, and was subsequently published its first addendum, in 2005, by the Technological Center of Medicine of the National Association of Pharmacies.

In this Form, it is possible to find monographs of pharmaceutical preparations, totaling 133 monographs, as well as information on the manipulated medication, the current legislation on this subject, and also several recommendations of technical ity. The addendum included 107 new monographs, equivalent to 156 preparations.

The Portuguese Form is now a fundamental tool for pharmacy professionals, particularly in the preparation of manipulated medicines, both in community pharmacy and in the hospital pharmacy, with greater weight in the area of Pediatrics, Geriatrics and Oncology, since it is in these areas where the medicine often needs to be adjusted taking into account the appropriate dosages and the clinical form of the patient.

The Galenic Portuguese is essential for pharmacy professionals, as it allows standardization and uniformity, improving the quality of medicines produced in Portuguese pharmacies.

Keywords: Pharmacopoeia; Galenic Form; Pharmaceutical Legislation

GENERIC DRUGS

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The increase in expenditure on medicines and the need of it, associated with the aging of the population, has been driving the creation of more effective but, at the same time, less expensive medicines: generic drugs. These are, by definition, ‘‘ a medicine with the same qualitative and quantitative composition in active substances, the same pharmaceutical form and whose bioequivalence with the reference medicine has been demonstrated by appropriate bioavailability studies ’’

We will address the role of generic drugs, as well as their advantages and disadvantages.

They have advantages for the State, for the SNS, and for users: the active substances have been on the market for some time and, therefore, offer a greater guarantee of safety and effectiveness; they are 20 to 35% cheaper than the reference medicine; finally, there is a greater speed associated with the authorization and placing on the market.

However, excipients are used in MG, and there is still no scientific study that proves that they are not responsible for causing adverse reactions, or that it doesn´t make the drug less tolerable.

The share of generic drugs in Portugal has been increasing over the years, with an increase in the number of MG, with a total of 9714 currently authorized. Thus, we argue that we should continue to invest in the development of the MG market.

Keywords: Generic drug; Reference Medicine; Effectiveness; Bioequivalence; Economic

SORTING OR WEEDING

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Sorting or weeding is a process that is part of preliminary operations to obtain powders, in which they can subsequently give rise to medicines and complementary forms (such as tablets, capsules, etc.). It aims at separating inert or altered parts that may have the drug or to eliminate foreign substances.

This work intends to describe the screening process and the contribution to obtaining a purer drug, showing the various ways of performing the technique. The Portuguese Pharmacopoeia and credible websites were used to collect information.

The weeding process also aims to eliminate contaminants from the drug, especially those that can alter its activity, since they can dilute the drug, or change the interaction between the drug and the human organism because these substances can interact with the human organism.

Screening can be performed manually, hand use to separate, for example, leaves and stems, dried fruit peels, and others. Sieve, here sieves are used to separate particles that are adhering to the drug. Ventilation applied when you want to separate light particles, such as dust, from the drug. Washing, a technique only indicated when impurities are so adherent to the drug that other processes do not achieve effective separation.

The technique is essential because it allows the discarding of unnecessary substances at an early stage, concentrating the drug and taking advantage of as much as possible, for a subsequent collection of powders.

Keywords: Pharmaceutical Operations; Post; Screening; Weeding

PHARMACEUTICAL OPERATIONS: COARSE DIVISION

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The pharmaceutical operations of coarse division are portrayed in a simple way as being a process of fragmentation of transformation of physical matter in another galenical form of mechanical form of division of solids.

These operations are a process of drug fragmentation, aimed at making drugs suitable for a more perfect posterior division or to be subjected to certain extractive techniques, namely: the Section, the process of dividing a body into small fragments by means of a cutting instrument, which in turn is usedin plant drugs; the Contusion is somewhat similar to the section, however it is applied in dry and hard substances and is about the reduction of the drug through shocks so even often the material used is the hammer or in the laboratory the mortar; the erasure as the name itself indicates it is a matter of erasing a surface using files or a scraper; the Granulation is linked to the metals in which fragments originate granularly hence its name; and finally the Extinction which is intended for materials of a clay or siliceous nature and consisting of heating or sudden cooling by immersion in cold water.

Keywords: Coarse Division; Section; Contusion; Erasure; Extinction

SIEVING

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Sieving is a mechanical separation, practiced during pulverization of solid particles of different dimensions. It serves to separate solids or parts of a solid material that contains grains with different dimensions or to undo small pellets of substances that have more compact parts, when they should be presented in powder form. Sieving is used to determine the granulometry of a solid material, that is, it allows to determine the size of the material's grains. This mechanical separation made through meshes of an appropriate fabric called sieve. It is formed by a thin mesh, generally surrounded by bronze or stainless metal where powders go mainly for the purpose of reducing the size of the particles and produce powders with desired sizes. The sieve's mesh has defined sizes that produces powders of different sizes: very thick, thick, moderately thick, thin or very thin. Sieving, in addition to being a process used in the pharmaceutical field, it is also commonly used in the areas of mining, agriculture, chemistry, among others.

Keywords: Mechanical Separation; Sieving; Pulverization; Sieve; Granulometry

SPECIAL TYPES OF TABLETS

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The special types of tablets are medicinal products with a pharmaceutical form of a tablet, which have varied forms of absorption and/or administration.

One of the types of tablets are those that dissolve or disintegrate in the mouth. They are usually uncoated, have a slow dissolution, a topical action and a local antiseptic or disinfectant activity. There are also tablets for chewing and sublingual absorption.

The last ones are usually shaped like a lentil of small thickness and size. Is advised the administration after meals.

Effervescent tablets are composed of chemicals associated with certain salts which, on contact with water, dissolve and release gases. They are hygroscopic and should therefore be kept in hermetically sealed bottles/tubes.

Vaginal tablets have a round or oval shape with microbicide local action.

Sterile tablets can be split into two groups: injectable and implantable. The first are water-soluble hypodermic tablets while the implantation tablets are applied to the subcutaneous tissue.

Finally, the tablets for external use, which need to be water soluble, are used in baths and gargles, and are meant to make disinfectant, aromatic, isotonic and astringent solutions.

There are also other special types of tablets such as osmotic, selective release, multilayer and many more others.

To conclude, there are several types of tablets which are called special because they have different characteristics but the same pharmaceutical form. We must consider the intended purpose by choosing the most appropriate type.

Keywords: Tablets; Special Ttypes; Special Tablets; Pharmaceutical Forms

GASTRO-RESISTANT GALENIC FORMS

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The small intestine is one of the main routes of absorption of drugs due to its pH and the large area available for absorption inside. There are drugs that are sensitive to the low pH of gastric juice and need to remain intact when passing through the stomach. For that reason, gastro-resistant medicines were created.

These drugs resist gastric juice so that the active substance of the drug is released only in the small intestine. These drugs disguise the unpleasant taste, protect the active ingredient from environmental factors, protect the gastric mucosa and prevent nausea and vomiting.

One way to make a drug gastro-resistant is by applying an enteric coating. For this coating to be dissolved, is required the contact with a less acidic environment compared to the stomach or the contact with the digestive enzymes present in the small intestine.

The pharmaceutical industry produces several gastro-resistant pharmaceutical forms that have to be tested through a dissolution test compound of two phases: acid phase and basic phase. The amount released in the acid phase is limited to 10%.

The double phase test can be conducted using one container in acidic conditions and another in basic conditions. In this case, the dosage form will be transferred between the two containers. This may be impractical for multiparticulate dosage forms, which will require more time-consuming steps.

Gastro-resistant pharmaceutical forms have numerous advantages such as preventing dissolution in acidic medium, preventing the emetic effect of some active substances and protecting the gastric mucous.

Keywords: Gastro-resistant Drugs; Enteric Coating; Dissolution Test; Acid Phase; Basic Phase

GRIFFIN SCALE

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In 1949, William C. Griffin, introduced a semi-empirical notion of hydrophilic lipophilic balance, Griffin announced that all emulsifiers involve a molecule that combines the hydrophilic and lipophilic groups and the balance of the strength size of these two opposing groups is called H.L.B. For a better interpretation of the scale, it's necessary to define emulsion as a dispersed system containing at least two immiscible phases, thermodynamically unstable as a result of the excess of free energy associated with the surface of the droplets. Griffin expressed the hydrophilic and lipophilic properties on a numerical scale, according to which the surfactant substances are assigned H.L.B values ranging from 1 to 50, increasing as the substance becomes more hydrophilic.

According to the Griffin scale, the very low H.L.B substances, lipophilic, are anti spume agents. Those H.L.B. between 3 and 9 have lipophilic characteristics and constitute emulsifying W/O agents, but above 8 the surfactants begin to express hydrophilic properties, which accentuate by the increase in the respective value of H.L.B.

Thus, the group of substances whose H.L.B. ranges from 8 to 16 includes emulsifying agents O/W, with detergents between 13 and 16 and solubilizing agents between 16 and 18.

In the past, the selection of the most appropriate emulsifying agent for each emulsion was made, by attempts, experimenting with various substances, until one was found that led to the desired results. Currently, thanks to the system developed by Griffin, the selection of the most suitable emulsifying agent for each emulsion has become simpler and more rational.

Keywords: Griffin Scale; Hydrophilic Lipophilic Balance; Emulsions

COLLOIDAL DISPERSIONS

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Colloidal dispersions are a heterogeneous system consisting of two or more substances, in which the dispersed or discontinuous phase is found within the dispersing or continuous phase, in the form of small particles formed by aggregates of molecules (colloids). Colloidal dispersions are medium in size, are visible under the microscope and are thermodynamically unstable. Generally, the appearance of these dispersions is translucent, their particles only sediment by ultracentrifugation.

There are several types of colloidal dispersions: gel (a solid that has a gelatinous and plastic texture due to the interaction of a liquid with solid particles, has a high viscosity); emulsion (dispersion of a liquid in another liquid forming a heterogeneous system that is stabilized by a surfactant); aerosol (they are colloids formed by a liquid or a solid dispersed in a gas); sol (dispersion of solid particles in a liquid or solid medium); Foam (dispersion of a gas in a liquid or solid medium).

Colloidal dispersions can be prepared by agglomeration, (physical or chemical methods) or by fragmentation (physical or chemical methods).

Colloids have several properties, these being instability, Brownian motion, and the Tyndall effect.

Keywords: Particles; Heterogeneous; Colloids; Dispersed Phase; Continuous Phase

EVOLUTION OF CYTOLOGICAL DIAGNOSIS' TERMINOLOGY: LOW-GRADE UROTHELIAL CARCINOMA VS LOW-GRADE UROTHELIAL NEOPLASM

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According to the latest statistics worldwide, Urothelial Carcinoma stands in 11th place in terms of incidence.

It is in this context that urinary cytology appears to us, as an essential tool for the screening of patients, for this type of tumour, and the follow-up of those who have already been treated. Despite having some limitations, the advantages of this method make it excellent for its function. Thus, it was necessary, from an early age, to establish the classification criteria to describe urinary cytology.

This was not a mild task to accomplish, due to several factors, such as: difficulty in strictly defining cytological criteria (which are valid for specific categories); arduous consensus in relation to the atypical category; as well as differences in the acceptance and widespread use of these criteria by pathologists.

For this reason, there have been several classification systems over the years.

In 2016, the Paris System for Reporting Urinary Cytology was published. Its main objective was to identify high-grade urothelial lesions. At the same time, it intended to standardize the diagnostic terminology and reduce the use of terms that were dubious, thus helping the clinical decisions that had to be made.

In order to resist the test of time, the Paris Classification, as any classification system, ought to be unceasingly validated in terms of its clinical efficacy and diagnostical value.

Low-grade Urothelial Carcinoma was one of the designations that changed with the evolution of data, becoming known as Low-Grade Urothelial Neoplasm, according to the Paris Classification.

Keywords: Paris Classification, Urinary Cytology, Low-grade Urothelial Carcinoma, Low-grade Urothelial Neoplasm

SQUAMOUS CELL CARCINOMA

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About one-third of the primary pulmonar malignancies represent squamous cell carcinomas (SQCs), being directly linked to smokers as a result of premalignat alterations accumulated through time.

Some of the common findings in this tumor can be postobstrutive pneumonia and tumor cavitation.

Squamous cell carcinoma can be classified in keratinizing and non keratinizing tumors, the degree of differentiation varying through well-differentiated to poorly differentiated.

Classical characteristics of this carcinoma combine atypically shaped keratinized cells (“tadpoles” and “fiber cells”), small irregular shaped hyperchromatic nuclei with irregular chromatin distribution, scant cytoplasm and tumor diathesis.

We will discuss a seventy years old pacient bronchial brush, with tumor cavitation suspicion and nonproductive cough. Preserved in liquid-based (ThinPrep), the sample was analysed by Papanicolau coloration.

Based on the cytological alterations found, squamous cell carcinoma is our diagnose suggestion.

Keywords: Squamous cell carcinoma, keratinizing tumor, tumor diathesis

COMMERCE AND SERVICE - FUNERAL AGENCIES

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Commerce not only links, but also structures communities, economies and the environment. As the challenges of global development are progressively more multidimensional and interdependent, trade policy becomes a crucial element in seeking balance in human, economic and environmental development. Thus, strategies and sectors that offer greater legal security, and that foster a more favorable environment for access and exercise of the activities in question are needed, while simultaneously creating conditions for economic development, based on a solid legislative framework.

The object of study, included in the area of commerce and services, is the funeral activity, which includes the rendering of services related to the organization and execution of funerals, transportation, burial, exhumation, cremation, expatriation and transfer of corpses or remains already buried. The funeral agency is the individual or collective person who has as its main purpose the funeral activity.

This work is intended to set out the guidelines to which these establishments must abide for the application of adapted services, promoting the safety of workers and ensuring a work of excellence.

In this regard, the work focused on research on the conditions of control and hygiene in funeral agencies, particularizing the legal framework of the establishment, based on Decree-Law No. 10/2015, which is a facilitating tool for the access and exercise of this activity. A checklist was also carried out, backed by the same legislative framework. The funeral activity requires extreme quality in the procedures of its professionals and in the correct fulfillment of the services performed, without forgetting the interests of those who use them.

Keywords: trade, legal regime, funeral activity, security, checklist

TOURIST ENTERPRISES

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This work was carried out within the curriculum unit of Habitat Management. As a methodology, a bibliographic research on the subject was carried out and a checklist was prepared to support the study of assisted observation, based on the legislation in force.

Tourism Enterprises is understood as the establishments that provide accommodation services, for remuneration, with an appropriate set of structures, equipment and complementary services, under the Legal Regime of Tourism Enterprises (RJET). The following can be considered tourist enterprises: hotel establishments; tourist villages; tourist apartments; tourist complexes (resorts); housing tourism enterprises; rural housing tourism enterprises; camping and caravaning parks.

The main legal and normative provisions are: Decree-Law nº80/2017 of 30 June; Decree-Law nº228/2009 of 14 September; Decree-Law nº39/2008 of 7 March which in its current version (4th alteration) is republished Decree-Law nº 186/2015, of 03 September; Decree-Law nº243/86 of 13 September; Ordinance nº 39/2015, of 25 September.

The work performed by the Environmental Health Technician (TSA) is important, not only for the Public Health and Safety, but also for the development and operation of the activities of the installations, with the objective of promoting the quality of life of the users, as well as the environment of the installations.

Keywords: Tourist Enterprises; Legal Regime of Tourist Enterprises (RJET); Environmental Health Technician (TSA)

CAMPING SITES

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The objectives of this work are to highlight the requirements of the campsites, such as the surface for the installation of equipment, electric power network, water supply, sanitary installations and their location, common installation equipment, and also to highlight the operating requirements.
Camping parks are those enterprises installed on duly delimited land and equipped with structures destined to allow the installation of tents, trailers, caravans, motorhomes and equipment necessary for the practice of camping.
These may be public or private, depending on whether they are intended for the general public or only for the associates or beneficiaries of the respective owners or operators.
The Environmental Health Technician (TSA) acts in the sanitary control of the environment, being responsible for detecting, identifying, analyzing, preventing and correcting current and potential environmental health risks that may be originated by: natural phenomena or human activities; by the evolution of population settlements and by the functioning of services, establishments and places of public use.
The legal and normative provision used was Decree-Law No. 39/2008 of March 7.
The methodology used was the bibliographic research and the elaboration of a checklist to support the study of assisted observation, based on the main points of the legislation in force.
As campsites are a structure that offers residence to a large number of people, throughout the year, it is significant that public health technicians have a great deal of attention in monitoring these spaces.

Keywords: Camping Sites, Caravans, Motorhomes, Environmental Health Technician, Requirements

MARITIME HEALTH

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While working on this project we aim to alert to the need to intensify the epidemiological surveillance and control of communicable diseases that are in danger of international dissemination, and to strengthen and maintain response capacities in this area.

To this end, we have carried out a bibliographical survey and carried out a checklist based on the legislation in force, to support the study of assisted observation.

Border health standards emerged and established themselves in the world from January 17, 1899 and shortly after, in 1924, the international community adopted the International Health Code in force until today, although it had some technical modifications. All border posts in collaboration with the Sanitary, Customs and Police authorities must detect and notify, in accordance with these Regulations, the Public Health risks, events that may constitute International Public Health emergencies.

The International Health Regulations (IHR) have the function of warning of the need to strengthen the epidemiological surveillance and control of transmissible diseases with danger of international dispersion, strengthening and maintaining the response capacities in this field.

The Environmental Health Technician (TSA) acts in compliance with the International Health Regulations (2005) in order to prevent, protect, control and provide public health responses to an international spread of diseases, exercise epidemiological surveillance in ports, ensure minimum environmental requirements ensuring good hygienic conditions for travelers.

Keywords: Ports; Marine Health; Environmental Health Technician; surveillance

HABITAT MANAGEMENT AT THE HOSPITAL ENVIRONMENT

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The habitation has an extremely importance in the well-being of human race. It is known that indoor spaces can direct and indirectly influence people positive or negatively. In this case we will focus on the study of the hospital environment. This is an environment that has some particular physical characteristics and for that reason it is essential to have legislation that allows establish some minimum standards to ensure that this type of space is as appropriate as possible to the functions that will be practiced in it. For the execution of this work it was necessary to make a bibliographic research which allowed us to make a checklist to support the study of assisted observation based on some existing legislation which in this case is mostly about the Regulatory Decree 63/94 (2 November) which focuses on private establishments however the same can be applied in the public sector. In this document we also find references to several articles of Decree-Law nº 13/93.

The main objective of this work is to make known the conditions that these environments must obey from their facilities to the organization and service operation that they offer.

To conclude the installations of these establishments must be in good conditions and comply with the legislation in order to guarantee the health of both: the professionals who works there and the users of these health units.

Keywords: Hospital Environment, Habitation, Well-being, Indoor Spaces, Legislation

HYGIENE AND HEALTH CONDITIONS IN SWIMMING POOLS AND SPAS

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With the increasing demand for swimming pools for recreational activities, sports or even for private use, there must be greater regularization to ensure that these spaces have the desired quality thus avoiding public health problems.

Those responsible for the exploration of the space in question have to act in such a way that these rules are established and complied with by implementing good practices in the environment where they are inserted. Therefore, accidents at work are prevented and there is increasing satisfaction on the part of workers.

There are several laws and regulations that we can consult to verify these conditions in multiple spaces consisting of swimming pools, water parks, for exemple Decree-law no. 79/2009 of April 2, which mentions topics like licensing for operation, inspection, and the applicable ordinances. Decree-Law No. 317/97 of September 25, where it is possible to consult the regulations of the operation of sports facilities for public use and Regulatory Decree No. 5/97 of March 31, which specifies the technical and safety conditions, which defines the necessary requirements to have with water evacuation boxes.

So the vigilance of hygiene and health conditions in these spaces is very important, because it is possible to minimize the associated dangers and promote health. This vigilance is carried out by Environmental Health Technicians and Public Health Doctors.

Keywords: Pools, Public Health, Hygiene, Vigilance, Environmental Health

HYGIENE AND SALUBRITY CONDITIONS IN FOOD TRUCKS

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Street trading, whilst food product sale, is a target of inspection from ASAE, who verifies the compliance of norms of its sector, its hygiene and salubrity conditions, its points of sale for the vehicles of transport and its own foodstuffs, their packaging and respective labelling. This document will be focused on the specific case of food trucks.

We present legislation relating to this field of study, namely, the sale of food products, where it should be observed the arrangements of the Portuguese Law relating to the hygiene of foodstuffs. Also highlight the legislation regarding the Legal Regime of entrance and exercise of sale activities, services and catering, in particular the subsection that orients the regulations of the sale for non sedentary municipal retail.

The methods used are research about legal framework for licensing and hygiene and safety conditions in street trading of food products and the elaboration of a checklist, regarding a food truck, grounded on the legislation.

From this we draw which points are essential to evaluate on a checklist referring to a food truck, as well as the need to prioritize the existence of smooth surfaces for easier cleaning. Due to the regulation of these establishments being specific for each municipality, the checklist to apply will be different for each of them.

Keywords: street trading, food truck, checklist

HABITAT MANAGEMENT IN NURSING HOMES

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Ageing is a natural phenomenon and an irreversible process present in the human being, and that can be influenced by intrinsic factors (referring to the person himself) and extrinsic factors (inherent to the environment). This process is not directly related to the individual's illness or disability, but to the last phase of the life cycle. Thus, a home for the elderly is an establishment where social support activities are developed for older people through collective housing, temporary or permanent use.

Today, in the context of the COVID-19 pandemic, more people have been infected in old people's homes, damaging their safety and well-being. Contingency measures have therefore been taken to prevent the spread of the virus, such as restrictions on visits and properly equipped staff.

This work aims to make known what standards these institutions must comply with in order to implement services that are appropriate to the needs of the residents who enjoy them, promoting their well-being and health, as well as those of their workers. In addition, it was intended to link these measures to the current situation.

That said, work focused on research into the health and safety conditions in old people's homes in times of pandemic, paying particular attention to the legal framework of the establishment, as well as on the completion of a checklist based on the key points of the legislation.

Keywords: health, COVID-19, residential structure, elderly, prevention

PLAYGROUNDS - CASE STUDY

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Playgrounds are generally found outdoors and dedicated mainly to children, for their entertainment.

The aim of this work was to understand the safety and health conditions in which parks were found, and to understand whether they complied with the rules in the legislation. As a methodology, a checklist was carried out based on Decree-Law 203/2015. This regulates safety in playgrounds and playgrounds, covers public or private playgrounds, playgrounds in nurseries, kindergartens and educational establishments, skateboarding tracks, climbing walls, trampolines and inflatable equipment, among others. Research was also carried out into the role of the Environmental Health Technician in this field.

As a practical part a survey was made to two parks, one in Coimbra and the other in Figueira da Foz , where the checklist was used.

We concluded that regarding the two playgrounds observed, Parque Infantil da Solum - Coimbra and Parque Infantil das Abadias - Figueira da Foz, the main aspects to be observed are: Parque Infantil da Solum fulfils a higher number of requirements compared to Parque Infantil das Abadias, namely the indications on each swing, which the first has and the second does not. Another aspect to observe are the accesses, in the park of Figueira there are two accesses, one by stairs and the other by a ramp, in the park of Solum there are three accesses, all suitable for people with conditioned mobility.

Keywords: playgrounds; safety; health; legislation; environmental health technician

NURSERIES AND KINDERGARTENS

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This study aims to address the theme of Habitat Management in daycare centers and kindergartens. The role of housing regarding health is extremly important, so before and after any construction of housing space, all requirements that promote the well-being and health of users, must be guarenteed.

The aim of this study is to verify the hygiene and health conditions in these spaces.

Through bibliographical research for licensing and conditions of hygiene and safety in daycare centers and kindergartens we relied on legislation, namely Decree of Law 243/86 of August 20, regulates the conditions of hygiene and safety of work in commercial establishments, offices and services, namely, Ordinance 262/2011 of August 31, establishes the regulatory standards of the conditions of installation and operation of day care centers, as amended by Ordinance 411/2012 of December 14 (amended articles 15 and 20 and paragraph 1 and no. 4 of the annex to Ordinance 262/2011), namely, Decree of Law 163/2006 of August 8, regulates, the definition of accessibility conditions to be satisfied in the design and construction of public spaces, collective equipment , public and housing buildings and the General Regulation of Urban Buildings.

We have drawn up a checklist that supported our study and which has as main verification items the general rules relating to functional areas and their equipment and good hygiene and safety conditions.

We conclude that a nursery and kindergarten space must comply with numerous legal requirements, with regard to its construction and operation.

Keywords: Hygiene, Safety, Health, Habitat

THE WATER FOOTPRINT AND THE CONCEPT OF GREEN, BLUE AND GRAY WATER

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Water, which exists in the liquid, solid and gaseous states, is an essential good for life and is unevenly distributed around the globe. The subject of water is currently a matter of concern and discussion worldwide, due to its great importance and the fact that it is a natural resource that can be exhausted. It is worth mentioning the importance of the World Water Day because it is a day that leads to reflection on the importance of water and ways to use it in a more conscious way.

The objective of this work was to relate the concept of green, gray and blue waters to the footprint of water, to clarify these concepts, and to analyze and evaluate the knowledge of the populations regarding them.

An online survey was applied to the general population, which allowed to characterize the knowledge regarding the water footprint and the concept of green, blue and grey water; in which 25 answers were obtained. With this survey we realized that the subject is little known by the population, only 36% of respondents know these concepts. We also observed that 68% of people have seen campaigns about water footprint awareness, but the ideal was for everyone to know what it is, because the more they know the more they can change.

In conclusion, it is necessary to give more importance to these concepts and spread the word so that we can avoid water scarcity and contamination reverting the scenario outlined for the future.

Keywords: water; water footprint; green, gray and blue water; natural resource

ENVIRONMENTAL HEALTH COMMUNITY WATER FOOTPRINT

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Water is an essential good and an indispensable necessity for the health and survival of humanity, and is therefore considered one of the basic rights.

The water footprint is an indicator that expresses the water consumption involved in the production of the goods and services we consume. On the other hand, the blue water footprint relates to surface or groundwater that evaporates or is added to the product. The grey water footprint, on the other hand, relates to the volume of water needed to dilute the pollution generated during the production process. It is important to highlight that a person's water footprint relates more to what they consume than what they spend at home washing, bathing or brushing their teeth. It is estimated that only 5% of a person's total water footprint comes from direct water expenditure.

This work aimed to assess the water footprint of students and alumni of the Environmental Health Degree, and thus suggest ways to implement good practice in water use.

The methodology used for this work was a survey applied in similar studies and the review of scientific articles published on the subject.

We acquired a total of 15 answers, where we were able to calculate the water footprint of each answer, we then observed that the best recorded water footprint was 16,583, the total volume of water used during the production of goods and services, as well as the direct consumption of water was the lowest and the worst was 33,715, which means that it was the highest total volume recorded before our respondents.Knowing that Portugal has a rather high water footprint in relation to European countries, we can thus conclude that all the people who answered our questionnaire have a good water footprint.

With this work it was possible to raise the environmental health community's awareness of the importance of water.

Keywords: Water Footprint; Water; consumption; awareness; pollution.

WATER RESOURCE MANAGEMENT

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Water resources include, in addition to water, their beds and margins, as well as adjacent areas, maximum infiltration zones and protected zones.

The aim of this article was to demonstrate that water resource management needs to ensure preservation, followed by its use, recovery, and conservation in satisfactory conditions, as well as to assess the population's knowledge regarding water resource management.

By conducting a bibliographic search and applying an online questionnaire to students on the topic, we have deepened the purpose of our article.

After analyzing the questionnaire, we can conclude that at the level of knowledge on the topic of Water Resources Management, 81.8% of individuals were aware, in relation to the application of good practices, 21.6% reported not applying good practices on a daily basis to reduce water use, which demonstrates a lack of clarity about the importance for our survival of this valuable and limited natural resource.

A correct management of water resources involves the definition of an appropriate planning policy and, consequently, the approval of water resource plans, with a view to the valorization, protection and balanced management of national water resources, as well as the rationalization of their water resources. use.

Therefore, it is important that this scarce resource is managed fairly and carefully. The planning and management of water resources aims to organize and distribute these resources, considering their availability, to respond to the needs of the population.

Keywords: Water Resource; Water Resource Management; Good Habits; Planning

CLIMATE CHANGE AND IMPLICATIONS FOR WATER QUANTITY AND QUALITY

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Climate change is a global environmental problem, with strong consequences on ecosystems, water quality, health and economic activities. They affect the variability of water resources, compromising the quantity and quality of water in the future, and increasing the vulnerability and risks associated with its use.

The aim of this work was to assess the population's knowledge on the subject of climate change and its implications for the quantity and quality of water, as well as to highlight the interest in preserving this resource.

From the results obtained from the evaluation at the level of knowledge of the population on this subject, 45 responses were obtained. It was verified that a large part of the respondents know the influence of climate change on water quality and quantity (100%), its consequences and impacts on water resources, as well as the most affected areas. The respondents were also asked about the existence of a climate agreement, to which they considered its importance, believing most of them that we are still in time to reverse climate change (77.8%).

Good ecological and chemical water conditions are essential, as this is an essential element in ecosystems and climate normalization. The decrease in water quality has a negative impact on Public Health, both in the spread of new diseases and in the development of existing ones.

The key objective of a climate action is the protection of the planet, its inhabitants and prosperity against the impacts of climate change. Ensuring resilience and maintaining social cohesion at the global level is a priority.

Keywords: climate change; water resources; quality; Public Health; resilience

CONTRIBUTIONS TO SUSTAINABLE WATER MANAGEMENT IN PORTUGAL

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Water is a natural and renewable resource with great economic, environmental and social impact. However, with population growth, the production of waste and other materials is increasing and can be considered harmful to nature, so having access to quality water is one of the greatest challenges for man.

The goal of this work is to evaluate the knowledge and practices of water use by the Portuguese population, as well as to raise awareness and sensitize to sustainable water management. A bibliographic review was also carried out through studies in other scientific articles on the subject. An online survey was carried out to a population of different ages and educational backgrounds in order to acquire different perspectives for our research, to which 156 answers were obtained. The analysis of the results led to the understanding that the majority of the population states that the use of water cannot be done anyway (66%), and 83.3% considers that the price increase does not guarantee the sustainable use of water. Therefore, there is a lack of concern on the part of the Portuguese population about the scarcity of water resources.

As water is an essential asset for all living beings, there is enormous concern about its preservation in relation to the quantity and quality of fresh water available. Having said that, it is important to educate society in order to change the mentality in which it aims to improve the quality of life of man, water and the planet.

Keywords: water, sustainability, awareness, common good, waste

WASTE OF WATER

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Water is increasingly scarce on the planet and the human being, being the only rational animal, must be aware of the importance of this resource for life. Although this seems infinite and renewable it is not, especially because Humans are able to waste it in an absurd and sometimes unconscious way.

In order to observe population knowledge and to be able to make population aware that it is possible to save and reuse water, as well as to raise awareness of the daily expenses of each individual, a population survey was conducted so that it was possible to have a notion of people's awareness about daily actions and water expenditures, a flyer was subsequently distributed.

With the survey we had a total of 347 answers, to the question "What do you do while the shower water heats up?" 78.1% of the population surveyed that they let the water run this action is not very conscious since collecting this water is a very simple act that can result in significant water and monetary savings.

Considering that water is an easily accessible good it is seen as an inexhaustible good in most countries of the world. However, the reality is that there are still countries that do not have access to clean water. As one of the objectives of sustainable development, access to clean water and sanitation for the whole world by 2030 it is necessary to act on this problem, starting with simple and easy-to-be met measures for all of us.

Keywords: water, waste, human being, consciousness, sustainable development

POLLUTION AND CONTAMINATION OF WATER

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Water is an essential good to life and should be used correctly to ensure that future generations have access to it with a good quality. Water pollution consists on the introduction by human beings directly or indirectly of substances or energy into the marine environment resulting in negative effects like damage to living resources as well as dangers to human health and obstacles to marine activities.

The objective of this work was to evaluate the knowledge of the inquired population about the theme and warn about the importance of preserving water.

The research method was based on a bibliographic research about the topic and application of a questionnaire to the Portuguese population.

From the results obtained referring to the population's level of knowledge about "Pollution and Contamination of Water" there were 169 answers and we can conclude that most of the people knows the difference between contamination and pollution of water (52.1%) they also seem to know which are the main sources of contamination (79.3%) and all agree that pollution and contamination of water are a danger to public health.

We conclude that it is necessary to alert the population to improve their attitudes towards the preservation of water quality. The water is important to all the types of life on this planet and there are attitudes that can and should be improved. We can start for recycling oil as well as not throwing garbage to the floor or directly in the water and not dumping chemicals into the water.

Keywords: Contamination, pollution, public health, water, preservation

WATER SUSTAINABILITY - GOOD PRACTICES

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Water is an essential resource for life, particularly for human beings. With the passing of time the population uses water more and more unconsciously, without thinking that one day this natural resource may run out. Water management is an important issue for society since it is related to sustainable development, a development that meets the needs of human beings in the present without compromising the ability of future generations to meet their own needs.

In order to understand the theme discussed at work, water sustainability, and to perceive its good practices, a bibliographic review was carried out through studies in other scientific articles on the same theme, and an online survey was also applied to students in university to assess whether in their daily lives they develop good practices for water sustainability, to which 89 responses were obtained.

The analysis of the data showed that in general most of the respondents (64.8%) think to follow the necessary steps to save water, however in the rest of the survey this is not what is represented in most of the questions, as for example most of the respondents let the water run until it warms up.

The sustainable development strategy aims to promote harmony between human beings and between humanity and nature. One of the current challenges is to establish changes in attitude and behavior in society, since our intellectual, cultural and moral capabilities impose responsibility on all stakeholders.

Keywords: Water; human being; natural resource; Sustainable development; Good habits

WATER FROM THE PUBLIC SUPPLY SYSTEM - THE LEVEL OF CONFIDENCE OF CONSUMERS

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In the l ast report made available by ERSAR (Regulatory Entity for Water and Waste Services) up until now, Portugal presents i tself exceptionally well i n regards to water supply, having kept the 99% l evel of safe water within the consumer's tap i n the year of 2019.

The focus i s on the public service of water supply to Portugal's population, the main objective being to establish the l ink between the consumer's l evel of trust on the water supply system and the quality and safety of that system.

For the construction of this article an i nquiry to the general population was created and applied. A pre-existent bibliography revision was also performed i n order to enable the result comparison.

From our results we can verify that the biggest reason for the non consumption of water from the supply system i s due to the preference of bottled water (80,3%). However, an interesting point to highlight i s that even preferring bottled water, the i nquired population

continues to demonstrate a high l evel of trust i n the water supply system, being that the classification of the majority (79,1%) varies between 7 and 10 on a scale of 0 to 10.

Nevertheless, there are still some doubts about i ts taste which i s verified by the fact that l ess than 47% of the i nquired population considers i t to have a good taste.

In conclusion, despite the high l evels of trust, these don't reflect on the tap water consumption, due to the taste factor.

Keywords: water supply, consumer's level of trust, water consumption, tap water

THERMAL WATERS AND PUBLIC HEALTH

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Public health is the science of preventing diseases, prolonging life and promoting health through organized efforts of society, the objectives it takes into account are the improvement of health services and aims to strengthen action plans thus maintaining a healthy population, improving health and well-being and reducing all options that may harm health.

The thermal waters that are located underground, with high depth levels have a different chemical composition due to the contact of water with rocks, so these have therapeutic properties such as: cleansing and moisturizing the skin, aid in healing as in reducing irritations or dermatitis.

The objective of this work was to evaluate the knowledge of the Açoreana population in relation to the possible benefits of thermal waters for health, and a literature review and the application of a survey were carried out.

It was found that the individuals surveyed trust the hot baths they attend and 87.5% are aware of the health benefits of thermal waters. They also state that regular control of the quality of these waters and the hygiene of facilities and equipment is necessary.

Several factors should be taken into account so that thermal waters do not influence the health of the population in a harmful way. there needs to be frequent control and surveillance of the quality of these waters

Keywords: Health, Thermal Waters, Water Quality, Control and Surveillance

SUSTAINABLE WATER MANAGEMENT IN THE WORLD

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In recent years, the importance given to natural resources and the way in which they are used in society has increased as a consequence of the degradation of water quality, waste, demographic explosion, poor distribution and the unsustainable model of economic development adopted by most countries. With this article, we intend to discuss the different ways of managing water by the population and how it is aware of the importance that water has in our lives. Through the survey carried out in this study, we conclude that water is not given due importance, because despite the efforts made and all the awareness campaigns to the population, it does not recognize its importance due to the failure in environmental policies, hence not making a good management of it.

Thus, it is necessary to insist on changing these habits through awareness, actions and, more importantly, environmental education.

Keywords: natural resources; water management; awareness raising; environmental education.

DISEASES OF HYDRIC ORIGIN

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Water has a direct influence on human health, quality of life and development, such conditions can be summarized in five keywords: quality, quantity, continuity, coverage and cost.
This work focuses on presenting the main waterborne diseases and search their incidence in different European, American, Asian and African continents. For its realization, a bibliographic search was carried out, referring to 12 articles published between the years 2002 to 2019, alluding to water-borne diseases and also the analysis of its incidence in some continents.
The diseases that are most associated with the lack of care with water quality are typhoid fever, cholera and malaria, all of which have diarrhea as a common symptom. Polluted water is definem as water that has changes in its physical and chemical characteristics. Once contaminated, the water requires specialized treatment so that consumers can enjoy it without being exposed to the risk of contracting any of the diseases presented.
Through the analysis of some values, we can see that in underdeveloped continents, with a higher population density, there is a greater deficit in the treatment of water, since there is not the necessary care for it to be properly treated and, later, consumed.

Keywords: diseases, water, contamination, pollution, quality

ARTERIAL STIFFNESS AND OBESITY

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Arterial stiffness is a complex phenomenon characterized by the decrease of the complience of the central arteries. Anatomically, the arterial stiffening is associated with an increase in the post-load of the left ventricle and a decrease in the mean coronary perfusion pressure, which occurs during diastole. The consequences of this mechanism is already known today: coronary ischemia, left ventricular hypertrophy, increased pressures on vascular walls, among others.

The measurement of arterial stiffness, through the pulse wave velocity (PWV), allows us to perform the study in several segments of the arterial circulation, thanks to the propagation of the waves, their delay time and distance between them. The properties of the arterial wall, the thickness and the respective diameter of the arterial lumen will be perpetuators of PWV.

In an individual, the inadequate lipid profile is a recognized cardiovascular risk factor. In this poster i will report a studie about the relation between arterial stiffness in a sample of obese and non-obese individuals trought the parameter of PWV. An increased value of PWV is related to the fusion of the reflected wave with part of the systolic wave, running at a high systolic pressure and a decrease in diastolic pressure. The studie show that PWV is the method of choice to evaluate arterial stiffness, promoting the application of that for cardiovascular disease prognosis and indicator of morbility and mortality.

Keywords: Arterial Stiffness, obesity, pulse wave velocity

Discipline: Applied Research II

Professor: Joaquim Pereira

Degree: Clinical Physiology

A 123

Edition 14/20

EFFECTS OF ENERGY DRINKS ON ELECTROCARDIOGRAM PARAMETERS

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Energy drinks are non-alcoholic drinks that have the ability to provide energy, enhance alertness and improve physical and cognitive performance. The industry of this type of drinks grew rapidly due to its high consumption, mainly by teenagers and young people. Proportional to this consumption, health events also increased, with a growing number of arrhythmic episodes related to the ingestion of large volumes of these drinks or even when simultaneous to alcohol consumption. In view of these facts, investigations have been carried out whose focus is the influence of the consumption of energy drinks on heart rate (HR) and electrocardiogram parameters (ECG). Although many studies have been done, the results are controversial.

This work aims to identify the effects caused by the ingestion of energy drinks in electrocardiographic parameters, especially the QTc interval and HR variability. Thus, understanding the influence of energy drinks on the dynamics of the cardiac system can be a possible pillar in the interpretation of some events or even pathologies masked until then.

Keywords: Energy drinks, effects, electrocardiogram

Discipline: Applied Research II

Professor: Joaquim Pereira

Degree: Clinical Physiology

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HEART RATE VARIABILITY IN FOOTBALL AND FUTSAL PLAYERS

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Introduction: Regular physical exercise is related to physiological cardiovascular adaptations that lead to cardiac changes that improve physical performance. Progressive resistance, low resting heart rate and stronger cardiac volume are a valid physiological indicator of the cardiovascular system's ability to adjust to physical overload in well-trained athletes. Heart rate variability is a non-invasive study method that allows us to assess the intensity between the sympathetic nervous system and the parasympathetic nervous system, reflecting the adaptive capacity of the heart to change the physiological conditions.

Objective: This review aims to study the heart rate variability in football / futsal players, in order to assess the onset of bradycardia throughout the sports season.

Methods: Systematic review of the published literature that evaluates heart rate variability in football / futsal players, using a heart rate monitor, with a 10-minute record in total, of which the first 5 minutes are discarded and the remaining 5 are used to evaluate the RR intervals. The search engines used were Pubmed and Google Scholar.

Results: Regarding the results obtained, the various articles demonstrated that there were no significant changes during the measurements. Nonetheless several tests were used, such as the Yo-YO IR1 test associated with heart rate variability, demonstrating that there was no relationship between them, keeping the heart rate stable throughout the sports season.

Conclusions: After analyzing the articles, it was realized that the heart rate remained the same throughout the several measurements, being these variables from article to article. However, all articles came to the conclusion that more measurements were needed over the season and that the sample should contain more athletes.

Keywords: Heart rate variability, futsal, electrocardiogram

NUTRITIONAL SUPPLEMENTS: CREATINE

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Creatine is a nutritional supplement very widespread as a form of ergogenic resource and, consequently, as a strong stimulant of hypertrophy. This is due to the properties of the creatine supplement, which are directly related to the production of ATP energy in the body's skeletal muscle.

The study aims to develop knowledge about the functions that this creatine supplement plays in the body, and to determine the best ways to enjoy the benefits promoted by its action in the functioning of the body.

This study was carried out based on the analysis of scientific articles between the years 2010-2020, using the combination of the following words: Food Supplements, Creatine Supplement, among the 2990 results obtained in the search, 16 were selected because they are more relevant to the subject matter.

The results obtained demonstrate how creatine acts in the body and in fact how it provides benefits to the body, thus confirming the effectiveness of the supplement in promoting an improvement in physical performance, increasing strength, potency, and consequently muscle mass.

However, the creatine Supplement must be properly incorporated into the diet and/or supplementation of each individual according to their respective needs, to promote the health and well-being of the body.

Keywords: Creatine; Supplementation.

EGGS CONSUMPTION AND RISK OF HEART DISEASES

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Introduction: Egg is a nutritious food, essential in a healthy diet, being of low cost and caloric density. It is a valuable source of several nutrients and one of the main sources of cholesterol in the diet.

Objective: Understand the relationship between egg consumption and cholesterol and cardiovascular diseases

Methods: Literature review was conducted through Pubmed databases, using the expressions "eggs consumption", “eggs and heart diseases” and “eggs and cholesterol”. The selection of articles was made based on the year of publication (2010-2020), reducing the number of articles to 33. By choosing the title, only 15 articles remained that fit the theme. Of these, thirteen were selected for full reading.

Results: Eggs are a very rich food from a nutritional point of view, and therefore have several health benefits. They are also a source of cholesterol containing about 225mg of it. Cholesterol can be HDL or LDL, the latter being considered a risk factor for the development of heart disease, however, as long as a balanced and healthy diet is achieved and cholesterol levels are regulated, eggs can be beneficial for the control of these diseases. However, there is no relationship between egg intake, cholesterol and cardiovascular disease.

Conclusion: In conclusion, eggs are important sources of dietary cholesterol, and it is not yet certain that they adversely affect the individual's health and that they negatively influence cholesterol.

Keywords: “egg consumption”, “eggs and heart diseases” and “eggs and cholesterol”

HEALTH IMPACT OF OMEGA 3 IN FISH

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Introduction: Omega-3 (ω-3) represents one of two classes of polyunsaturated fatty acids (PUFA). This is found in the form of eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) in fish. Its benefits are related to its differential ability to alter various physiological pathways and cardiovascular risk factors. The amounts produced by the human body of omega-3s are insufficient and, therefore, these fatty acids are considered “essential” fatty acids and it is necessary to obtain them through the diet.

Objectives: Understand the impact of omega-3 present in fish on human health.

Methods: A review of the literature was conducted in the Pubmed and Sciencedirect databases using the following keywords "omega-3", "fish", "consumption", "EPA" and "DHA" with the determinant "and". Thirty-five articles were obtained in english and portuguese published in the last 10 years and, later, analyzed, first by title, then by reading the abstract. After the reading the full text, we selected fifteen articles.

Results: According to the analyzed literature, the intake of omega-3 present in fish is beneficial for cardiovascular diseases including hypertension, pregnancy affecting the child's cognitive development, oncological diseases, diabetes, neurological diseases especially Alzheimer's, depression and inflammatory bowel diseases including Crohn's disease.

Conclusion: Despite its benefits, the intake of fish has to be regularly analyzed due to the risk-benefit ratio, as taking into account that the overall composition of fish can also be harmful to our body. Lastly, due to the importance of the topic, further studies are needed.

Keywords: "omega-3”; “fish”; “EPA”; “DHA”; “benefits”; “health”

THE IMPACT OF SOY DRINK ON CHILDREN'S HEALTH: ASSESSMENT OF NUTRITIONAL COMPOSITION, BENEFITS AND LIMITATIONS

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Introduction: The soy beverage is one of the most popular vegetable drinks. It has a high protein content and contains isoflavones that are likely to be beneficial for health. Despite all the benefits attributed it is an alternative that is currently being questioned.

Objectives: Understand the impact of soy drink on children's health and the assessment of its nutritional composition.

Methodology: Literature review conducted between October 15 to October 26 2020, on the databases “GoogleScholar” and “Pubmed” - with the keywords “vegetable drinks”, “soy beverage”, “nutritional composition”, “children”, “impacts” and “health” in portuguese and english, between 2010 and 2020. After applying the exclusion and reading criteria in full, 17 articles were selected for analysis.

Results: Although the soy drink contributes to the prevention of chronic diseases, the replacement of cow's milk by intolerant or allergic to cow's milk protein, or vegetarian, without fortification and fermentation, is not advisable since it can lead to mineral deficits , vitamins and amino acids, requiring supplementation.

Conclusion: The exclusive consumption of the soy drink by vegetarians or allergics and intolerants, is viable if accompanied by supplementation. In the case of children without dietary restrictions, mixed consumption can be a solution. Although this drink is still considered expensive and little consumed, it may play an important role in the market, as it meets the current needs and desires of the population.

Keywords: “vegetable drinks”, “soy beverage”, “nutritional composition”, “children”, “impacts” and “health”

THE BENEFITS OF PEA PROTEIN AGAINST ANIMAL PROTEIN

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Introduction: Pulses are edible seeds of plants in legumes family, including bean, pea and lentil. Pulses are rich in dietary fiber and protein, which provides many vitamins/minerals. Moreover, they are low in fat, energy density and glycemic load which helps maintaining body weight and reduces the risk of cardiovascular diseases. Pea protein is a new type of plant protein becoming more popular in food industry due to its low cost, availability, nutritional values and health benefits.
Objective: This study aimed to analyse the benefits of pea protein against animal protein.
Methods: A literature review was conducted. The research was performed in PubMed and Academic Google databases, using the key words “pulses”, “vegetal protein”, “pea protein”, “sustainable”, “AND”, “public health”, considering papers published in the last 10 years. We obtained 20 articles and 15 were selected after reading the title, abstract and integral text.
Results: Data shows that supplementation with pea protein increases muscle thickness, when compared to placebo. Moreover, whey and pea proteins promote similar strength/performance, body composition and muscle adaptation in high density functional training since no difference was found between pea protein and whey-based dietary products.
Discussion/Conclusion: Pea protein can be an effective alternative to whey-based dietary products for athletes from different levels/sports and also in elderly to slow down the aging process and maintain muscle mass. Furthermore, its production uses fewer resources, being less environmentally impactful than animal protein. Therefore, its consumption must be increased, due also to its nutritional quality.

Keywords: pulses; vegetal protein; pea protein; sustainable; public health.

THE INFLUENCE OF IODINE CONSUMPTION IN COW'S MILK FOR HUMANS

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Introduction: Iodine is an essential element necessary for the production of thyroid hormones, which controls metabolism and has an important role in cognitive development and cardiac function. This mineral is acquired exclusively from the diet and in many countries, dairy products, particularly milk, are the main source of iodine intake. The recommended adult iodine intake is 150 µg.

Objectives: To understand how the iodine concentration can be affected and how it can be controlled in order to obtain the best benefit for human health from the iodine in milk.

Methods: For the research, scientific databases such as Pubmed, Science Direct and Scielo were used. Sixty articles were analyzed, first by title and then by abstract. Subsequently, fifteen articles in English, published since 2010, were analyzed in full.

Key words: iodine benefits, cow's milk, dairy products consumption.

Results: Types of iodine, the presence of goitrogenic compounds in pastures, bovine health problems, teat dipping and milk processing are factors that influence the amount of iodine in milk. As well as the season and the husbandry system, the iodine intake and the lactation status of the cows, results in higher concentrations of milk produced in winter than in summer. The same happens with organic milk that has lower concentrations than conventional milk.

Conclusion: Total iodine intake depends on the variation of iodine concentration in milk as well as on the level of milk consumption in a population and therefore ensuring a stable level of iodine in milk is important to avoid iodine deficiency.

Keywords: iodine intake, cow's milk consumption, iodine benefits

KEFIR, A TRENDY DRINK OR AN IMPORTANT PROBIOTICS SOURCE?

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Introduction: Probiotics are components of microbial cells, showing effective benefits in any host's health. Over the last years, there has been an increasing interest in probiotics for their benefits. Fermented dairy products, such as kefir, are examples of functional foods where the microorganisms present have a strong probiotic potential. Kefir is an artisanal fermented milk with an acid flavor and creamy consistency, produced from the bacterial fermentation of kefir grains.
Objective: identify health benefits of the nutritional composition of kefir.
Methods: A systematic review of articles was carried out using the keywords "milk kefir" and "probiotics" in the NCBI database, namely PubMed, between 2010 to 2020. From this search, 154 articles were found and after a brief analysis, 33 articles were selected. They were read in full, leading to the final selection of 16 articles, as they were fit to the subject addressed. Scientific books on nutrition were also consulted.
Results: Possible benefits of kefir were identified. Among them, we can highlight the antimicrobial activity, beneficial cholesterol metabolism, gastrointestinal tract, immunomodulation, antioxidant activity, antidiabetic, antiallergic, anticancer effects, improved lactose digestion and intestinal health.
Conclusion: From the literature review, it was possible to verify that kefir seems to have several benefits. However, further studies are necessary, in order to better understand the physiological mechanisms. Further studies in humans are also needed, since most of them are performed on animals.

Keywords: Milk kefir, probiotics, healthy benefits

QUINOA: NUTRITIONAL COMPOSITITION AND HEALTH BENEFITS

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Introduction: Quinoa is a pseudocereal that stands out for its high quantity and quality in protein, while possessing various minerals and vitamins in its nutritional composition.

Objective: Understand the general health benefits of quinoa, focusing its effects in celiac patients.

Method: A literature review with articles from the last 10 year was conducted in PubMed, Sciencedirect and Scielo, using the keywords “pseudocereal”, “quinoa”, “health”, “benefits” and “celiac”, “disease” resulting in 106 articles from which 20 were chosen initially by the title, then by the reading of the abstract. Finally, 16 were selected by full reading both in portuguese and english.

Results: Quinoa contains antioxidant and anti-inflammatory properties that can be beneficial for health in general. It is also gluten-free so it can be included in celiac patients’ diets and improve their condition.

Conclusions: This pseudocereal can cause adaptive responses in celiac patients and better their condition in long terms. However, this property needs more study as there is not sufficient information about it.

Keywords: “pseudocereal”, “quinoa”, “health”, “benefits” and “celiac”, “disease”

PREBIOTICS AND OBESITY: HEALTH BENEFITS

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Prebiotics can be produced industrially or be naturally present in certain foods. These aren't digestible, but they selectively stimulate the growth or activity of one or more bacterial species. The consumption of foods rich in prebiotics can be strongly related to obesity, since intestinal microorganisms play an important role in maintaining body weight. The objective of this article was to understand the role of prebiotics in obesity prevention. Literature review was conducted in the databases PubMed and ScienceDirect. This research was restricted to information and review articles, published in the last 10 years using the following keywords: "Prebiotics", "Health", "Obesity", ''Microbiota '' and "Overweight ". After title and abstract analysis of 83 articles, it was selected 48 and from that, after full reading it was included in this study 15 articles. The consumption of prebiotics has an important role in the nutrient absorption, pathogen protection and modulation of the immune system. In addition, the change in the microbiota due to the consumption of prebiotics is associated with benefits such as decreased insulin resistance, glycemic control and glucose tolerance. In the obese population, there was a reduction in tissue inflammation, increased satiety, decreased body mass index and, consequently, loss of fat mass and increase of lean mass. This review article showed the importance of the consumption of prebiotics and the consequent regularization of the microbiota in metabolic disorders especially in obesity. Therefore, is suggested that the use of prebiotics is a potential therapeutic tool for the treatment and prevention of obesity.

Keywords: Prebiotics, health, obesity, microbiota, overweight

BENEFICIAL NUTRITIONAL EFFECTS OF CHIA AND FLAXSEED CONSUMPTION ON HEALTH

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Introduction: The association of eating habits with various health conditions has encouraged the search for new healthy foods such as chia and flaxseed.

Objective: Study of the nutritional effects resulting from the consumption of Chia and Flaxseed on health.

Methods: A literature review was conducted on the PubMed database with the key words: chia seeds, flaxseed, health effects of seeds. The articles consulted were published in the last ten years, resulting from the research 520 articles, of which, after reading the title, 30 were selected. After the abstract and full text reading, 13 articles were included in this review.

Results: The seeds stand out for their high nutritional potential, due to their chemical composition and high therapeutic potential. The fact that both are a source of bioactive compounds with high antioxidant activity is essential to help the body regulate blood pressure and combat diseases such as cardiovascular disease, diabetes, cancer and obesity.

Conclusion: The alpha linoleic acid (ALA) present in both seeds has been shown to be the bioactive compound with the most health benefits. Thus, we conclude that the consumption of the two seeds has positive nutritional effects for the well-being of the organism.

Keywords: Seed, Chia, Flaxseed, Alpha linoleic acid (ALA), Health

MESOTHELIOMA

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Malignant mesotheliomas are rare and aggressive, being responsible for 20.576 deaths in 2018 World-wide. In Portugal is the second rarest cancer and it was responsible for 57 deaths in 2018. This tumour originates frequently from lining cells (mesothelium) of the pleura and peritoneum, but they can also be formed in the pericardium and the tunica vaginalis. However, more than 80% of mesotheliomas are localized in the pleura.

Asbestos exposure is the best-known etiological risk factor. Men have a higher rate due to work exposure. Therefore, some countries implemented laws to restrict the use of asbestos, declining the incidence of mesotheliomas.

There are three major histological subtypes of mesothelioma: Epithelioid, Sarcomatoid, Biphasic. More than half are the epithelioid type which has the best prognosis with a survival between 12 and 27 months after diagnosis. Both sarcomatoid and biphasic mesotheliomas have a poorer prognosis.

The most frequent symptoms are dyspnoea, cough or chest pain. This difficult the diagnosis which is based in imaging exams of the chest and upper abdomen, laboratory blood tests, histopathology and immunohistochemistry.

Ubiquitin carboxyl-terminal hydrolase (BAP1) plays an important role in being the most frequent mutation. Its suppression triggers neoplasic transformation interfering in DNA repair, transcription regulation, cell metabolism, apoptosis, and ferroptosis.

The most common therapies are surgical resection, chemotherapy, radiation therapy and immunotherapy. Cytoreductive surgery combined with hyperthermic intraperitoneal chemotherapy represents the gold standard treatment.

It's important to highlight the future in the therapeutic field, with especial attention in new potential chemotherapy combination, biomarkers and immunotherapy.

Keywords: Mesothelioma, BAP1, Epithelioid, Pleural, Biomarkers

TESTIS CANCER

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Testicular cancer is a malignant disease that affects males mainly from 15 to 45 years old, representing about 5% of all urologic cancers. Its incidence has doubled in the last forty years, especially in occidental and northern Europe. On the other hand, its mortality has been decreasing substantially due to great advances in prognostic and multimodal treatment.

Many different studies looking to understand the development and progression of testicular germ cell tumours (TGCTs) have highlighted the involvement of SCF/c-KIT pathway signalling. It has also been found that TSPY1 (Testis Specific Protein Y-Linked 1) is over-expressed in most testicular germ cell tumours.

Testis cancer typically presents as a painless mass in the testis, while several patients have diffuse pain, swelling, or stiffness in the scrotum. The primary therapy for testis cancer is a radical inguinal orchiectomy, which involves the removal of the testis and spermatic cord.

Due to poor sensitivity and specificity, serum tumour markers alone, cannot be used to diagnose testis cancer. However, they play a central role throughout the diagnosis-treatment continuum by giving important information about risk stratification, prognosis, response to therapy, and disease recurrence. In men with suspected testis cancer, three markers must be measured: alpha-fetoprotein (AFP), lactate dehydrogenase (LDH), and human chorionic gonadotropin (HCG).

MicroRNAs can be used to bypass the poor sensitivity of the markers previously mentioned, as they are specific to each patient, carving a pathway to a personalized treatment, based on the genetic characteristics of cancer cells.

Keywords: Testis cancer, tumour markers, microRNAs, KIT ligand, orchiectomy

BLADDER CANCER

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Bladder Cancer (BC) is the most common type of cancer of the urinary system reaching, in 2018, 200 000 deaths. In Portugal, in the same year, considering all cases of cancer, the incidence was about 4% and the mortality of about 3,8%.

The standard methods of diagnosis are cytology and cystoscopy. The precision of the cystoscopy method is effective, however, it's invasive. Cytology, less invasive, doesn't has the same precision, being performed as a complement. BC is classified into non-muscular invasive bladder cancer (NMIBC) and invasive bladder cancer (MIBC), the most aggressive.

On 60% of localized tumour cases is expected survival of 5 years. Metastatic tumours have decreased survival. BC can also be divided into different types: urothelial carcinoma (90% of cases), squamous cell carcinoma and adenocarcinoma.

According to TNM classification, patients are classified with T0-T4, N0-N2 and M0-M1 stages. Then, is calculated the risk of recurrence and progression according to the number of tumours, tumour size, previous recurrence rate, tumour category, concomitant carcinoma in situ and grade. These classifications don't fully reflect the "intrinsic characteristics" of BC, besides, it's known that MIBC is a heterogeneous disease with a high rate of associated mutations. Also, the expression of PD-L1, some DNA or RNA markers, epigenetic changes and the detection of extracellular vesicles could be good tools for the diagnosis. For that reason, more effective diagnostic tools have been studied, allowing the sub stratification of patients and definition of therapy: chemotherapy or immunotherapy using different monoclonal antibodies.

Keywords: bladder cancer; NMIBC; MIBC; TNM classification; biomarkers

NON-HODGKIN LYMPHOMA

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Non-Hodgkin lymphoma (NHL) it's the 5th most common cancer diagnosis in children under the age of 15, accounting for 7% of tumors in developed countries.

NHL is a lymphoid malignancy that occurs mostly in mature B cells and is stratified from indolent to aggressive lymphoma according to its biological behavior. It includes a large number of entities, such as Anaplastic large cell lymphoma, Burkitt lymphoma, Diffuse large B cell lymphoma and Lymphoblastic lymphoma.

Burkitt's lymphoma represents 30% of pediatric lymphomas and Lymphoblastic lymphoma is the most common type of NHL in children and young adults.

The diagnosis is established by tissue biopsy. Development in Molecular Biology techniques has contributed to the discovery of several oncogenic pathways that involve lymphomagenesis, thus amplifying the diagnostic and therapeutic approaches available. The diagnosis is based on the World Health Organization classification of lymphoid neoplasms.

For many years, treatment was centered on chemotherapy, until the introduction of rituximab, a monoclonal antibody directed against CD20. This was the first immunotherapy for NHL, being the main trigger for the development of more noncellular immune therapies for this type of lymphoma.

Monitoring of treatment is essential to avoid relapses. Therefore, the detection of circulating tumor DNA has been increasingly used instead of PET scan since it is more sensitive, allows to estimate the heterogeneity of the tumor and to identify new mutations that arise.

Keywords: Non-Hodgkin Lymphoma, B cells, Cancer, Diagnosis, Treatment, Markers

GIST - GASTROINTESTINAL STROMAL TUMOR

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The designation Gastrointestinal Stromal Tumor (GIST) emerged in the '80s. It's the most common mesenchymal tumour of the gastric tube, with an incidence of 6.45 to14.5 per million people.

The first risk stratification system was predicting GIST malignant behaviour by classification into very low, low, intermediate and high-risk categories based on tumour size and mitotic rate. A modified classification system introduced the tumour site as a third independent factor.

Mutations like Proto-oncogene c-KIT and Platelet-derived growth factor receptor A (PDGFRA) have higher incidence of all gene mutations in GIST. Both are tyrosine kinase membrane receptors, and when the stem cell factor c-KIT (SCF/c-KIT), as well as the PDGFRA, binds to Wildtype KIT, it causes autophosphorylation of tyrosine residues, which induces cell proliferation, differentiation and cell survival through the activation of intracellular transmission signalling pathways.

The diagnosis is made using immunohistochemical (CD117/DOG1) and molecular analysis (KIT/PDGFRA). It's noteworthy the positivity of KIT in 95% of GIST tumours, with patterns ranging from cytoplasmic to membranous and dot-like. The DOG1 marker also plays an important role in the diagnosis of GISTs, being positive in all these tumours, whereas PDGFRA and CD34 are positive in most. In contrast, expression of SDHB is lacking in SDH-deficient GIST tumour cells.

The first, second and third-line treatment is based on the use of Imatinib, Sunitinib and Regorafenib, respectively. They are inhibitors of several protein kinases involved with angiogenesis, oncogenesis and the tumour micro-environment.

Keywords: Gastrointestinal Stromal Tumors, Imatinib, c-KIT, PDGFRA

MULTIPLE MYELOMA

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Multiple Myeloma (MM) is a B-cell neoplasia that culminates with an unconstrained proliferation and accumulation of plasma cells (PCs) in the bone marrow. It is the second most common blood cancer, being more prevalent in the older population and often a chronic, incurable disease.

Before MM develops, patients may present two asymptomatic previous stages: monoclonal gammopathy of undetermined significance (MGUS) and smoldering MM (SMM), which differ in the percentage of PCs in the bone marrow. The progression of the disease relies on the number of plasma cells in the bone marrow (PCBM), the levels of pathologic proteins in the bloodstream, and the bone marrow microenvironment, among others.

MM is also divided according to genetic mutations, into non-hyperdiploid MM and hyperdiploid MM. The mutations that occur together with the interactions between MM cells and the bone marrow microenvironment contribute to tumour progression by deregulating signaling pathways such as PI3K/Akt/mTOR; Ras/Raf/MEK/MAPK; JAK/STAT; NF-kB, which play important roles in the pathogenesis of MM. Understanding these altered pathways may uncover therapeutic approaches developed to target them specifically.

Therapeutic options vary from proteasome inhibitors, immunomodulatory substances, and monoclonal antibodies to classical chemotherapy agents for MM. In recent years treatment has become more effective, increasing the chances of survival, even though most patients often relapse after it, due to the genetic heterogeneity of MM cells.

Keywords: Cancer; Multiple Myeloma; Microenvironment; Signalling Pathways;Therapeutic

THYROID CANCER

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Thyroid cancer (TC) is the most common malignant neoplasm of the endocrine system. With around 550,000 annual cases worldwide, this pathology presents a higher incidence rate in women.

Risk factors include history of exposure to radiation, a family history of thyroid disease, suspicious ultrasound findings, lymphadenopathy, a history of goiter (enlargement of the thyroid gland) and Asian ancestry.

This disease is predominantly asymptomatic, although symptoms can include neck swelling, difficulty swallowing/breathing, hoarseness and hemoptysis.

Serum levels of TSH (thyroid-stimulating hormone) associated with imaging studies of the nodules indicate if the use of fine-needle aspiration for cytologic evaluation is necessary.

Subtypes of TC are classified according to the cell from which they derive – follicular cells (FC) or parafollicular C cells (PCC) – and are diagnosed based on their histological features.

Approximately 80% of all cases correspond to papillary thyroid cancer, which in conjunction with follicular thyroid cancer, poorly differentiated thyroid cancer and anaplastic thyroid cancer comprise the spectrum of malignancies developed from FC. These entities lodge genetic alterations related to constitutive activation of two signalling pathways involved in thyroid growth and proliferation, the mitogen-activating protein kinase (MAPK), and the Phosphatidylinositol-3-kinase (PI3K)/AKT-pathways.

Medullary thyroid cancer arises from PCC and represents approximately 3% of thyroid cancers, containing rearranged during transfection (RET) mutated gene that promotes abnormal activation of RET signalling pathway.

Therapeutical approach varies according to the type and stage of the cancer and includes thyroidectomy, radioactive iodine therapy, and molecular-targeted therapies with tyrosine kinase inhibitors.

Keywords: Thyroid cancer, Thyroid nodule, Papillary thyroid cancer, Follicular thyroid cancer, RTK, MAPK, PI3K/AKT, BRAF, RAS, PAX8-PPARγ rearrangement, RET

MELANOMA

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Melanoma is one of the most aggressive skin cancers, which emerges from melanocytes. Melanomagenesis can be initially triggered by two types of risk factors: exposure to natural and/or artificial ultraviolet (UV) radiation and host-related agents. From a genetic point of view, this type of cancer is very heterogeneous. Therefore, depending on the initiating stimulus, it may be associated with different types of driver mutations. B-Raf Proto-Oncogene (BRAF) is the most frequent mutated gene in melanoma, although there are other significant genetic alterations, such as mutations in NRAS Proto-Oncogene (NRAS), Proto-Oncogene c-KIT (C-KIT) and G Protein Subunit Alpha Q (GNAQ) biomarkers, for example. This modifications in melanocytes chromosomes lead to the aberrant activation of two main signalling pathways: mitogen-activated protein kinase (MAPK) and phosphoinositol-3-kinase/protein kinase B (PI3K/AKT) signalling mechanisms. Moreover, melanoma cells are strongly affected by the surrounding microenvironment of the tumour and the immune system.

Keywords: melanoma, skin cancers, melanocytes

HEREDITARY METABOLIC DISORDER - GALACTOSEMIA

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Galactosemia is an inborn error of carbohydrate metabolism caused by an impairment of any one of the three galactose metabolizing enzymes named as "the leloir pathway" (GALK, GALT, GALE). This mutation occurs in three different chromosomes 9p13, 17q24, 1p36, that are responsible for the codification of essential enzymes in the galactose metabolism. All of these diseases follow an autosomal recessive pattern of inheritance. The most significant defect among them is GALT deficiency or classic galactosemia, which is often referred to as hereditary galactosemia (OMIM 230400 - Galactosemia), patients with this disorder exhibit severe GALT deficiency with absent or barely detectable erythrocyte and hepatic activity.

The diagnosis of galactosemia can be initiated due to clinical characteristics of the patient, newborn screening results and laboratory findings. The verification of the disorder is established by measuring galactose-1- phosphate levels and GALT enzyme activity in red blood cells and/or molecular genetic testing of the GALT gene. The treatment of Classic Galactosemia standard of care is a life-long galactose-restricted diet by eliminating galactose and lactose from dairy products.

The international clinical guideline for the management of classic galactosemia recommends a life-long galactose-restricted diet that only eliminates sources of lactose and galactose from dairy products, allowing mature cheeses, caseinates, and non-milk foods.

In order to understand the mechanisms responsible for the phenotypic variation with the same genotype is essential to provide appropriate counseling. Usually, these patients embrace organizations available to share their experiences.

Aim: To describe the classic galactosemia disorder focusing on genetic factors.

Keywords: "Galactosemia"; "Classic Galactosemia"; "Hereditary"; "Genetics"; "Metabolic"

GENETIC BASIS OF MAPLE SYRUP URINE DISEASE

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Maple Syrup Urine Disease (MSUD) is a hereditary metabolic disease with an autosomal recessive character, which mainly affects newborns. It occurs when the organism cannot process branched-chain amino acids (BCAAs). The strong smell of sugar burning in the urine gave birth to the name of this disease. The estimated prevalence of MSUD is 1 in 185 000 newborns and is higher in communities where consanguinity is frequent.

MSUD is caused by an inborn error of the metabolism, which occurs due to mutations in the genes *BCKDHA*, *BCKDHB* and *DBT* that encode components of the enzyme complex called α-keto acid branched chain dehydrogenase (BCKDH). BCKDH participates in the catabolism of BCAAs, which are leucine, valine and isoleucine. The enzymatic deficiency leads to toxicity in the organism. The diagnosis is confirmed by elevated serum levels of leucine, isoleucine and valine by quantitative analysis of amino acids.

MSUD is categorized as severe, intermediate or intermittent. It manifests itself in newborns after four to seven days of life, through some symptoms such as alteration of tone, lethargy, refusal to eat and weak sucking. The prognosis is extremely unfavorable if an early treatment is not applied. The treatment is based on the elimination of toxic metabolites that accumulated and the prescription of a hypercaloric and hypoproteic diet which is restricted in BCCAs, with possible supplementation of minerals and vitamins in case of need. It is advisable to start as soon as possible and maintain the treatment for life.

Our aim is to study maple syrup urine disease from a genetic point of view.

Keywords: maple syrup urine disease, genetic mutations, inherited metabolic disorders

GRACILE SYNDROME- *BCS1L* GENE MUTATION

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The GRACILE syndrome is an autosomal recessive disease, which originated in Finland. It is characterized by a homozygous mutation in the *BCS1L* gene that encodes the chaperone responsible for the assembly of complex III of the respiratory chain.

Clinical Manifestations: The first symptom found is a delay in intrauterine growth. Later, other clinical manifestations appear, such as growth retardation, aminoaciduria, cholestasis, iron overload, lactacidosis and early death.

Genetics: It is caused by a missense mutation in the *BCS1L* gene, which is located on chromosome 2q35. This gene encodes a protein necessary for an incorporation of the Rieske FeS subunit into the respiratory chain complex III. The mutation is located in the second exon (c.232 A> G) of the gene, leading to the change from a serine to a glycine at position 78 of the protein (S78G).

Diagnosis and Treatment: Until now, there is no treatment available that has prolonged the lives of these patients, who were condemned from an early age. Therefore, it is important to provide a prenatal diagnosis for families with a history of this disease.

The metabolic disorders associated with this syndrome vary in severity, with a Fanconi-type aminoaciduria and type A lactacidosis that characterize it.

The ketogenic diet may represent a potential therapy for diseases associated with the respiratory chain of mitochondria, although there are not yet enough studies for such evidence.

The aim is identify genetic changes associated with GRACILE syndrome and if nutrition influences the treatment.

Keywords: GRACILE syndrome, *BCS1L* gene mutation, respiratory chain complex III, growth retardation.

ADRENOLEUCODYSTROPHY AND NUTRITIONAL INTERVENTION

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Adrenoleukodystrophy (ALD) is a rare, recessive genetic disease that mainly affects males. The mutant gene, which causes the disease, is located on the X chromosome. This gene is responsible for encoding the ABCD1 protein, which has the function of transporting very long chain fatty acids (VLCFA) into the peroxisomes, where they suffer β-oxidation. Due to the dysfunction of this protein, VLCFA are prevented from entering peroxisomes, accumulating in tissues, especially in the brain and adrenal glands. The effect of this excessive accumulation is the destruction of the myelin sheath, affecting the transmission of nerve impulses.

Adrenoleukodystrophy has an unfavorable prognosis, and its diagnosis is made by checking the levels of VLCFA, by cytogenetic or molecular analysis. Early diagnosis is of great relevance due to its rapid progression.

The first proposed treatment for X-ALD consisted of a diet with low consumption of VLCFA. Another therapeutic proposal was to combine the diet with low intake of VLCFA with the intake of monosaturated oleic acid (GTO). In general, a diet with low levels of VLCFA, can be obtained using skim milk, lean beef or pork, chicken (except skin), fruits and vegetables. Should be avoided supplements with mineral multivitamins (essential sources of fatty acids), such as industrial fat (butter, cream, whole milk, ice cream), meat fat and meat products. Adequate nutritional care and physiotherapy reveal beneficial contributions to the improvement of symptoms.

The purpose of this review article is to assess how food can mitigate the symptoms of the disease.

Keywords: Adrenoleukodystrophy; treatment; prognosis.

TYROSINEMIA TYPE 1

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Hereditary Thyrosinemia type I (HT1), is an autosomal recessive disease whose genetic mutation is located on chromosome 15 region q23-q25, in the *FAH* gene of the enzyme fumaryl-acetato-hydrolase (FAH), which is the last enzyme involved in the tyrosine catabolic pathway. In this pathology, the total degradation of tyrosine does not occur, due to the deficiency of the FAH enzyme, which causes accumulation of toxic substances, succinylacetone and succinylacetone. The liver and kidneys become intoxicated and, from this point on, the child begins to manifest symptoms.

In HT1, the symptoms can range according to the acute or chronic expression of the disease. In the acute form, it may present early with rapid deterioration of liver and renal functions. In the chronic form, renal dysfunction occurs, which can cause rickets, cirrhosis, delayed growth, and nervous system problems. Some cases present cardiac alterations.

This mutation has a worldwide prevalence of 1:100,000 to 1:120,000, manifesting itself mostly in the population of Canada.

For the treatment of this pathology, it is recommended the dietary restriction of tyrosine and phenylalanine avoiding its accumulation and it is necessary to restrict the proteins, since it contains these amino acids. Relatively of pharmacological treatment, the NTBC drug can be used, which blocks the metabolic pathway producing toxic metabolites, preserving the liver and kidneys. Finally, liver transplantation is indicated only when late diagnosis occurs and liver lesions are irreversible.

The objective of this work are to have a deeper knowledge of this genetic mutation, its complications, and its treatment.

Keywords: “Thyrosinemia type I”, “genetic mutation”, “FAH”.

POMPE'S DISEASE

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Pompe's disease (PD) is a rare, autosomal recessive genetic disease, caused by acid maltase deficiency. The deficiency of this enzyme is due to mutations that occur in the GAA gene on chromosome 17, which encodes this enzyme. The lack of this enzyme, prevents glucose molecules from being released, which induces the accumulation of glycogen and a decrease in the supply of energy to many organs, namely the striated muscle and the heart.

Regarding the clinical presentation of Pompe's Disease, three classic forms are distinguished: infantile, juvenile and adult forms, with an inverse correlation between clinical severity and the level of residual enzyme activity. In infantile form or glycogen storage disease (GSD) type IIa, the manifestations begin in the first months of life and include progressive heart problems and generalized hypotonia. In juvenile or GSD type IIb and adult or GSD type IIc forms, patients typically have a more marked myopathy at the level of the scapular and pelvic waists, with early affect of the diaphragm and intercostal muscles, leading to hypoventilation. The diagnosis of Pompe's disease is obtained by demonstrating the deficit in the activity of acid maltase in fibroblasts, leukocytes or muscle. In these patients it is common to perform a muscle biopsy that shows in the vast majority, a glycogen accumulation within the lysosomes and dispersed in the cytoplasm. Regarding treatment, the replacement therapy with human recombinant alpha-glycosidase stands out, which prolongs survival and reduces morbidity, contributing to the alteration of the disease prognosis.

So, the objective of this work is to characterize the disease in general, highlighting the genetic component and the possible nutritional intervention.

Keywords: Pompe disease; acid maltase; metabolic disease; glycogen

TAY-SACHS DISEASE

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Tay-Sachs disease (TSD) is an autossomal recessive genetic disorder, particularly a gangliosidosis. It is caused by a mutation in the gene encoding the enzyme β-hexosaminidase A (HEX A) leading to an enzyme deficit that triggers neuronal accumulation of GM2 gangliosides.
The *HEXA* gene is located on chromosome 15q23 and can undergo different mutations, which leads to three forms of presentation: infant, juvenile and adult, having a variable clinical phenotype depending on the different accumulation rates of GM2 gangliosides.
The diagnosis is made based on the clinical manifestations which are characterized by progressive cognitive and motor deterioration leading to the appearance of symptoms such as seizures, mental retardation, paralysis, blindness and deafness. It is very common for a cherry-red spot to appear on the macula of the retina and these patients generally have an average life expectancy of 5 years. To complement the diagnosis, a blood test can be used by measuring the levels of β-hexosaminidase A.
Regarding treatment, this disease still has no cure however, it is possible to apply some care to the patient such as physiotherapy, medication (anticonvulsants and antibiotics) and ensure adequate nutrition and hydration, improving the quality of life of patients. These patients may need enteral nutrition and supplementation in order to ensure a good nutritional status.
This rare disease still needs to be investigated in order to improve the available therapy. Currently, the possibility of enzyme replacement therapy is being studied.
This review aims to describe TSD according to its genetic etiology and associate the role of nutrition on the treatment of TSD patients.

Keywords: “Tay Sachs disease”, “β- hexosaminidase A” and “GM2 gangliosidosis”

NUTRIGENETICS, NUTRIGENOMICS AND OBESITY

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Obesity is a global epidemic that has been increasing worldwide. This chronic disease, associated with many comorbidities, has a multifactorial etiology involving factors such as diet, environment and genetics. There are specific genes associated with obesity, which are related with energy intake, appetite, macronutrients preferences, lipid metabolism, thermogenesis and transcription factors. Therefore, nutrigenetics and nutrigenomics contributes to the understanding of the obesity phenotype.

Some of the genes associated with obesity are hormone related such as LEP (leptin), GHRL (grelin) and CCK (cholecystokinin), the insulin-induced gene *INSIG2*, *APO-A* gene which is important in lipid metabolism and the *FTO* and *MC4r* genes that are involved in appetite and energy balance control. More recently discovered the RPK1 gene, associated with the inflammatory process.

All in all, the interaction between genetic predisposition and obesogenic environment contributes to the obesity epidemic. The adverse impacts of this disease remain a concern in today's society, making it necessary to create larger/greater interventions. The field of nutrigenomics and nutrigenetics is showing promising results for the prevention and management of obesity, however more studies are needed to present nutritional guidelines.

The aim of this work is to understand the difference between nutrigenetics and nutrigenomics, as well as to comprehend the relation between this concepts and obesity through the investigation of the different polymorphisms associated with the development of this disease and also of the potential molecules influencing gene expression.

Keywords: "Nutrigenomics", "Nutrigenetics", "Obesity", "Gene", "Interaction"

NUTRIGENOMICS AND AGING

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Aging consists of a natural biological process whose phenotypic characteristics are the result of a chronic systemic inflamation, also known as “inflamaging”. This multifactorial process is influenced by the interaction between genetic and environlmental factors, including diet and nutrition. Nutrigenomics is an emerging field of research which has been investigating the link between dietary components and their influence on the genome.

The process of aging has been associated with a global hypomethylation of DNA and gene-specific hypermethylation. Changes in histones and chromatin structure have also been observed. Interestingly, nutrition has been found to influence DNA methylation and histone modifications (methylation and acethlation) through both food quality and quantity. For instance, certain nutrients constitute substrates for the methylation of both DNA and histones, as well as cofactors that affect the activity of the enzymes methyltransferases and those involved in the 1-carbon cycle. In addition, bioactive compouds could contribute to the regulation of DNA methyltransferases and histone deacetylases.

Eating habits and nutrition seem to play a very important role in the promotion of a healthy aging, through direct or indirect interactions with the genome. However, more studies are needed in order to deepen the knowledge regarding diet-genes interactions.

The aim of this work is to understand the impact of nutrients and bioactive compounds on the genome and their role in aging.

Keywords: Nutrigenomics, Aging, DNA methylation, Histone modifications, Nutrition

EATING BEHAVIOR OF THE ADULT POPULATION

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In Portugal, inappropriate eating habits are the third main risk factor that contributes the most to the total years of healthy life lost.

The objective of the work was to study the eating behavior of the adult population.

Bibliographic reviews on the topic were reviewed and an online survey was reviewed.

It was found that 63.5% of the respondents consume 3 to 4 meals daily, however 30% consume 5 or more and only 6.5% take 1 to 2 meals daily. Most adults claim to have a high consumption of meat, fish and vegetables, highlighting the consumption of meat, since 12% of the respondents claim to always consume meat and 56% often choose it.

In Portugal we consume 30 tons more salt per day, with the prevalence of arterial hypertension in the Portuguese adult population estimated to be 42.1%. The National Program for the Promotion of Physical Activity, considers physical inactivity one of the main risk factors for chronic non-communicable diseases, leading to an increase in physical inactivity in the population.

Thus, eating behavior influences health in adults, being directly linked to the excessive consumption of high levels of caloric intake, as well as products of animal origin, fats, especially saturated, salt and sugar, and low intake of fruits, vegetables, adding physical inactivity.

Keywords: Eating behavior, health, adults

FOOD SAFETY WHEN USING LUNCH BOXES

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Food plays an essential role throughout individuals life cycle. Ensuring that food does not present a danger to the consumer when it is prepared and / or consumed according to their purpose is the main objective of food security.

Lunchbox emerges as a strong ally for appropriate food and concomitant with a healthy lifestyle. The thermal coating of the lunch box must preserve food´s temperature until the moment of its ingestion.

With the accomplishment of this work it was intended to evaluate the level of knowledge and good practices on food safety in the use of lunchboxes and to sensitize the population on how to use them according to food safety rules. A bibliographic research was carried out on the subject and a survey was applied to the general population.

Of the 901 interviewed, it was found that 64% use plastic to transport their food. Only 29% know the safe temperature for hot and cold meals. Just 29% warms food in glass containers and 85% knows that heating food in plastic containers is harmful to health.

From “meadow to plate”, all stages of food production must implement effective strategies for promoting safe food. The adoption of appropriate practices can prevent foodborne infections and contribute to reducing health costs.

Keywords: food, lunchbox, health, food security

FOOD SECURITY IN PANDEMIC TIME

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The theme of food safety has always been of great importance, it is necessary to take into mind the hygiene and handling of food in order to safeguard the health of the population. Climate change, scarcity of water resources or soil degradation can be three examples of food security.
The objective of this study was to evaluate the good practices of food security in pandemic time in the Portuguese population, having carried out a bibliographic review and the application of a survey.
It was found that 71.1% of the population feels safe whenever they buy food in the supermarket and 59.6% of the population feels safe food whenever they attend a restaurant, however, 47% of the individuals have the perception that the Portuguese population is not aware of the necessary safety measures whenever they purchase a food.
The current context of the COVID-19 pandemic is characterized by the implementation of a wide range of measures to prevent the expansion of the disease, with impacts on various aspects of life. The behaviour stemming from food consumption, from changes in the level of food buying and consumption to the increased food insecurity situation, are examples of this.

Keywords: food safety, pandemic, behaviour

IMPACT OF THE COVID-19 PANDEMIC ON POPULATION EATING BEHAVIOR

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Food is of great importance for human health, because when done correctly it is possible to avoid a large number of diseases, in addition to serving as a basis for nutrition.

The measures adopted to prevent the spread of COVID-19 (a disease caused by the SARS-COV-2 coronavirus), namely preventive (prophylactic) isolation, may contribute to changes in food purchasing and consumption behavior.

Our goal for this study was to evaluate the modification of food towards the COVID-19 pandemic. A bibliographic review was carried out and then we choose to conduct an online survey of a population.

It was found that, of the sample consisting of 505 individuals, 78.8% reported that natural foods such as vegetables, poultry, and fish were the most consumed.

81.80% of the population considered having a healthy diet a healthy diet, and 73.50% mentioned that a healthy diet contributes to a good functioning of the immune system.

49.50% reported that the pandemic influenced the extent to which there was an increase in weight (38.40%) and a more sloppy diet (37.70%)

The majority of the population (51.50%) said that the pandemic influenced the reduction of food waste.

Therefore, it was found, that people are not aware of how they can acquire their purchases in the context of a pandemic, being in prophylactic isolation. That said, there is a need for awareness transmitted by entities and organizations that can assist in this type of procedure so that people know how to act correctly in the context of a pandemic.

Keywords: Food; Covid-19; Pandemic; Immunity system; Awareness

FOOD WASTE

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Food waste appeared in households and in public catering services, mainly for collective food. Its main reasons are: excessive cooking and lack of use of food within the expiration date.
The objective of the work was focused on a brief reflection on the general knowledge that the population has about food waste and its consequences. As a methodology, a bibliographic review was made and a questionnaire about the theme was applied to the population in general.
Of the 536 respondents, 69.8% of respondents plan the shopping list in advance and the remaining 30.2% of respondents are not in the habit of planning the shopping list. 76.7% confess that they are in the habit of buying products that are not on the list.
The relevance that people give to promotions such as "take 3 pay 2", or similar, is great (57.8%), but even so, there is a percentage (42.2%) that does not adhere.
Foods that are rejected by respondents occur at the following frequencies: never (28.9%) and daily (2.2%). Since the vast majority of respondents in our universe of respondents (95.1%) are aware of the consequences of food waste
We found that the vast majority of respondents reuse leftovers for making other meals (94.2% of the universe), demonstrating that they have a certain concern for the topic.
In short, in our view, the population begins to give a strong importance to food, avoiding food waste, due to a greater awareness of the consequences of this waste, we may one day reach the goals set by world organizations.

Keywords: Food, Food Habits, Leftovers, Reuse, Waste.

FOOD BEHAVIORS OF HIGHER EDUCATION STUDENTS

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Food and nutrition are basic requirements for the promotion and protection of health and enhance human growth and development with quality of life and citizenship. This is, after breathing and drinking water, the most basic of human needs.

Entry on higher education is a turning point in the biography of any student, in which they develop autonomy for their choices, namely food choices.

The objective of this work was to evaluate students' eating behaviors before entering higher education and as students of higher education, and for that, a bibliographic review was carried out and a survey was applied to students.

Through the analysis of the data obtained from the sample of 497 students and regarding the consumption of vegetables and fruit, it was found that students consumed more frequently before entering Higher Education comparatively after their entry.

It was found that 51.1% answered that they continued with the same eating habits after entering higher education, 33.4% mentioned that it worsened and 15.5% said that it improved compared to the food they ate before entering higher education.

We conclude, therefore, that it is important to highlight the need for changes in certain eating behaviors of university students, as they tend to extend into adulthood, being necessary to actively intervene in this population and reverse inappropriate eating habits and sedentary lifestyle, characteristic of these students.

Keywords: Eating behaviors; Food; Lifestyle; Higher Education, Students.

GOOD PRACTICES IN FOOD SAFETY FOR STUDENTS

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Food is the basic need for any society. It influences the quality of life because it is related to the maintenance, prevention or recovery of health. It must be healthy, complete, varied, pleasant to the palate and safe to fulfill its role.

The World Health Organization points out as the main problems of food safety the contamination by microorganisms, such as Salmonella, Campylobacter, Escherichia coli, Listeria, Vibriocholerae; and others, such as substances that occur naturally in food (mycotoxins and marine biotoxins) and environmental contaminants (dioxins, polychlorinated biphenyls and metals).

For the development of this study a bibliographic review of several articles on the subject was carried out and data collection and subsequent analysis tools were used, from students in Higher Education

It was found that most respondents know that there are procedures that reduce contamination, but still do not comply with them. Some of these steps are essential so that food toxinfections do not arise.

85% of the respondents answered that they confect food well and 72.8% of the students have knowledge of bacteria that cause foodborne diseases that may come from poorly confectioned food.

Every day there are challenges for which one must be more than prepared and alert to solve them, because food can be a vehicle of transmission of disease agents, being the food diseases of microbiological origin, one of the biggest security problems. Foodborne diseases and the associated damages are unpleasant to say the least, and in the worst case fatal.

Keywords: Food; Quality; Safety; Contamination; Diseases

FISH FOOD SECURITY

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The evolution of society and the changes in lifestyles and eating habits have had profound repercussions on the food chain. The concern arose to develop and market foods appropriate to the demands of modern life, without underpnoising the satisfaction of nutritional needs and the promotion of well-being and health.

The need to evaluate the degree of freshness of the fish traded in a lot, in an expeditious way and without resorting to destructive tests leads to privilege of sensory analysis. In this sense and with a view to contributing to the harmonisation of the attributes to be considered in the course of a sensory analysis, as well as the respective scores to be assigned, a freshness quotation table which is translated into several languages and published in the Regulation has been developed at European Union level.

In this work, a literature review was made and a questionnaire was applied to the population.

In view of the results obtained, 42.1% reported not having a healthy diet.

Of the respondents, 40.8% felt confident when consuming fish.

When considering the hygiene and safety of fish, it is essential to know the risk associated with its consumption and the hazards concerned. This knowledge is essential in order to implement measures to avoid or reduce the presence of hazards, whose presence in food can cause deleterious effects on the health of the consumer.

Keywords: Food; Quality; Security; Contamination; Diseases

IMPLEMENTATION OF THE HACCP SYSTEM IN A BAKERY

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In recent times companies and organizations in the food industry have faced several problems due to the quality and safety of their products, so it was necessary to implement new systems for control, management and food safety.

Therefore, companies and organizations in the food industry need to include these systems in their management activities, forcing them to comply with an increasing number of regulations and standards of their main goal, the protection of consumers from diseases and injuries.

The Hazard Analysis Critical Control Points (HACCP) system was then created, which consists of a preventive system that seeks the production of innocuous foods, to guarantee a higher food security. For its proper application, a set of technical, scientific, food production and handling principles is required.

This work starts by approaching the HACCP system in a more superficial way, focusing on its evolution. Then there is a second part, which consists of implementing this system in a bakery, showing the main advantages of implementing this system and also showing a system with a demanding and complex methodology that guarantees the achievement of a totally safe product.

It was observed that, through the procedures of the HACCP system, it became possible to guarantee the food security of a “traditional bread”.

Keywords: HACCP ; Bakery; Food Safety

NUTRITIONAL AND MEDICAL APPLICATIONS OF SPIRULINA

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Introduction: Spirulina is an excellent source of macro and micronutrients, rich in proteins (70%) and vitamins (A, D, B2, B6, B12). Spirulina Plantensis is the best known and used in the pharmaceutical industry, and it has been discovered that it can be useful to treat and prevent various health problems. With this poster, we will cover each of the medical and nutritional applications of Spirulina Plantesis.

Objective: Determine the nutritional and medical applications of spirulina, its advantages and progressive evolution in the pharmaceutical industry.

Material & Methods: The researched articles were based on electronic databases like Google scholar and the Pubmed. The research was conducted with the keywords: “spirulina”, “nutrition”, “medical and nutrition application”, “composition”, between 2010-2020.

Results & Discussion: Spirulina Plantensis has been recommended as a food supplement in diets for weight loss due to its high nutritional and energy value. It has several pharmacological activities such as immunomodulatory, anti-cancer, antioxidant, metalloprotective, antimicrobial, antidiabetic. Also, it has several beneficial effects on health such as combating malnutrition, hyperlipedemia, obesity, chemical toxicity, inflammatory allergic reactions and damage by radiation and anaemia.

Conclusion: The use of spirulina plantensis has been increasing significantly in the pharmaceutical industry due to its nutritional composition and its positive and beneficial effects on the health of the population.

Keywords: Spirulina; Medical and nutritional applications; Dietary supplement; Chemical composition; Immunomodulatory; Anti-cancer, Antioxidant; Metalloprotective; Antimicrobial; Antidiabetic

MELATONIN AND ITS INFLUENCE ON COVID-19

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Introduction: Coronavirus, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), is a newly discovered virus that was declared a pandemic. The virus affects the respiratory system and produces an inflammatory storm that causes lung damage and respiratory dysfunction.
Melatonin is a neuroendocrine small molecule secreted from the pineal gland during the dark period of a circadian cycle. It is known to influence many biological processes in the body, including circadian rhythms, the immune system, and neuroendocrine and cardiovascular functions. Melatonin rhythms also reflect the natural process of aging.
Objective: The aim of this study is to understand the relationship between the use of melatonin and the treatment or improvement of symptoms of COVID-19.
Methods: This study was based on the review of 11 articles found on "PubMed" and "ScienceDirect", all from 2020, using the keywords "Melatonin" and “COVID”.
Results: A significant number of studies and clinical trials indicated that melatonin is safe, even at doses 100 times higher than physiological concentrations. The potential of melatonin as an adjuvant treatment, had been suggested as a feasible therapy against SARS-CoV-2. Previous research has documented the positive effects of melatonin in alleviating acute respiratory stress induced by virus, bacteria, radiation, etc.
Conclusion: The direct protective action of melatonin against COVID-19 is unknown, but Melatonin plays a key role in several biological processes and offers an alternative point of view in the management of viral infections.
Therefore, melatonin practical usage in the current COVID-19 outbreak is suggested to be beneficial.

Keywords: Melatonin; COVID-19; Chronic disease.

ANTIDEPRESSANTS AND BODY WEIGHT

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Introduction: Depression is among the ten most prevalent diseases in the world. Changes in weight, associated with depression, are a complex phenomenon and can be influenced by specific factors linked to antidepressant therapy.

Objective: Understand the impact of antidepressant use on body weight in the class of monoamine oxidase inhibitors (MAOI), selective serotonin reuptake inhibitors (SSRIs) and tricyclic antidepressants (TDA)

Methods: The literature review was conducted through research in the scientific databases using as keywords "Antidepressants" AND "Body weight", between 2008-2020.

Results: The causes of weight gain are explained depending on the class of antidepressants. In the case of tricyclic antidepressants thought to be related to increased desire for carbohydrate-sourced foods due to antihistaminergic activity, monoamine oxidase inhibitors may be related to monoamine oxidase inactivation, and selective serotonin reuptake inhibitors are due to low levels of 5HT; however, showing that if these levels are high, they can lead to an opposite effect by decreasing appetite which, will lead to decreased weight.

Conclusion: Changes in body weight in patients treated with antidepressants are multifactorial and are an important factor for non-treatment. Further studies should be designed to clarify the mechanisms behind these weight swings so that therapy is increasingly directed to the patient's needs, considering these drawbacks.

Keywords: antidepressants; body weight; MAOI; TDA; SSRIs

Discipline: Nutrition

Professor: Ana Lúcia Baltazar

Degree: Pharmacy

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THE ROLE OF PROCESSED MEAT IN THE DEVELOPMENT OF CANCER

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Introduction: Meat processed is all meat treated by salting, fermentation, curing, smoking or other processes that can enhance the taste or improve preservation.

Cancer is a disease that affects the growth, multiplication and territorial expansion of cells, with the existence of mutations in DNA, an uncontrolled division is observed and, therefore, the appearance of abnormal properties. Carcinogenesis is a process of transformation of a normal cell into a mutated cell.

Aim: Relate the intake of processed meats and the development of cancer

Methods: The literature review was made using scientific databases from 2015 to 2020 and the CUF website.

Results: The International Research Agency classifies processed meat as carcinogenic in humans, as it presents an increased risk of cancer.

The manufacturing process involves; healing techniques that can produce carcinogenic N-nitrous compounds (NOCs); smoking that has polycyclic aromatic hydrocarbons; cooking at high temperatures that make heterocyclic aromatic amines carcinogens, and the ingestion of meat with heme group can catalyze the formation of NOC and lipid peroxidation in the gastrointestinal tract. These products can lead to the formation of adducts of DNA and induce mutations that lead to carcinogenesis. Immunochemical methods, gas chromatography/ mass spectrometry and mass spectrometry in liquid chromatography are used to detect the presence of adducts.

Conclusion: The solution is a lower intake of processed meats and compensates with a diet based on lean and white red meats such as chicken, fish, vegetables and

fruits, which can provide a balanced and healthy diet without the use of the intake of processed meats. This research work aim was able to develop the relationship between the intake of processed meat and the development of cancer.

Keywords: Processed meat, cancer, eating habits, mutations, healing process

THE ROLE OF THIAMINE (VITAMIN B1) IN ALZHEIMER'S DISEASE

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Background: The first and perhaps the best example of the interaction between nutrition and dementia is related to thiamine. Thiamine-dependent enzymes are important components in glucose metabolism that are reduced in the brains of Alzheimer's patients, who also have thiamine deficiency. Therefore, its decline may be responsible for the reduction of this metabolism and thus reduce the cognitive deficits associated with Alzheimer's.

Objectives: To understand the relationship between thiamine deficiency and Alzheimer's disease, as both are associated with cognitive deficits and reductions in cerebral glucose metabolism and what are their possible causes.

Methods: The research was accomplished on the scientific basis Pubmed and ScienceDirect, from 2011 to 2018, according to the objective of the work.

Results: Several studies have been carried out to analyze the possibility of delaying this pathology with thiamine enrichment. It has been shown that the effects of thiamine administered orally had a mild beneficial effect on the disease, but if it is long term there are no effects recorded in slowing the progression of this disease. However, oral thiamine supplementation, despite improving cognitive function, did not lead to substantial changes in brain thiamine. On the other hand, if treatment is given early, a thiamine can reverse deficits related to thiamine deficiency. Other studies have shown that this deficiency in individuals over 60 could only be corrected by parenteral administration.

Conclusions: Further studies are needed to determine the benefits of using parenteral thiamine as a possible therapy for the treatment of Alzheimer's disease. In short, a diet rich in nutrients that modulate degenerative processes with appropriate pharmacological therapy can provide an increase in well-being and health, through a possible delay of Alzheimer's in the patient or even as an adjunct in prevention this pathology.

Keywords: thiamine; Alzheimer's disease; metabolism; cognitive deficits; thiamine deficiency

COVID-19: BENEFITS OF VITAMIN D

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Background: Vitamin D is a steroid hormone found in many foods and also produced by the endogenous system when the sun's ultraviolet rays reach the skin and trigger its synthesis. There are several in vitro studies which report that vitamin D has many mechanisms through which it reduces the risk of microbial infection and death as it plays a vital role in "respiratory homeostasis" reducing rates of viral replication.

Objectives: The goal of this research is to partially understand the reasons behind the respiratory infections caused by the SARS-CoV-2 virus, and in what sense improved immunity through better nutrition through vitamin D can be an essential factor.

Methods: This research was constructed through scientific databases and websites, and articles were selected from the year 2020, according to the work aim.

Results: The severe damage caused by the SARS-COV-2 virus is due to its infection of the upper and lower airways with rapid replication of the virus and a massive inflammatory cell infiltration which produces an enormous increase in proinflammatory cytokines. Vitamin D, through its active metabolite 1.25(OH)2D, increases innate defence by antimicrobial induction of peptides such as catechycidine which lead to viral destruction and elimination by various mechanisms.

Conclusions: Information is limited to the potential protective factors for this infection. Currently, it is not clear how vitamin D achieves the balance between the functional state of immune responses and antiviral status in these patients. However, considering the range of beneficial immunological effects attributed to vitamin D and its safety, it is used as a supplement in therapeutic intervention in COVID-19 in critically ill patients.

Keywords: COVID-19; Vitamin D; Pulmonary Cytokine Storm.

PIPERINE - PREVENTION AGAINST BREAST CANCER

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In our food, spices have been introduced to improve his smell, taste and color. Some of them have made a huge contribution to cancer prevention and treatment.

Breast cancer is one of the most common carcinoma in women and has as main treatments surgery, chemotherapy, radiotherapy and hormonal therapy. Although, there has been a multidrug resistance and for these reason studies are being developed for new chemotherapeutic agents.

Piperine is a pungent alkaloid with an important phytochemical in the diet and with excellent therapeutic activity due to his anticancer characteristics, because it is a potent inhibitor of p-glycoprotein, it reverses the resistance of cancer cells, acting as enabler for chemotherapy.

The objective of this study is verifying the efect of piperine in preventing breast cancer.

The scientific review was based on “PubMed”, using as keywords “Piperine”, “Breast Cancer” and “Chemeotherapy”, which led us to choose eleven articles, with publication date between 2011 and 2020.

Studies carry out on piperine in relation to breast cancer, have discovered the formation of reactive oxygen species in various types of cancer cells, which lead to depolarization of membrane potencial releasing citochrome c, activating caspases and inducing apoptosis. It was verify the inhibition of cell proliferation wich leads to the cell cycle stopping and due to this mechanism of action, in adjunct to chemotherapy, we have an example such as paclitaxel, which increases the effectiveness, of TNF-related apoptosis-inducing ligand-based therapies in breast cancer cells.

In short, piperine has obtained results to help fighting breast cancer.

Keywords: Piperine; Breast Cancer; Chemotherapy; Apoptosis; Inhibition of cell proliferation.

EFFECT OF SELINUM ON PAIN REDUCTION IN FIBROMYALGIA

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Introduction: Fibromyalgia (FM) is a chronic musculoskeletal syndrome. It's characterised by diffuse pain and the present of musculoskeletal tender points on physical examination. FM it's a condition of widespread chronic pain with hyperalgesia and allodynia. Various factors, such as oxidative stress and calcium ion (Ca2+) influx overload, play significant roles in the aetiology of FM. TRPM2 and TRPV1 are cationic channels highly permeable to calcium. Oxidative stress promotes an increase in calcium influx which is one of the factors that increase the aetiology of the disease. Selenium is an essential element for the activity of glutathione peroxidase (GPx). The GPx catalyses the hydrogen peroxide' detoxification of and organic hydroperoxides.

Objective: Study the effect of Selenium on pain reduction in FM.

Methods: The scientific review was based on "PubMed", using as keywords "Fibromyalgia", "Selenium AND Fibromyalgia", between 1998 and 2019.

Results: In FM, the presence of oxygen-free radicals are verified; these function on the TRPM2 and TRPV1 channels allow the outflow of calcium. Selenium degrades these oxygen-free radicals, preventing calcium from the ionic channels. However, selenium-rich foods do not have enough levels to lessen all oxygen-free radicals and thus significantly reduce pain.

Conclusion: It is possible to reduce the pain caused by fibromyalgia by intake of Selenium; however, in our diet, these levels are low, not demonstrating a significant reduction of pain.

Keywords: Calcium; Fibromyalgia; TRPM2; TRVP1; Selenium

KETOGENIC DIET IN CHILDREN WITH EPILEPSY

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Introduction: Epilepsy is a disease characteristic of a lasting predisposition to generate recurrent, sudden and unpredictable seizures. Despite the advance of technology, knowledge of the disease and its therapeutics, the existence of children with intractable epilepsy is maintained, this derived from drug resistance. The Ketogenic Diet is presented as a non-pharmacological therapeutic alternative in the fight against this pathology. It consists of a diet rich in fat, low in carbohydrates and adequate protein consumption. In addition to the efficacy in reducing seizures, it also presents improvements in the patient's alertness, attention and overall cognition.

Material and Methods: Data were obtained through a survey that lasted a month, from Pubmed and Sciencedirect websites, using the following keywords: "Epilepsy" and "Ketogenic Diet"

Results: It has been proven that the Ketogenic Diet has benefits in the fight against epilepsy. During the last decade, its use has increased. There are indications that the Ketogenic Diet improves the overall cognition of the patienthe Ketogenic Diet usually is implemented with variable dietary ratios and usually presents seizure frequency at 1 month, 3 months, 6 months, 1 year, and 2 years. Usually the main reason for discontinuing ketogenic diet is familiar decision.

Conclusion: The Ketogenic Diet is a very viable therapeutic in the treatment of epilepsy. In addition to crisis control, patients exhibit improvements in behaviour and alertness. Therefore, it is necessary to communicate the benefits of this diet so that more patients and caregivers adhere to this therapeutic.

Keywords: Epilepsy; Ketogenic Diet; Children; Therapeutic

VITAMIN B12 SUPLEMENTATION IN VEGETARIANS

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Vegetarianism is a dietary option of abstaining from animal food products. A better health achievement is usually the first goal of turning vegetarians, on the reports that the chronic diseases were significantly lower in vegetarians than in omnivores.

Vitamin B12 is a water-soluble vitamin found in substantial quantities only in animal foods. It is needed for nerve tissue health, brain function, and the production of red blood cells.

If the consumption of animal foods is very low or absent, it will clinically manifest itself in the blood and nervous system, where it plays a crucial role in cell replication and fatty acid metabolism.

This study aims to understand the vegetarianism diet.

The researched articles were based on the electronic databases, with the keywords “Vegetarianism”, “Omnivores”, “Vitamin B12” and “Supplementation”, between 2006- 2019. Besides vitamin B12 there are other nutrients in deficiency. A good planning and careful attention, vegetarian diets can include all these nutrients. To accomplish that, one of the following options must be followed:

1. Eat fortified foods two or three times a day to get at least three micrograms of B12 a day;
2. Take one B12 supplement daily providing at least ten micrograms;
3. Take a weekly B12 supplement providing at least 2000 micrograms.

For vegetarians, vitamin B12 can be obtained from seaweed, plants, edible fungi, soy and rice beverages, some breakfast cereals and meat analogues.

Different guidelines for vegetarian diets have been settled based on the need to fortify foods with molecules that are reduced or missing in these diets.

Keywords: Vegetarianism, omnivores, vitamin B12, supplementation

NEW TREATMENTS TO COMBAT CELIAC DISEASE

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Celiac disease is a chronic disease that involves the dysregulation of the immune system associated with inflammation of the small intestine on exposure to an environmental factor: the gluten protein, in individuals with a specific genetic background. It's considered a multifactorial disease with a broad spectrum of symptoms. It envolves and changes in the intestinal villi that include lymphocytic enteritis and mucosal atrophy.

The goal of this literature is to understand why the current treatment is not fully effective in all celiac patients and also identify new therapeutic alternatives, pharmacological ones, that promote greater adherence and effectiveness in Celiac Disease.

The research was constructed through scientific databases, and articles were selected from the past ten years, according to the work aim.

Several new promising pharmacological therapies have been discovered and developed for the treatment of this disease. namely, therapies based on the modification of gluten; modulation of intestinal permeability; modulation of the adaptive immune response; Intraluminal therapies; Immunomodulation and gluten tolerance. However, our focus will be on Intraluminal Therapies: Gluten-sequestering polymers (BL-7010) and Antibodies that neutralize gluten.

Currently, no novel drugs or new treatments are available on the market. As the development of a novel medication for celiac disease is still under preclinical and clinical phases, the conventional dietary treatment will hold its place for the time being. In the long run, the ideal therapy should provide the opportunity to include gluten in Celiac disease patients diet.

Keywords: Celiac Disease; Novel Treatments; Pharmacological Treatments, Intraluminal Therapies, Gluten-sequestering polymers