

POSTER WEEK 15/2021

ABSTRACT BOOK



POSTER WEEK

**Escola Superior
de Tecnologia
da Saúde**

Politécnico de Coimbra

III Virtual Poster Week
May 27th – June 3th, 2021

SCIENTIFIC COMITEE

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SCHEDULE

Poster Week 15/2021

Calendário

	5 th 27 May	6 th 28 May	S	D	2 th 31 May	3 th 1 June	4 th 2 June
8-9h							
9-10h		Ana Baltazar Toxicologia Alimentar - 9P DN 3 ^o			Fernando Mendes Imunohemoterapia CL I - 9p CBL 2 ^o	Luisa Macieira Patologia - 6P DN 1 ^o	Ana Baltazar Tecnologia Alimentar - 9P DN 3 ^o
10-11h							
11-12h	Hélder Simões Higiene Trabalho - 6P SA 3 ^o					João J. Joaquim Farmacoterapia - 8P DN 2 ^o	Jorge Balteiro Tecnologia e Farmácia Galénica II - 10P Farm 2 ^o
12-13h		Claudia Reis Audiologia Clínica II - 4P Audio 2 ^o					Diana Martins Anatomia Patológica Sistemática - 2P CBL 2 ^o
13-14h							
14-15h	Célia Gomes IAFarm - 1P Farm 4 ^o				Cristina Santos Saúde Pública - 11P SA 2 ^o		
15-16h	João Lima Política Nutricional - 11P DN 3 ^o				Inês Araújo Meios de Comunicação Não Oral II - 4P Audio 2 ^o		
16-17h					Joaquim Pereira Electrocardiologi a 2 - 16P FC 2 ^o	Cristina Santos Gestão da Qualidade da Água II - 9P SA 2 ^o	Carla Matos MTRA - 5P Audio 2 ^o
17-18h						Ana Lança Avaliação de Riscos Profissionais - 5P SA 3 ^o	Alexandra André - 1P Anatomia II CBL 1 ^o
18-19h	Paulo Matafome Fisiologia II - 8P Fisioterapia 1 ^o						João Lima Nutrição Humana - 5P DN 1 ^o
19-20h					Paula Rodrigues Estágio FC - 1P FC 4 ^o		Ana Lança Educação para a Saúde Ambiental - 7P SA 3 ^o

INDEX

Abstract number	Discipline	Program
A1 – A6	Occupational Hygiene	Environmental Health
A7 – A17	Nutritional Policy	Dietetics and Nutrition
A18 – A25	Physiology II	Physiotherapy
A26 – A34	Food Toxicology	Dietetics and Nutrition
A35 – A38	Clinical Audiology II	Audiology
A39	Anatomy II	Biomedical Laboratory Sciences
A40	Research Applied to Pharmacy	Pharmacy
A41 – A49	Clinical and Laboratory Immunohemotherapy I	Biomedical Laboratory Sciences
A50 – A60	Public Health	Environmental
A61 – A64	Means of non-oral communication II	Audiology
A65 – A80	Electrocardiography II	Clinical Physiology
A81 – A92	Human Nutrition	Dietetics and Nutrition
A93	Clinical Internship in Clinical Physiology II	Clinical Physiology
A94 – A99	Patology	Dietetics and Nutrition
A100 – A108	Food Technology	Dietetics and Nutrition
A109 – A116	Pharmacotherapy	Dietetics and Nutrition
A117 – A126	Galenic Technology and Pharmacy II	Pharmacy
A127 – A131	Technical Means of Aural Rehabilitation	Audiology
A132 – A140	Water Quality Management II	Environmental Health
A141 – A149	Food Microbiology	Dietetics and Nutrition
A150 – A154	Risk Assessment and Control	Environmental Health
A155 – A156	Systematic Pathologic Anatomy	Biomedical Laboratory Sciences
A157 – A163	Environmental Health Education	Environmental Health

ABSTRACTS

HYGIENE AND SAFETY IN THE PAINT INDUSTRY

Adriana Marta, Daniela Paulino, David Silva, Marco Filipe

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In Europe, around 4,000 years B.C., the first paints began to be used in civil construction, namely Lime.

In 1989, with the publication of the Directive 89/677 / EEC, the placing on the market and the use of substances such as lead in preparations such as paint were limited.

The objective of this work is to study the impact of the paint industry in relation to Health and Safety at Work.

Paints are a complex mixture of volatile compounds such as water, glycerin or other oxygenated and non-volatile derivatives, such as acrylic resin, polymer additives, surfactants, polycyclic aromatic hydrocarbons, nanoparticles and polymers and pigments.

In general, almost all paints are flammable due to the incorporation of solvents and reducers, which release flammable vapors during application.

Volatile Organic Compounds are chemical substances based on carbon. They usually evaporate at room temperature and pressure, causing volatile particles that are harmful not only to people's health but also to the environment.

The simple operation of opening a can of paint or a solvent already constitutes a risk in the Industrial Painting activity, due to flammable, toxic or corrosive vapors.

Correct use of PPE's, as well as hand washing and hygiene, prevent's respiratory problems, neurotoxic and carcinogenic effects, in order to avoid inhalation of dust or paint mist.

It is important to raise awareness of the use of PPE's, as well as correct Hygiene practices while handling paints in an industrial context. This being the main reason for reducing exposure to its toxic compounds.

Keywords: hygiene at work, paints, volatile organic compounds, personal protective equipment, safety and health at work

BIOLOGICAL RISK IN HOSPITAL ENVIRONMENT

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Biological risks are one of the most worrying in the hospital environment, being found in abundance. Viruses, bacteria, fungi, protozoa, parasites, among others, are considered biological risks.

These are characterized by a dense microbiological population, cross-infection, contact with blood and other body fluids, manipulation of pathological samples, poor hygiene and cleanliness in hand washing, failure in the processes of disinfection, sterilization and asepsis.

They include acute and chronic communicable diseases, parasitic infections and toxic and allergic reactions.

Health professionals who work in a hospital environment are exposed to diverse risks, including those caused by biological, chemical, physical, ergonomic agents, among others. With that we can see that hospitals are considered unhealthy for receiving patients with various infectious diseases and grouping them in the same place, which causes a high degree of biological risks for professionals.

The aim of this study was to analyze the measures adopted by hospital service professionals, promote health and prevent the spread of biological agents and, for this, a bibliographic review was carried out through a search for other scientific articles.

The prevention of biological risks is carried out through training for health professionals, the use of Collective and Individual Protection Equipment, hand, surface and utensil hygiene, placement of waste in appropriate places and safety protocols in the event of an accident.

In this way, biological risks are an important factor to be taken into account in the emergence of new diseases, and must be combated at the source through various preventive measures.

Keywords: Biological Risk, Hospital Environment, Preventive Measures, Health Professionals and Pathologies.

RISKS ASSOCIATED WITH ASBESTOS EXPOSURE

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Asbestos is a variety of six natural mineral fibers, extracted from rocks. It is considered the most important toxic carcinogenic agent present in workplaces in Portugal and in most countries, since exposure to its fibers can cause serious illnesses.

Asbestos fibers, light and aerodynamic, easily move in the air; when they penetrate the lungs, they behave like small spines that are not expelled and join to the walls of the pulmonary alveoli, causing serious diseases, such as asbestosis, lung cancer and mesothelioma.

The purpose of this work is to acquire a more comprehensive knowledge about the risks associated with the use and manipulation of asbestos, the harmful effects that it causes on the health of individuals who deal with / work with materials based on it, including the consequences for the health of your family members, and what preventive measures are involved. A bibliographic research was made on the subject and a survey was applied to the general population.

It appears that 57% of respondents say that asbestos is harmful when inhaled, 1% say that asbestos is harmful when ingested and 41% say that it is harmful when inhaled and ingested. Microscopic fibers can be placed and remain in the lungs, which can cause diseases, decades later.

Domestic exposure to asbestos occurs when workers transport asbestos fibers from their workplace to their homes, thus leading to the onset of diseases due to the transport of asbestos to the family environment.

Keywords: Asbestos, Lung Diseases, Mineral Fibers, Inhalation, Risk

BIOLOGICAL RISKS OF VENTILATION AND AIR CONDITIONING SYSTEMS

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The air conditioning began to be used in 1914, providing everyone with a greater sense of thermal comfort. Over the past few years, indoor air quality has become a prominent topic in studies by professionals from various areas. Inadequate maintenance of ventilation systems, that is, low air quality is related to a large number of damage to human health. In the course of this work, a literature review of numerous documents related to the consequences of exposure to biological risks of ventilation and air conditioning systems, with the objective of reflecting on the consequences they bring to the health of the population. The effects on the health of its occupants depends not only on the type of contamination, concentration, exposure time and individual susceptibility. Biological Risks can be found in ventilation systems. Air has the main biological agents in the work environment, so it is necessary to maintain the hygiene of the place with frequent cleaning. A heating, ventilation and air conditioning (HVAC) system has as main objective to provide indoor environmental comfort conditions (temperature and humidity) to occupants, also having the ability to reduce air infiltration's and maintain pressure relationships between spaces. It was inferred, therefore, that the control of air conditioning systems is a major factor in the prevention of infections and when all intervening factors are not effectively controlled, it may lead to outbreaks of infection.

Keywords: Air quality; Biological risks; Contamination; Health; Ventilation.

THE INFLUENCE OF NOISE DURING SLEEP

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According to the Portuguese Environment Agency, noise is like an unpleasant sound for the human ear, noise can have several harmful effects on human health, which can be physical (changes in the hearing system causing loss of physiological hearing), blood pressure, heart or respiratory rhythm) and psychological (increased stress or tiredness).

Discomfort, because of the noise, can be seen when the individual is active or at rest, and at rest is the ambient noise that is classified as the one that causes the greatest disturbance. The noise sources can be different, such as: noise from airports, industries, public roads, concerts, loud music, or from traffic.

Of the 50 workers questioned, it was found that most of them are subject to noise in their workplace and safety conditions, in the case of hearing protection, are provided by the employer. Only 36.4% of workers from various companies say that they feel that the noise they are exposed to on a daily basis has an influence on sleep.

An uninterrupted sleep is essential for a good physiological and mental health of the human being, otherwise its effects can cause fatigue, mood swings or reduced quality. The noise contributes negatively to a peaceful sleep, and after 30 dB (A) it can be evaluated in three different ways depending on the degree assessed through several particularities: first degree, causes difficulty or impossibility to sleep; second degree, interruptions in sleep / insomnia; third degree, noticeable decrease in sleep quality, which may increase blood pressure and heart rate.

Considered as a public health problem, noise must be controlled periodically so as not to be harmful to health, requiring the willpower and commitment of the entire community.

Keywords: Noise; Sleep; Human health; Public health; dB (A)

OCCUPATIONAL HYGIENE

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Occupational hygiene integrates a set of non-medical methodologies necessary for the prevention of occupational diseases, having as its main field of action the control of physical, chemical and biological agents present in work components and materials, which are susceptible to cause harm to workers. Occupational hygiene is extremely important due to the fact that it anticipates health hazards resulting from work processes.

In order to analyze the exposure of workers to agents and factors potentially harmful to health, a questionnaire was applied to a sample of the portuguese population, followed by the analysis of the respective results.

Of the 54 individuals to whom the questionnaire was applied, 33.3% classified the noise in their work environment as strong. As for vibrations, 27.8% of the sample classified them as weak while 24.1% classified them as strong. As for the opinion about occupational hygiene in the company, we did not get any individuals who were unsatisfied, and 51.9% of the sample evaluated it as good (satisfied).

Occupational hygiene is fundamentally based on techniques and measures that focus on the work environment. Thus, it identifies, assesses, and controls risks, with the main purpose of increasing physical, psychological, and social well-being and, simultaneously, contributing to Productivity and Quality of Work.

Keywords: Occupational hygiene; Noise; Vibrations; Working conditions; Preventive measures

DEVELOPMENT OF A NUTRITIONAL POLICY TO REDUCE THE INCIDENCE OF GASTRIC AND COLON CANCER IN THE CENTRAL REGION OF PORTUGAL

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Introduction: Oncologic disease was identified as one of the main health priorities of the Regional Health Plan 2018-2020 for the Central Region of Portugal (CRP). Gastric cancer (GC) and colon cancer (CC) were amongst the 5 main causes of years of potential life lost before age 70 in this population due to oncologic disease.

Aim: To develop a nutritional policy to be implemented in the CRP, to reduce the incidence of GC and CC.

Methodology: The main health issues of the population of CRP were identified using regional health documents and national surveys. After establishing the main areas of intervention, strategies were outlined using Portuguese nutritional policies as reference.

Results: The present policy, which will be implemented between 2022-2027, has three strategic areas: promotion of nutritional literacy, promotion of healthy food environments at work and promotion of physical activity. For each area, strategies were outlined, so as to address the risk factors contributing to GC and CC, such as obesity, sedentarism and poor food choices in the adult population. These strategies require partnerships with city halls, healthcare centres, local companies and agricultural producers, sports clubs and higher education institutions. The main implementation sites include local companies, healthcare centres and both public infrastructures and outdoor spaces.

Conclusion: SC and CC are multifactorial diseases whose modifiable risk factors are present in a large proportion of the population. Therefore, the implementation of this policy could have a positive impact, not only on the incidence of these cancers, but also of obesity.

Keywords: nutritional policy, Central Region of Portugal, gastric cancer, colorectal cancer, obesity

REGIONAL POLICY TO REDUCE DIGESTIVE NEOPLASIA INCIDENCE BY INTERVENTION IN THE ACTIVE POPULATION

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Introduction: According to the Portuguese National Institute of Statistics, the mortality rate, in the center region, is 10.4% for stomach cancer and 12.3% for colon cancer, being the main causes of death among people over 55 years old. Diagnosis typically occurs above the age of 50. As a pathology of multifactorial etiology, it is urgent to implement, in the previous age group, nutritional policies that promote healthy eating and lifestyle.

Objectives: Implementation of a regional policy to reduce the incidence and prevent neoplasms aimed at the active population from 35 to 45 years old.

Methodology: For the development of this regional policy, the following documents were analyzed: National Program for the Promotion of Healthy Eating 2020; National Food and Physical Activity Survey 2015-2016; Center Regional Health Plan 2018-2020; Baixo Mondego Local Health Plan 2018-2020.

Results: This three-year regional policy is based on three lines of intervention: Education and training; Change in food availability; and Promotion of physical activity. Applying several strategies, such as the development of workshop cycles, changes in food availability in canteens and vending machines and the promotion of physical activity at the workplace, respectively. Partnerships will be established with the Center Regional Health Administration, commercial and industrial associations in the region and meal supplying companies.

Conclusion: Regional policy is expected to contribute to reducing the incidence rate of neoplasia in the medium to long term period.

Keywords: Neoplasia, nutritional policies, center region.

HYPERTENSION AND THE MEDITERRANEAN DIET: A NUTRITIONAL POLICY IN THE ALGARVE REGION

Rita Marieiro, Marta Salas, Bruna Rodrigues e Bruno Franco

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Introduction: The Algarve region, when compared to the national panorama, is one of the regions where there is higher difficulty in accessing health care. Cardiovascular diseases, particularly hypertension, are one of the health problems with the highest incidence in the adult population of this region, and it is necessary to intervene to reduce it.

Objectives: To develop a nutritional policy aimed at reducing the incidence of hypertension through the promotion of the Mediterranean diet (MD).

Methods: A research was conducted through sociodemographic enquiries to analyse the main weaknesses of the Algarve population, using the INSEF 2015 and National Health Survey 2014 surveys. Regarding policy development, we analysed programs and campaigns already implemented in the region.

Results: Our nutritional policy proposal is based on 3 axes: increasing knowledge about MD, training health professionals to act accordingly, and modifying the availability of food in local markets. To this end, the following strategies will be applied: dissemination of information through the various media, formation of support groups to disseminate the application of preventive measures for hypertension, and creation of pamphlets to guide the population in adopting a low-salt diet. With the support of the Municipal Councils and health centers throughout the Algarve region, this policy will be implemented over 3 years.

Conclusion: Through the development of this policy, we aim to raise community awareness about the importance of adopting healthy eating habits, based on the Mediterranean diet, to reduce hypertension and its risk factors.

Keywords: “Algarve”, “Hypertension ” and “Mediterranean diet”

TYPE 2 DIABETES MELLITUS IN THE NORTH REGION OF PORTUGAL

Carolina Laurentino, Joana Oliveira, Tânia Santos, Tiago Melo

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Introduction: Diabetes Mellitus is one of the main public health problems in the North, and adults are the age group of the population with a higher incidence of this disease. Thus, it is important to develop nutritional policies and programs to reduce this problem.

Aim: To create a nutritional policy that helps to minimize the incidence of type 2 Diabetes Mellitus and promoting the literacy related to this pathology in the North of Portugal.

Methods: It was analysed several documents such as “INSEF 2015”, “IAN-AF 2015-2016”, “Retrato de Saúde 2018” and “PNPAS 2020”. After analyzing these documents, an intervention was made based on “Plano estratégico 2017-2019 ARS do Norte”.

Results: The four axis of the policy are to improve knowledge, supply and food consumption and to promote the practice of physical activity. In this way, a strategy was developed for each axis with the objective of combating the identified problem. Partnerships will be created in the industrial / business, political and sports sector. It is also intended that these strategies are implemented, by the end of 2022, in places such as companies, city halls and in public spaces made available by them, in the various municipalities in the North region.

Conclusion: With this nutritional policy defined, it is intended to minimize the incidence of Diabetes Mellitus type 2 in the north region of the country.

Keywords: Diabetes Mellitus type 2; nutritional policy; food supply; healthy eating; physical activity; north region.

NUTRITIONAL POLICY IN LISBON AND TAGUS VALLEY REGION

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Background: In the Lisbon and Tagus Valley region, the main health problems are sedentarism and low adherence to the Mediterranean diet, with a high prevalence of overweight and obesity, particularly in the low-income population.

Aim: Implement a nutritional policy aimed to increase physical activity and improve adherence to a healthy eating pattern, thus reducing the prevalence of overweight and obesity in the low-income population.

Methodology: A research was carried out in several reports and surveys, in order to assess the main problems of this region, such as the IAN-AF, COSI, Lisbon and Tagus Valley Health Profile and PRSLVT. Regarding policy development, an analysis of programs and projects already implemented in the region was carried out.

Results: The development of the policy, will be based on three axes: awareness and empowerment of the population, encouragement of physical activity practice and sustainability. A set of strategies directed to the low-income population will be implemented, being fundamental to establish partnerships with Comboios de Portugal, Metropolitano de Lisboa, public transportation companies in the region, City Councils, restaurants, Caritas Diocesana of the region and other institutions of social nature and the association Vitamimos. This intervention will take place from March 2022 to October 2022.

Conclusion: After the implementation of this policy, we expect to improve the eating pattern of this population, increase the practice of physical activity and, consequently, decrease the prevalence of overweight and obesity.

Keywords: obesity, Lisbon and Tagus Valley, food literacy, sustainability, physical activity

DEVELOPMENT OF A NUTRITIONAL POLICY IN THE ALGARVE, PORTUGAL

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Introduction: The data available suggest that food insecurity remains prevalent nowadays in Algarve. This can also be related to poor nutritional literacy in this region since there's a lower percentage of people that have higher education. In addition to this issue, Algarve is an area that is economically dependent on tourism and that causes seasonal unemployment and also a low population density and higher desertification rate.

Aims: To develop a nutritional policy to reduce food insecurity and promote nutritional literacy in Algarve.

Methodology: Data collection was carried out through statistical inquiries such as "Censos 2011", "React-Covid", "Infofamília", "Instituto Nacional de Estatística", scientific databases such as "Pubmed" and other data from a solidarity institution called "Banco Alimentar".

Results: The three axes of this policy are to improve the availability and access of different types of food; increase the knowledge of nutrition related themes; reduce food waste, promoting a circular economy; hence, with this policy, we intend to implement new strategies, such as the use of a route to collect different food that would be wasted from the local farmers and distribute it to the families that are previously notified as food insecure. Also establish partnerships with town halls, parish councils, local producers, restaurants/coffees and with the regional health administration. The goal is to achieve all of this until 2023.

Conclusion: It's hoped that the implementation of this nutritional policy reduce food insecurity and increase nutritional literacy. Therefore improving the nutritional status and consequently the quality of life of this population.

Keywords: Algarve; Food insecurity; Nutritional literacy

DEVELOPMENT OF NUTRITIONAL POLICY AND STRATEGIES TO DECREASE IN CHILDHOOD OVERWEIGHT AND OBESITY IN LVT

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Introduction: Região de Lisboa e Vale Tejo (RLVT) has childhood overweight and obesity values of 29.5% and 10.6%, respectively. Additionally, the population has higher levels of income and purchasing power, a high unemployment rate and a low level of education of the adult population compared to the continental average. In view of the influence that these factors have on food choices it becomes necessary to implement Nutritional Policies.

Objectives: It is intended to develop a nutritional policy aimed at minimizing the incidence of childhood obesity by 15% in 3 years.

Methodology: A review was carried out based on the analysis of data from the existing bibliography of European and National Programmes and the characterisation of the population from Pordata, INE and COSI 2019.

Results: Depending on the problems found, the implementation of the Nutritional Policy, will be guided by 3 axes: Education and Food Literacy; Availability; Social Inclusion.

Thus, the strategies and actions developed will involve the following sectors: industry and the food chain, education, social and economic. The implementation of these actions will take place in municipalities, IPSS, school groupings and health centres, in order to cover the whole community.

Conclusion: The implementation of the developed Nutrition Policy will promote behavioural changes in the population, contributing to decrease childhood overweight and obesity in LVT Region.

Keywords: nutricional policy; overweight; obesity; childhood; LVT Region

IMPLEMENTATION OF NUTRITIONAL POLICY IN THE ELDERLY POPULATION OF THE ALENTEJO REGION

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Introduction: The aging population, a sedentary lifestyle and obesity, which are the trigger of problems such as diabetes and high blood pressure, pathologies with high prevalence in the Alentejo region. The region has a large demographic extension and low population density, for that reason is characterized by several difficulties in Primary Health Care access. Thus, there is a late diagnosis of nutritional deficiencies and associated pathologies.

Objective: Create and implement a nutritional policy for the Alentejo region that contributes to reduction of identified problems.

Methodology: Were analysed sites such as PORDATA and INE and documents such as the National Program for the Promotion of Healthy Eating 2020 and the 1st National Health Survey with Physical Examination 2015: State of Health 2015.

Results: This policy is based on three axes, namely early diagnosis, awareness for healthier habits in the elderly population and increase proximity between population and Health Care. In order for this information to reach the largest number of people and the necessary means are made available, they will be partners: city councils, municipalities, parish councils and scouting communities in the locations covered by the intervention. A set of strategies were defined to facilitate the approach of health professionals to the community, namely a van to reach the elderly citizens.

Conclusion: In view of the strategies that will be taken, it is expected that the implementation of the nutritional policy will result in an improvement in the global health conditions of the elderly population in this region.

Keywords: Alentejo; Seniors; Obesity; Nutritional Policy; Accessibility.

NUTRITIONAL POLICY TO REDUCE ALCOHOL CONSUMPTION IN NORTH REGION

Ana Branco, Carolina Santos, Diana Pinto, Mariana Monteiro

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Introduction: Studies have shown a substantial increase in alcohol consumption among young people, this being the most commonly used addictive substance by college students. Statistical data have shown that, coincidentally, the northern area of Portugal has the highest number of traffic accidents. Knowing that alcohol can seriously impair driving, due to reduced attention and reaction capacity, this leads us to positively associate the exaggerated alcohol consumption by university students in the North with the number of traffic accidents in this region.

Objective: Establish a nutritional policy to raise awareness and reduce alcohol consumption and, consecutively, traffic accidents.

Methods: The Google Academic and PorData platforms were used. The articles were selected taking into account their relevance and statistical data were only collected for the North region.

Results: The nutrition policy implemented is based on two axes, one to reduce the availability and sale of alcoholic beverages in higher education institutions, and the other to educate and raise awareness about the consequences of excessive consumption, such as traffic accidents. We will create partnerships with the student councils/associations of several schools in the North Zone. The alcohol sales ban will ideally be enforced at all times, while the awareness lectures will be held over the course of a semester.

Conclusion: Through the implementation of nutritional policies, a community intervention supported by health promotion actions should be developed in the short term, with the aim of preventing traffic accidents under the influence of alcohol.

Keywords: traffic accidents; alcohol; college students; North

NUTRITIONAL POLICY IN THE AUTONOMOUS REGION OF MADEIRA

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Introduction: In Portugal, the prevalence of childhood pre-obesity and obesity has been consistently decreasing in recent years. Despite this reduction, regions such as Madeira still have alarming percentages, so it is necessary to implement a nutritional policy to minimize this public health issue. Given the influence parents habits and eating choices have in their children, this policy will not only focus on the children attending primary school (5 to 10 years old), but also on the parents.

Aim: Develop a nutritional policy in the Autonomous Region of Madeira to prevent and reduce the prevalence of childhood obesity.

Methods: Documents and websites were used such as the COSI 2019, National Food and Physical Activity Survey 2015/2016, Ending Childhood Obesity from WHO, Direção Geral da Saúde, INE, Strategic Plan of the Regional Health System and the Government of Madeira.

Results: This nutritional policy is centered on 3 key aspects of intervention that use a set of strategies. These key aspects focus on educating and raising parents and children's awareness, about the benefits of a healthy and diverse diet; influencing the food quality of children in school and family environments; and promoting the practice of physical activity. This nutritional policy will be developed between September 2021 and September 2025, and will have as partners the region's primary schools, the city councils and the regional secretary of education, science and technology.

Conclusion: With the implementation of this nutritional policy we look forward to improve the health status of the children in this region.

Keywords: Childhood obesity, Autonomous Region of Madeira, Health

NUTRITIONAL POLICY TO MITIGATE CHILDHOOD OBESITY IN THE AZORES REGION

Bruna Silva; Carolina Abrantes; Diana Ferreira; Eva Luz

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Background: Azores region, except Faial island, has a lower frequency of breastfeeding and breastfed children for a period after 6 months. This might be related to the fact that this region has also a high prevalence of childhood overweight and obesity than the national average. Breastfeeding and adequate food diversification are associated with a reduced probability of developing childhood obesity.

Aim: Develop a nutritional policy in this region, using preventive activities, in order to reduce the prevalence of childhood obesity.

Methodology: For the diagnosis of the situation, the results of IAN-AF 2015-16 and COSI 2016 and 2019 were used. The PubMed and ScienceDirect databases were used to define strategies, using the descriptors “childhood obesity”, “breastfeeding”, “intervention” and “food diversification”.

Results: This policy will be implemented for three years, in which strategies are based in three axes: increase breastfeeding literacy, healthy eating habits and practice of physical activity in the first years of life. These strategies include the integration of a multidisciplinary team, in health centers for the promotion and support of breastfeeding and healthy food diversification; implementation of the Baby-Friendly Hospital initiative in the hospitals of Terceira and São Miguel islands and the creation of spaces for baby's physical activity. To carry out the different tasks, partnerships would be established with different stakeholders, such as hospitals, counties and health centers in the Azores region.

Conclusion: We expect that the implementation of these policies in Azores may be effective in combating childhood obesity.

Keywords: “Obesity”, “Azores”, “Breastfeeding”, “Prevention”, “Food Diversification”

ASTHMA MECHANISMS AND RESPIRATORY FUNCTIONAL TESTS

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Asthma affects one in twenty people, being a chronic pathology that is caused by obstruction and inflammation of the airways. This disease has several symptoms like wheezing, cough, and heavy breathing, which are caused by specific stimuli (allergens) or unspecific (environmental factors). Asthma can be extrinsic/allergic, caused by the inhalation of allergenic substances, or can be intrinsic/non-allergic which is provoked by non-allergic stimuli.

Asthma is diagnosed by respiratory functional tests that help in the treatment evaluation, allowing to elaborate the diagnosis and trying to prevent this disease. These tests include various exams, two of them are spirometry and plethysmography, which allow the measurement of respiratory system parameters that may be affected by the presence of asthma.

People that suffer from this disease may have an asthma crisis that consists of four reactions: inflammation, bronchoconstriction, hyperreactivity, and remodelling. The inflammation in the airways involves several types of cells and the release of inflammatory mediators that trigger an inflammatory response.

This pathology has no cure, however, can be controlled by administering bronchodilators, antihistamines, theophylline, and also through the intervention of respiratory physiotherapy which aims the prevention and treatment of practically all diseases that affect the respiratory system. This control can be pharmacological to reduce the inflammation of the respiratory airways through medications or non-pharmacological that intends to avoid the stimuli that trigger asthma. On the other hand, it is possible to prevent the occurrence of this disease by avoiding curtains and carpets that accumulate dust, domestic animals, among others.

Keywords: Asthma mechanisms, allergens, inflammatory mediators, respiratory functional tests, respiratory system.

ERYTHROPOIETIN – PHYSIOLOGY AND PATHOPHYSIOLOGY OF ABUSE

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Erythropoietin (Epo) is a glycoprotein produced by interstitial fibroblast cells in the kidneys, and, in a lesser extent, by perisinusoidal cells in the liver. The production and secretion of Epo and the expression of its receptor (Epo-R) are regulated by the tissue oxygen supply. Hypoxia results in an increase in the level of gene transcription (located on chromosome 7) and the production of both Epo and Epo-R via activation of the hypoxia-inducible factor 1 (HIF-1) pathway, which, in turn, targets colony-forming unit erythroid (CFU-E) cells in bone marrow stimulating erythrocyte production (erythropoiesis) and preventing their apoptosis, thereby improving tissue oxygenation. From the moment it was possible to produce recombinant human erythropoietin (rhEpo) that its therapeutic use has always been very promising. This molecule allows the same biological effects as the endogenous hormone, allowing a significant improvement in quality of life of patients to who it is administered, like those with anaemia associated with chronic renal failure. Furthermore, the largest number of red blood cells, oxygen carriers, results in improved aerobic power, thereby increasing exercise tolerance. Unfortunately, this benefit has encouraged the abuse of Epo in sport, particularly by endurance athletes, ignoring the dangerous side effects associated with its administration – Epo, by thickening the blood, increases vascular constriction and the overall blood pressure, leading to an increased risk of heart disease, stroke, and cerebral or pulmonary embolism. To combat this scourge, Epo was considered a banned substance in sport, so it is commonly associated with doping.

Keywords: Erythropoietin; erythropoiesis; therapeutic use; side effects; doping.

REGULATORS AND COAGULATION CHANGES; VITAMIN K AND HEMOPHILIA

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Coagulation is a mechanism of natural protection against bleeding, associated with vascular damage. This mechanism occurs in a cascade of events that culminates in the formation of a clot. The formation of a reinforced clot comprises two phases: aggregation and coagulation.

This complex process must be regulated to simultaneously counteract excessive blood loss and prevent the formation of intravascular thrombi. Vitamin K is synthesized by the bacterial flora in the intestine or obtained from the diet (broccoli, watercress, oil and olive oil). Vitamin K belongs to lipophilic and hydrophobic vitamins and can be divided into k1, k2 and k3.

The absorption of vitamin K occurs in the small intestine and is transported through the lymphatic pathways, so a bile flow and pancreatic fluid at normal levels are necessary for its correct absorption. Vitamin K acts as a cofactor for the formation of an γ -carboxyglutamic amino acid present in coagulation factors II, VII, IX and X, allowing these factors to bind to calcium ions to activate the coagulation cascade.

Hemophilia is a chronic disease and a congenital dysfunction in the blood clotting process. It is a recessive disease related to the X chromosome, so it is more common in men. Changes in the coagulation cascade can cause two types of hemophilia: hemophilia A (caused by the absence/deficiency of factor VIII) and hemophilia B (caused by the absence/deficiency of factor IX). The treatment for this condition consists of the injection of the deficient/absent factor.

Keywords: coagulation, regulation, vitamin K , dysfunction, hemophilia

AUTOIMMUNE DISEASES

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The immune system's function is to protect our body from external microorganisms by producing antibodies, proteins responsible for recognizing and destroying these invading agents. To eliminate them, our immune system can recognize the self-antigens of foreign antigens.

In autoimmune diseases, since the foreign antigen resembles the self-antigen, antibodies attack the cells of their own body. This immune response, defined by autoimmunity, is based on the concept of self-tolerance, the ability to not respond to body cells. In autoimmune diseases, there is a decrease in self-tolerance, so the body produces antibodies against its own cells through T-cell-activated by B lymphocytes.

Autoimmune diseases can be classified into two groups: One-organ-specific autoimmune diseases, including Type 1 Diabetes Mellitus, where insulin producer beta cells are destroyed and Multiple Sclerosis characterized by an attack to the neural myelin sheath; and non-organ-specific autoimmune diseases such as Rheumatoid Arthritis defined by exacerbated interaction between cytokines and white blood cells causing joint inflammation and Systemic Lupus Erythematosus described as an inflammatory disease of the connective tissue leading to several symptoms, the most commons rash and joint pain.

However, its causes are not fully known yet, but it is still known that some factors can awaken this same condition. An example of this is the use of some drugs, people with hereditary predisposition, viruses and bacteria.

Keywords: Immune system, antibodies, autoimmunity, self-tolerance

RENIN-ANGIOTENSIN-ALDOSTERONE SYSTEM / ACE AND RECEPTORS AT1 INHIBITORS

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The Renin-Angiotensin-Aldosterone System is a series of reactions designed to help regulate blood pressure.

Thus, when blood pressure decreases, the juxtaglomerular apparatus secretes Renin. This activates Angiotensinogen, present in the liver, converting it to Angiotensin I. This, in turn, is cleaved by ACE (Angiotensin-Converting Enzyme) to form Angiotensin II.

Angiotensin II has two receptors, AT1 and AT2. When bound to AT1 it causes, among others, vasoconstriction and tubular reabsorption that will lead to an increase in blood pressure. On the other hand, when it binds to AT2, it has a vasodilating effect. This hormone also causes the release of Aldosterone by the adrenal glands and Antidiuretic Hormone (ADH) by the pituitary gland.

Aldosterone will cause the reabsorption of sodium in the distal tubule, while ADH causes the reabsorption of water in the collecting duct. This results in an increase in blood volume and consequent blood pressure. In addition, Aldosterone causes the excretion of potassium by the kidneys.

In case of hypertension, two types of inhibitors are used, ACE inhibitors and AT1 inhibitors. The first one prevents the cleavage of Angiotensin I by reducing the amount of Angiotensin II. The second one prevents the binding of Angiotensin II to AT1 receptors. Thus, ACE inhibitors are less effective since there are alternative pathways for the formation of Angiotensin II, which would eventually bind to AT1 receptors.

Keywords: Renin, Angiotensin, Aldosterone, ACE, AT1

NON-ALCOHOLIC FATTY LIVER DISEASE, CHOLESTEROL METABOLISM AND STATINS

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Cholesterol is a complex substance of the lipid-steroid type found mainly in animal fats. Cholesterol can be obtained through food or is mostly synthesized in the liver. Problems in cholesterol metabolism in the body can lead to an increase in its concentration in the blood and, consequently, coronary diseases such as atherosclerosis.

Statins are drugs that inhibit the enzyme 3-Hydroxy-3-Methyl Glutaryl Coenzyme-A reductase (HMG-CoA reductase), the enzyme in cholesterol synthesis. The inhibition of this enzyme reduces cholesterol and the quantity of the Low Lipoprotein Cholesterol (LDL) circulating.

Statins is the class of medication most prescribed to reduce cholesterol levels and to reduce heart disease.

The non-alcoholic fatty liver disease, stands out for the abnormal accumulation of lipids at the hepatic level, in people who do not drink alcohol or who drink in small amounts.

This disease is the most common in people with obesity, diabetes, high cholesterol, and there may be some genetic predisposition. Most of these patients do not have symptoms, so the diagnosis is made through exams. There is no specific treatment for this disease, but it is possible to prevent its progress by controlling some risk factors, specifically the adoption of healthier lifestyles.

Keywords: Cholesterol, Statins and HMGCoA reductase, NAFLD lipids accumulation and healthy lifestyle

WHITE AND BROWN ADIPOSE TISSUE AND THE ENDOCRINE FUNCTION OF ADIPOSE TISSUE

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Adipose tissue is a type of connective tissue composed mainly of adipocytes, which are cells that contain lipid particles in their cytoplasm. It also has endocrine characteristics, as the secretion of adipokines (cytokines liberated by the adipose tissue) such as leptin (that helps to regulate energy balance with the feeling of satiety) and adiponectin (which regulates glucose levels).

This tissue can be divided into white or brown. White adipose tissue is formed by a single large vacuole that stores lipids and it can be either subcutaneous (important in the body's thermal insulation) or visceral (used for energy storage). Brown adipose tissue, on the other hand, contains many small vacuoles with lipids, a large amount of mitochondria and has as its main function the production of heat (through oxidation of lipids).

It is possible to transdifferentiate white adipocytes to an intermediate phenotype in a process known as "Browning", giving rise to "Brite" cells. These cells have characteristics of both adipocytes, however, they have a higher capacity to dissipate energy, which increases the metabolic rate, which is a very important factor in the fight against obesity and metabolic diseases. In obese people, leptin ceases to have the necessary effect, which leads to a greater feeling of hunger which translates into the intake of more food. Insulin resistance also develops, making it more difficult for glucose to enter cells, accumulating it and contributing to the inflammation of adipose tissue (causing changes in the production of hormones in adipocytes, aggravating the state of obesity).

Keywords: Adipose tissue, White, Brown, Adipocytes, Browning, Brite, Leptin, Obesity

COMPLICATIONS OF DIABETES: NEPHROPATHY AND DIABETIC FOOT

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Diabetes is a metabolic disease characterized by increased blood glucose levels (hyperglycemia), resulting from insufficiency/absence of insulin produced by the pancreas. This condition leads to complications such as diabetic foot and nephropathy.

Nephropathy is caused by improper excretion of protein in the urine. Hyperglycemia in diabetics increases blood pressure and glomerular filtration rate. This causes lesions in the glomerular filtration barrier, with the passage of molecules into the filtrate that was previously retained in the bloodstream, as is the case of albumin, causing microalbuminuria. Progressively, the lesions of the filtration barrier become larger and the amount/diversity of proteins excreted in the urine increases, changing to being called proteinuria. There are treatments that use angiotensin II receptor inhibitors, which prevent vasoconstriction, and, consequently, improper filtration of the protein.

In the case of the diabetic foot, hyperglycemia causes lesions in the nerve endings - neuropathies - which lead to loss of sensation in the extremities, causing a sensation of pain and tingling. Individuals with diabetes are also at risk of developing peripheral vascular disease, which compromises blood supply to these body extremities. This hinders the healing of existing wounds and leads to the appearance of ulcers. These individuals should use insoles to relieve plantar pressure points trying to prevent ulcers from worsening. They should also consult a physiotherapist to help them with massages that promote irrigation and drainage of the leg (to avoid poor circulation) and exercises that promote muscle strengthening, balance, and motor coordination.

Keywords: Glucose, neuropathy, blood pressure, microalbuminuria

MYCOTOXINS AND ITS IMPACT ON THE INTESTINAL MICROBIOME

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Mycotoxins are a structurally diverse group of secondary metabolites produced by fungi that contaminates crops of grains, seeds and by-products in climatic regions with warm and humid environments. The gastrointestinal tract is the first physiological barrier against food contaminants. Thus it is the first target of these mycotoxins.

This paper aims to understand how food contaminations with mycotoxins can influence the gut microbiota.

A literature review was performed by searching for scientific articles from the last ten years. For this search, the keywords "Food contaminants", "Mycotoxin and impact on the intestinal microbiome", "Aflatoxin B1", "Human Health" were used. Thus, 227 articles were obtained, from which 35 papers were selected after reading the title and the abstract. Subsequently, they were read in full, where 25 articles were chosen by the theme addressed.

Of the existing mycotoxins, aflatoxins, ochratoxins, zearalenone, and fumonisins have a high capacity for accumulation in food and are capable of causing mycotoxicoses. Their severity or extent will strongly depend on the dosage and period of exposure, gender, physiological and nutritional status of the individual, and possible synergistic effects. These toxins are responsible for acute and chronic toxic effects, such as carcinogenicity, neurotoxicity, reproductive toxicity and developmental delays.

According to the scientific literature, there is a relationship between mycotoxins and alteration of the intestinal flora, taking into account that this is dependent on a specific dose and level of toxicity.

Keywords: "Food contaminants"; "Mycotoxin and impact on the intestinal microbiome"; "Aflatoxin B1"; "Human Health"

THE INFLUENCE OF GLUCOMANNAN IN WEIGHT CONTROL

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Introduction: Overweight and obesity are considered major health problems that increase mortality and quality of life. Glucomannan is the significant component of konjac corm, which comes from the plant *Amorphophallus konjac*. Glucomannan is a soluble, fermentable dietary and natural gel-forming fiber used as a food additive. In the last few years, its role as a dietary supplement has been evaluated to access its potential health benefits, namely weight control.

Aim: To evaluate through scientific evidence the efficacy of glucomannan supplement in body weight control, comorbidities and potential health hazards related to its intake.

Methodology: Data collection was carried out through scientific databases using research expressions: “glucomannan” AND “weight”. The papers selected were published in the last ten years, first analyzed by title, then abstract and finally full-text reading.

Results: Glucomannan promotes a “feeling full” effect due to the water-absorbing capacity of the fiber; it also helps intestinal motility. Despite that, glucomannan supplements, in general, don't seem to promote weight loss in overweight and obese individuals. Still, this fibre may decrease serum levels of glucose, total cholesterol, low-density lipoprotein and triglycerides, without having any significant adverse effects.

Conclusion: The evidence does not show that glucomannan intake generates statistically significant weight loss. Future trials should have better methodological quality; until then, glucomannan recommendation for weight loss should not be a first approach nor a priority.

Keywords: glucomannan AND weight

CAFFEINE EFFECT ON PREGNANCY

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Background: Caffeine is a natural stimulant of the central nervous system, present in some foods, such as coffee, tea, chocolate, and soft drinks. Caffeine is lipophilic, which means that it can pass freely through all biological membranes, such as the placental barrier. Consecutively, it eventually passes into the amniotic fluid, umbilical cord blood, plasma, and urine of neonates. Thus, during pregnancy, the metabolic rate of caffeine decreases significantly. Epidemiological studies have revealed that caffeine consumption during pregnancy is associated with adverse effects, such as intrauterine growth retardation, low birth weight, subfertility, and miscarriage.

Objective: To analyse and understand the consequences of caffeine intake during pregnancy and the maximum daily dose that pregnant women can ingest.

Methods: For this research, we used the scientific database Pubmed and ScienceDirect, using as keywords “caffeine”, “pregnancy” and “adverse effects”. After excluding articles before 2011, non-scientific, non-relevant abstracts and full reading, we obtained 25 relevant articles.

Results: Moderate to high daily caffeine consumption during pregnancy seems to be associated with an increased risk of adverse effects on the fetus, such as miscarriage, stillbirth, low birth weight and/or small fetus for gestational age, acute leukaemia in infancy and childhood overweight or obesity.

Conclusion: It is concluded that it is necessary to limit daily caffeine consumption during pregnancy, recommending a maximum intake of 100-150mg/day. However, its consumption is not prohibited. Thus, the objective of the article, initially proposed, was achieved.

Keywords: caffeine, pregnancy, adverse effects and caffeinated beverages.

THE PRENATAL EXPOSURE OF POLYCHLORINATED BIPHENYLS- IMPACT ON THE HEALTH OF PREGNANT WOMEN AND NEWBORNS

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Background: Polychlorinated biphenyls (PCBs) are human industrialized organochlorine compounds that have been banned from the United States of America. However, PCBs are still present in food and the environment.

Aim: Study the mechanism of polychlorinated biphenyls, their applicability, and their health effects on pregnant women and newborns.

Methods: A literature review was conducted on a scientific research basis, using the keywords “polychlorinated biphenyls”, “prenatal exposure”, “health effects” in Portuguese and English in the last ten years. After reading the title, 253 articles were selected, and then the abstract was analyzed, selecting 34. Those articles were read in total, and only 25 corresponded to the objective of the study.

Results: These compounds can carry potential adverse health effects, affecting different systems in our body. These effects can affect the mother’s health, increasing the risk of breast cancer and endometriosis. Besides the mother, they can also affect the baby, causing abnormal development of the child, obesity, hypertension and cardiovascular diseases.

Conclusion: Despite their prohibition, PCBs persist in the environment, continuing to cause harmful consequences to health.

Keywords: “Polychlorinated biphenyls”; “prenatal exposure”; “health effects.”

CURCUMIN: BENEFICIAL EFFECTS AND HEPATOTOXICITY

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Introduction: Curcuma longa L. is a plant from which curcumin (diferuloylmethane) is extracted, its main bioactive compound. It has been used for many years in traditional medicine in Asia and is now included in cosmetics, food additives and health care. More and more studies about this natural polyphenol, which its antioxidant and anti-inflammatory effects have been evidenced, preponderant factors in developing different pathologies.

Aim: To determine a barrier that separates the beneficial effects of curcumin on health from its hepatotoxicity.

Methodology: A search of articles from the last ten years was carried out in the databases "PubMed", "Google Scholar", "ProQuest", "ScienceDirect" using the words "Curcumin", "Curcumin hepatotoxicity", "Beneficial effects of curcumin".

Results: Curcumin demonstrates beneficial effects on oxidative stress, lipid and glucose metabolism, destruction of beta cells, and other mechanisms. This way, it revealed a protective and therapeutic outcome in several pathologies such as tumours, diabetes, pulmonary, gestational, hepatic diseases and depression.

In the sport's area, curcumin has proved to be an excellent nutritional strategy in controlling muscle pain after training, potentiating and reducing muscle recovery time.

Conclusion: Despite the positive results demonstrated, most studies were performed in vivo in animals and in vitro, making it necessary to carry out further studies in humans to prove these effects.

Keywords: Curcumin; hepatotoxicity; health; anti-inflammatory; antioxidant.

THE EFFECT OF SODIUM BICARBONATE AS AN ERGOGENIC SUPPLEMENT FOR ATHLETES

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INTRODUCTION: Athletes have distinct and individualized energy and nutrient needs due to the different sports practice. Thus, it is crucial to complement the prescribed dietary plan to enhance better performance in sports performance. Sodium bicarbonate has been empirically studied as an ergogenic supplement to reduce fatigue.

AIM: To understand the influence and effect of sodium bicarbonate administration on athletes' sports performance and health.

METHODS: The literature review was carried out on scientific databases, using as keywords: "Sodium Bicarbonate" AND "Athletes" OR "Performance" OR "Sports Nutrition" OR "Supplements". The title was read and subsequently the abstract and the full text to choose the most relevant article. The research was restricted to papers from 2016 until today.

RESULTS: According to the studies analyzed, the most pertinent topics were selected to carry out this systematic review. Thus, the following issues will be addressed: Dose-response relationship and its ratio with health on athletes. The ideal intake formula is a dose of 0.3 g/kg before the sporting event. The development of gastrointestinal symptoms such as abdominal bloating, nausea or diarrhoea may be adverse effects. The response to gastrointestinal discomfort varies from athlete to athlete, even with continuous administration, so monitoring is essential, and several strategies could be done to minimize side effects.

CONCLUSIONS: Sodium bicarbonate is a supplement that may be beneficial for sports performance. However, it will be necessary to develop more studies in the future, thus contributing to greater standardization of scientific evidence.

Keywords: "Sodium Bicarbonate"; "Athletes"; "Performance"; "Sports Nutrition"; "Supplements"

INFLUENCE OF MERCURY ON FETAL GROWTH AND DEVELOPMENT

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Introduction: Pregnancy is a period of great susceptibility of exposure to environmental contaminants, such as heavy metals, including methylmercury, since it can cross the placental and blood-brain barrier, impairing fetal growth and development.

Objectives: Understanding mercury metabolism and its impact on the health of pregnant women and fetal development. Identify foods with a higher risk of methylmercury contamination and propose healthier options.

Methodologies: A systematic literature review was carried, using the following keywords: “prenatal mercury exposure”, “methylmercury toxicity”, “nutrition”, and “mercury pregnancy”, in scientific databases, in the 2016 – 2021 year range. Thus, a total of 180 articles were obtained, of which 42 papers were selected after reading the title and the abstract. Subsequently, they were read in full, in which 31 articles were selected, in line with the theme to be addressed.

Results: Studies demonstrate a correlation between fish consumption and the levels of methylmercury in the body and associate these levels with cognitive deficits in children whose mothers were excessively exposed to this element. However, fish is also an important source of several essential nutrients, proteins, vitamins, minerals and fatty acids with a protective effect on exposure to mercury.

Conclusion: It is necessary to inform pregnant women about the impact of mercury on fetal growth and development and its primary sources. It is crucial to raise awareness for the consumption of small fishes and low trophic level, taking into account their benefits for maternal and fetal health and the risks of contamination.

Keywords: prenatal mercury exposure, methylmercury toxicity, nutrition, mercury pregnancy

SWEETENERS AND OBESOGENESIS

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Background: In the past few years, sugar consumption has been gradually increasing. The high consumption of sugary products is associated with the development of chronic diseases, such as obesity. One of the weight loss strategies used is limiting calorie intake and replacing nutritious sweeteners with non-nutritive, low-calorie or non-calorie sweeteners.

Aim: Understand how the consumption of non-caloric sweeteners can influence the genesis of obesity.

Methods: A literature review was carried out, using scientific research bases, crossing the descriptors "sweeteners", "sugar", "obesity", "non-nutritive sweeteners", "non-caloric sweeteners". From the research sources, 25 articles published between 2011 and 2021 were analyzed.

Results: Obesity prevention strategies that promote sugar replacement by artificial sweeteners may not produce the intended benefits. In most studies, the consumption of sweeteners leads to changes in the intestinal microbiota, contributes to appetite and increased palatability. These effects lead to less satiety, increased hunger and intake, with consequent adipogenesis and insulin resistance. The Food and Drug Administration and the European Food Safety Authority define the Acceptable Daily Intake for each sweetener. This numerical value is the amount of sweetener considered safe for daily consumption.

Conclusion: The consumption of artificial sweeteners can reduce dietary calories and body weight control. On the other hand, different methods lead to disagreement in the results, with unexpected adverse effects on body weight and glycemic control, through various indirect mechanisms, including impact on intestinal microbiota, adipogenesis and glucose homeostasis.

Keywords: "sweeteners", "sugar", "obesity", "non-nutritive sweeteners", "non caloric sweetners"

THE EFFECT OF GLUCOSAMINE IN THE TREATMENT OF OSTEOARTHRITIS

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Introduction: Osteoarthritis (OA) consists of a multifactorial degenerative chronic disease of the articular cartilage characterized by joint pain and loss of function. Glucosamine (GA) is an amino-monosaccharide that is an essential component of joint cartilage. It's produced endogenously, but it can also be used as a slow-acting drug in moderate to severe OA to reduce symptoms.

Aim: Understand through a scientific review the effects of glucosamine in osteoarthritis, more specifically, its mechanism of action, pharmacokinetics, efficacy and safety.

Methodology: The literature research was performed between 2011 and 2021 in scientific databases and using the following keywords: "glucosamine and osteoarthritis" and "glucosamine and pharmacokinetics". The papers were selected based on their title, abstract and integral text.

Results/Discussion: GA was shown to have anti-inflammatory activity, leading to reduced production of inflammatory and cartilage disintegrating mediators. Some studies suggest that GA may help reducing pain, improve physical function and improve joint space narrowing in knee OA. According to the literature, the therapeutic dose of GA should be 1500mg/day. Brand and formulation are also essential factors contributing to the effectiveness of GA. This supplement was considered safe, and no severe adverse effects or overdose cases were reported.

Conclusion: Although GA is one of the most consumed supplements globally, there is still a lack of consensus regarding the administered dose, nutrient-drug interactions and effects on glucose metabolism.

Keywords: glucosamine, osteoarthritis, pharmacokinetics, joint pain, food supplement

NEWBORN HEARING SCREENING

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Introduction: It is during intrauterine life that the baby begins to develop hearing.

The Universal Neonatal Hearing Screening (RANU) is currently the best method for the early diagnosis of childhood deafness.

In this work, it is intended to highlight the importance of RANU presenting all the consequences involved in this process.

Objective: Assess the importance of Neonatal Auditory Screening in the child's first year of life and which tests are used for screening.

Methodologies: A search was made in the databases "Scielo", "Pubmed" and in the search engine "Google Scholar", with the keywords "babies; diagnosis; neonatal hearing screening; deafness", resulting in a total of 20 articles. Eight articles were excluded due to incompatibility with the objective of the study

Results: The main objective of RANU is to test all newborns before leaving the maternity ward and up to 30 days of life. Up to three months, all babies must have undergone a diagnostic hearing assessment.

Babies born with a hearing impairment have a better recovery capacity, when it is diagnosed early, so that they can enter rehabilitation programs up to six months.

The main tests used in RANU are behavioural tests, acoustic otoemissions (OAS), and auditory brainstem evoked potentials (PEATC).

Conclusion: In short, deafness is one of the most common congenital pathologies in neonatology. However, in order to avoid / minimize the impact on the child's cognitive and social development, RANU came to offer an early diagnosis.

Keywords: babies; diagnosis; neonatal hearing screening; deafness;

HEARING SCREENING IN ELDERLY

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Introduction: Audition is one of the most important senses in the human communication process, where an alteration might be an obstacle. About said obstacle, elderly are the one of the most affected.

The hearing loss depends on several factors, with age having a great influence in this subject, since that as the time passes, audition has a tendency to decay.

Therefore, an early diagnosis and rehabilitation are important to elderly people, so that it is possible to act in a more effective way and provide them with a better life quality.

Objective: Based on a literature review, understand the importance of early hearing screening on this age range.

Methodology: This essay was done based on a research and information gathering using articles from various search engines (SciELO and Google scholar). The following keywords: “elderly”, “hearing screening”, “presbycusis” “hearing rehabilitation” were used during the search to simplify its process.

In a range of 24 searched articles, only 14 were used in this essay development phase.

Results: Hearing screening are fundamental to prevent and diagnose hearing pathologies, having an important role in autonomy and social inclusion for this age range, preventing psychological problems such as depression and loneliness.

Conclusion: With hearing screening it is possible to detect an eventual alteration in an early stage, which makes rehabilitation more efficient, by starting it in an early phase of the pathology, with the goal of providing better life quality.

Keywords: “hearing screening”, “elderly”, “hearing rehabilitation”, “life quality” and “presbycusis”

AUDITORY SCREENING IN A SCHOOL CONTEXT

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Introduction: Hearing screening in a school context has, as a finality, the early diagnose of hearing disabilities. Behavioral tests are used, which, subsequently, serve as the basis for a more detailed analysis of the situation. Objective: Based on a review of the literature, we intend to study the impact of hearing screenings in a school context. Methodology: Resorting to the b-on, PubMed, SciELO, and Academic Google databases, using the keywords “Hearing screening”, “Early intervention”, “Children” and “Learning”, in Portuguese and English, obtaining a total of 38 articles. Taking as inclusion criteria the date of the article being posterior to 2008, and as exclusion criteria the languages of the article differing from Portuguese and English and the age of the children being less than two or more than twelve years old, 17 articles remained for analysis. Results: The importance of hearing screening in a school context and the harmful consequences that may result from these not being performed early, given that hearing loss can be negatively reflected in the overall development of children and in scholar learning, were ascertained. These are promoted through awareness campaigns that alert the community towards potential audiologic risks. The technological advancements have boosted the creation of simple and fast applications, which reach a vast percentage of the population, thus promoting the increment of hearing screening appointments. Conclusion: When performed early, school hearing screenings allow the reduction of the impact of hearing loss in the overall development of children, specifically in terms of language, interaction, and cognition.

Keywords: Hearing screening, Early intervention, Children, Learning, Hearing loss in children

HEARING SCREENINGS IN A FACTORY ENVIRONMENT

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Introduction: Continuous exposure to industrial noise is one of the current problems that can be mitigated through adequate prevention. More than a nuisance, exposure to it can permanently damage the ear, significantly reducing the individual's quality of life.

Objective: Realize the importance of hearing screening in a factory context and how they can prevent more profound damage.

Methodology: Literature review was carried out in the PubMed, b-on and Academic Google databases, using the keywords "hearing screening", "industrial noise" and "hearing loss". After applying the exclusion criteria, 5 articles were selected for analysis.

Results: Given that there are more and more industries, where a good part of the population works in them, the concern is greater. Approximately 16% of hearing loss in adults is associated with noise exposure in the workplace. The daily confrontation with high noise levels, in the manufacturing environment, can cause significant damage to hearing, such as permanent sensorineural deficiencies. Failure to perform hearing screening delays the detection of noise-induced hearing loss, making it more difficult to prevent more severe hearing impairments. In most cases, noise-induced hearing loss goes unnoticed, especially at an early stage, as it develops gradually and affects the cochlear region of high frequencies.

Conclusion: It is concluded that, in order to minimize hearing loss induced by factory noise, hearing screening of workers should be carried out regularly, so that there is an early detection of hearing loss and, consequently, the conservation of hearing, reducing the risk of permanent hearing impairment.

Keywords: Noise-induced hearing loss; Industrial noise; Industrial workers; Prevention

ANATOMY AND PHYSIOLOGY OF THE LIVER AND THEIR IMPLICATIONS IN METABOLIC ALTERATIONS

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The liver is the largest gland in the body, and after the skin, the largest single organ. As it comprises around 2.5% of an adult's body weight. Their location is in the right upper quadrant (RUQ), it extended into the left hypochondrium and epigastrium.

The vascular anatomy can be described as three different levels of complexity according to the use, conventional, surgery and academic, the last is used to the anatomist to offer a systematization. The vascularization is complex, its dual blood supply from the portal vein (approximately 75%) and the hepatic artery (approximately 25%). It plays an essential role in nutrient metabolism.

The liver has a convex diaphragmatic surface and a concave visceral surface it can be divided in four anatomical lobes or into eight independent functional segments based on third-order portal vein distribution.

Considering the liver functions and their anatomy the liver it is an organ affected by large number of serious liver disorders, like non-alcoholic fatty liver disease (NAFLD), a metabolic syndrome characterized by excessive accumulation of fat in the liver cells. The importance of laboratory testing as an important tool in the diagnosis liver diseases.

The use of serum biochemical tests play an important role in the diagnosis and management of liver disease. The term "liver function tests" is used to refer a combination of liver biochemical tests, including aminotransferases, alkaline and phosphatases and bilirubin. Alanine aminotransferase (ALT) and aspartate aminotransferase (AST), are two of the most useful measures of liver cell injury

Keywords: Liver; Anatomy; Physiology; Pathology

IDEBENONA: EFFICIENT FOOD SUPPLEMENT AT LHON, WILL IT ALSO BE IN DOA?

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The Leber Hereditary Optic Neuropathy (LHON) and the Dominant Optic Atrophy (DOA) are hereditary optics diseases rare due to mutations in mitochondrial DNA that leads to a mitochondrial dysfunction and posteriorly to damages in the retinal ganglion cell. The cause of LHON is a primary mutation in the Mitochondrial DNA, being three the hotspot mutations found in 90% of the patients: m.11778G>A e m.3460G>A in the complex I, a m.14484T>C in the complex VI of the electron transport chain. The incidence of the disease é 1:31 000 it affects especially men, young adults, and it is transmitted maternally. The DOA develops due to the degeneration of the optic nerve it is characterized by the loss of visual acuity, optic disc pallor, changes in the visual camp and it is beginning in childhood. Its prevalence is about 3:100.000. In 75% of the patients the responsible gene for the disease is the *OPA1* gene. There are still few treatments for LHON, however the food supplements such as idebenona show promising results, if taken at the beginning of the onset of symptoms. In DOA, there is not a treatment yet, there is only counseling healthy living habits.

The idebenone antioxidant used in LHON is a synthetic analogue of the coenzyme Q10, it has a short lipophilic chain and counteract the lack of complex I when transporting the electrons directly to the complex III, promoting the production of cellular energy (ATP) and reactivating the retinal ganglion cells.

Keywords: LHON; DOA; neuropathy; idebenone

THE RELEVANCE OF SCIANNA IN SCIENCE TRANSFUSION

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The Scianna blood group was discovered in 1962 when Ms. Scianna, who had experienced multiple late pregnancy losses due to hemolytic disease of the fetus, had a high frequency antigen (Ag) detected.

This blood group system consists of seven Ag recognized by The International Society of Blood Transfusion, of which Sc1 and Sc3 are high frequency, and Sc2 and Sc4 (Rd) are low frequency. Three other Ag are the Sc5 (STAR), Sc6 (SCER) and Sc7 (SCAN). They are expressed by the erythroblast membrane-associated glycoprotein (ERMAP). The ERMAP gene is located on chromosome 1p34.2.

Most of the antibodies (Ab) against this blood group's Ag are IgG, being detected using the indirect antiglobulin test. Usually, the production of this Ab is triggered by red blood cells (RBC) stimulation (caused by transfusion or pregnancy), even though some cases of anti-Sc2 presence have been reported to be "naturally occurring".

When and whether Ab to the SC system Ag will be of any clinical importance is still unanswered due to the lack of routine characterization of these Ab. There have been reported rare cases of hemolytic disease with enough information that assign clinical relevance to the SC Ab.

An infant (belonging to group B, Rh negative) born to a group B, Rh positive mother had at birth, hematocrit levels of 45 percent. Twenty days after birth, hematocrit levels decreased to 17.3 percent (the infant required hospitalization and RBC transfusions). Routine maternal Ab screen came back negative, but anti-Sc2 alloantibodies were detected, being of clinical relevance to the transfusion.

Keywords: Scianna, ERMAP, science transfusion, HDFN

THE RELEVANCE OF JOHN MILTON HAGEN IN SCIENCE TRANSFUSION

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The John Milton Hagen (JMH) blood group consists of six high-prevalence antigens (Ag), which are recognised by the International Society of Blood Transfusion (ISBT) (JMH1 to JMH6).

The JMH antigen – semaphorin 7A (also known as CD108) – is a glycoprotein bound to the red blood cell (RBC) membrane by GPI linkage. It is coded by a gene (the SEMA7A gene) which is located on chromosome 15 (chromosomal location: 15q22.3-q23).

In the 1970s the first reports on antibody (Ab) reactivity appeared, followed by the description of the JMH group Ag carrier protein, semaphorin 7A (or CD108) and identification of the SEMA7A gene. It was in the year 2001 that the JMH gained its status as a blood group.

The JMH1 Ag is the primary Ag in the system and is present in about 99% of all individuals.

Anti-JMH usually appears in individuals who have an acquired loss of CD108. The negative phenotype for JMH is usually an acquired phenotype and there have been several case reports of anti-JMH patients who were transfused with JMH+ blood and suffered no adverse effects.

The JMH- phenotype has been described as being a transient phenomenon, as these individuals may become JMH+ later in life.

Most of the JMH- patients have acquired this phenotype through the presence of anti-JMH Ab in their sera. In the patients in which the anti-JMH ab was found, the expression of the JMH ag had not been completely lost, as the RBC of these individuals gave a weak Direct Antiglobulin Test.

Keywords: John Milton Hagen, semaphorin 7A, blood group, antigen, antibody

THE RELEVANCE OF CROMER IN SCIENCE TRANSFUSION

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The Cromer (Cr) blood group system consists of 18 antigens (Ag) located on the decay-accelerating factor glycoprotein (DAF or CD55), which through glycosyl phosphatidyl inositol (GPI) attaches to the membrane of erythrocytes and other cells that are in contact with plasma, in the gastrointestinal epithelium, urinary tract and nervous system. DAF is encoded by the DAF gene at the 1q32.2 locus. It has a regulatory function on complement activation by inhibiting the action of C3-convertase and preventing hemolysis. However, when there is a deficit of DAF and other GPI-anchored proteins, complement is more sensitive leading to paroxysmal nocturnal haemoglobinuria (PNH), in which no Cromer system ag are expressed.

Its clinical relevance still is debatable, with several studies indicating that this antibodies (Ab) do not interfere with hemolytic transfusion reaction (HTR). However, there have been exceptions where an incompatibility reaction has occurred. No Cromer Ab have been implicated in hemolytic disease of the fetus and newborn (HDFN) since the placental tissue is rich in HFD and absorbs them.

Keywords: Cromer, antigens, DAF, antibodies, transfusion

THE RELEVANCE OF COLTON IN SCIENCE TRANSFUSION

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In 1994, it was discovered that the AQP1 protein contained the antigens (Ag) of the Colton system. The Colton is the 15th human blood group system recognized by the International Society of Blood Transfusion and it was characterized in 1967 by a group of researchers from Minneapolis.

Currently, 4 Ag of this system are known: CO1 or Coa, CO2 or Cob, CO3 and, the most recently described, CO4, all encoded by the AQP1 gene, found on chromosome 7 which encodes the protein Aquaporin 1 (AQP1), that can be found on the erythrocyte membrane. The polymorphism between Coa and Cob is due to the exchange of an alanine (present in Coa) for a valine (present in Cob).

Thus, the possible phenotypes of the Colton System known and studied to date are Co(a+b-); Co(a-b+); Co(a+b+) and Co(a-b-).

For each phenotype, the individual has specific antibodies (Ab) which are usually IgG. These Ab react best by the antiglobulin test, especially when protease-treated erythrocytes are used, and anti-Coa, -Cob and -CO3 can also bind complement. In addition to that, anti-Coa, as well as anti-CO3, have shown to cause severe Hemolytic Disease of the Fetus and Newborn (HDFN) and Acute and Delayed Hemolytic Transfusion reactions but generally with no renal impairment. Ab anti-Cob has no relevance in HDFN.

Colton-null individuals may develop anti-CO3, a clinically significant antibody, induced by transfusion or pregnancy. Therefore, and given the rarity of this phenotype, identification and transfusion of these individuals is extremely challenging.

Keywords: Colton System, Aquaporin 1, Science Transfusion, Hemolytic Disease of the Fetus and Newborn, Antibodies.

THE RELEVANCE OF RH-ASSOCIATED GLYCOPROTEIN IN SCIENCE TRANSFUSION

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The Rh blood group system is one of the most complex and immunogenic systems known in humans, consisting of more than fifty antigens (Ag). Alongside with ABO blood group, is the most clinically significant in transfusion medicine.

The Rh complex, an association of membrane proteins that include non-glycosylated proteins (RhD and RhCE) and the Rh-associated glycoprotein (RhAG), plays a critical role in the structure and function of the red blood cell (RBC) membrane.

Presence of RhAG in the RBC membrane is a requirement for the expression of the Rh Ag, allowing proper assembly to the cell surface. Thus, defects in the RHAG alleles may result in the absence (Rh-*null* phenotype) or marked reduction of Rh Ag (Rh-mod phenotype). Rh-*null* and Rh-mod RBC are morphologically, and functionally abnormal and affected individuals have some degree of hemolytic anemia.

Additionally, Rh-*null*, also known as “golden blood type”, is one of the world’s rarest blood types, which has only been identified in fewer fifty people. Individuals with this blood type might face complex challenges during a blood transfusion or Rh incompatibility during pregnancy.

Keywords: Red blood cells, Rh blood group, RhAG, Rh-*null*, Rh-mod, Transfusion, Rh incompatibility

THE RELEVANCE OF INDIAN IN SCIENCE TRANSFUSION

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The Indian Blood System is named after its identification in the Indian population being one of the rarest blood groups, more commonly known as the Bombay phenotype. This group has two antigens (Ag) Ina (IN1) and Inb (IN2).

The Bombay phenotype, related to gene CD44 on chromosome 11, is the result of the inheritance of the h gene at the H locus and the sese at the Se locus from both parents.

CD44, known for carrying these Ag, is a glycoprotein that functions as an adhesion molecule and binds hyaluron being a major red blood (RBC) cell component. It reflects in an expression of high-frequency Indian antigen Inb (IN2), and low incidence Ina (IN1)- as its frequency in Bombay Indians is about 3% and is mostly found in Indian and Arab individuals. On the other hand, the allelic antigen Inb has an incidence of virtually 100% in other populations. The system also contains two high-incidence Ag, IN3 (INFI) and IN4 (INJA).

It was not found any relation between anti-Ina nor anti-Inb and hemolytic disease of the fetus and newborn.

Although this group is not very common, it is important to point out that the anti-H shows high reactivity against RBC cells from group "O", resulting in a transfusion reaction. Therefore, Oh individuals can only be transfused with individuals of the same group.

Keywords: Bombay phenotype, transfusion, antigens, Indian

THE RELEVANCE OF KNOPS IN SCIENCE TRANSFUSION

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The Knops blood group system is originated on the antibodies (Ab) group previously named high-titer, low-avidity antibodies (HTLA), whose term was used to describe a group of alloantibodies with similar characteristics, including the weak reactions at the anti-human globulin test. Once identified the protein that contains the Knops antigens, the gene was cloned and all known Knops antigens (Ag) were defined at the molecular level, allowing a more accurate study of the clinical relevance of this blood group system.

Knops consists of nine Ag, four of them being low frequency and five being high. These Ag are Type I glycoproteins (complement receptor type 1) which are encoded by the CR1 gene on chromosome 1q32.2. Most Knops Ab are not considered clinically significant, because they do not cause any obvious hemolytic transfusion reactions or hemolytic disease of the fetus and newborn. The importance of this blood group has increased in the field of infectious diseases, notably Malaria, even though it is not clinically relevant in transfusion science. Polymorphisms of CR1 gene associated with Knops blood group Ag may influence *Plasmodium falciparum* binding to red blood cells, and may therefore affect susceptibility to Malaria.

Keywords: CR1, Knops, Antibodies, Antigens, Transfusion, HTLA, Polymorfism

THE RELEVANCE OF CHIDO-RODGERS IN SCIENCE TRANSFUSION

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The Chido/Rodgers Blood Group System was discovered in 1962 and 1976, respectively. The International Society of Blood Transfusions (ISBT) attributed the number 017 to this Blood Group System. Chido (Ch) and Rodgers (Rg) antigens (Ag) are epitopes carried on the C4 protein of complement, they are not intrinsic to the red blood cells (RBC) although, fragments of the C4 protein can deposit on the RBC membrane and other tissues. Currently, the system has 9 antigens, 6 Ch (Ch1 to Ch6) 2 Rg (Rg1 and Rg2) and WH (Hybrid antigen).

Anti-Ch and Anti-Rg are IgG antibodies (Ab), mostly IgG2 and IgG4; they are not clinically relevant due to their low expression from the RBC transfusion aspect. Ch/Rg Ab have not caused any obvious signs of haemolytic transfusion reactions and radiolabelled Ch⁺ cells transfused to patients with anti-Ch to survive normally. However, anti-Ch and -Rg have been associated with severe anaphylactic reactions following infusion of fresh frozen plasma, plasma fraction, or platelet concentrates containing plasma, these events are rare.

There are current scientific findings related to the Chido/Rodgers blood group Ag that can be associated with various diseases relating to the lack or over expressions of C4 gene variants.

The strongest increased risk with certain C4 gene variants is for Systemic lupus erythematosus.

Keywords: Chido/Rodgers, Blood Transfusion , Complement

THE RELEVANCE OF GIL IN SCIENCE TRANSFUSION

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GIL is a blood system that was recognized in 2002 by the International Society for Blood Transfusion. Gill is a high incidence antigen that has been demonstrated to be characteristic of the aquaporin-3, coded by AQP3 on locus 9p13.3. The GIL-negative phenotype results in an AQP3 deficiency. However, this deficiency does not cause a disease condition.

Aquaporin-3 can be found on human red blood cells (RBC) and in various tissues (for example, on the collecting duct cells, liver, pancreas, lung, spleen, prostate, and leukocytes) as it works as a water and glycerol channel. The AQP3 protein spans the membrane six times, has three extracellular loops; the third loop presents glycosylation and has intracellular terminal domains.

Little is known about GIL and it has not been shown to be an inherited character. The GIL antibody (Ab) is an IgG Ab with an optimal reactivity at the indirect antiglobulin test (IAT). This Ab is so rare that only five women with anti-GIL have been found, all five of them had been pregnant at least twice and, despite two of the babies giving positive direct antiglobulin tests, none of them showed clinical signs of hemolytic disease as the erythrocytes did not react with anti-AQP3.

Although there is some indication of the potential for destructing transfused RBC, this Ab is so rare that further studies are needed.

Keywords: Transfusion, GIL, blood system, aquaporin-3, antigen, antibody

COVID-19: PANDEMIC EFFECTS ON ACADEMIC LIFE

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COVID-19 is a disease that primarily affects the human respiratory system. It is transmitted through airborne droplets and has a high degree of transmissibility. Given this, national governments have been forced to adopt a series of measures to combat the infection, using lockdown as the primary method of preventing further outbreaks.

This article aims to assess the impact of the pandemic on the academic life of higher education students in Portugal, based on a questionnaire directed to the community, where 64 answers submitted, and a bibliographic revision on the subject. The students were asked about their mental and physical well-being, as well as changes felt in their socio-economic situation.

From the results, we conclude that lockdown resulted in high levels of anxiety and stress that affected students' productivity, and a reduction in hours spent on physical activity. In 31.3% of responses (n=20), it's stated that they felt their energy and vitality level vary, generally being low, and it affected their physical exercise, with 21.9% of respondents (n=14) drop the practice and 37.5% (n=24) reducing the number of average hours during lockdown. It also affected economic stability, either through loss of income or expenses considered avoidable later, such as unused housing, with 52% of students (n=11) who chose to rent a house/room going back on their decision.

We conclude that the pandemic altered the stability and routine of these students, that would be looking for more freedom and opportunities, as well as an expansion of their social circle.

Keywords: COVID-19, Pandemic, Academic Life, Lockdown

SMOKING, SEDENTARY LIFESTYLE AND EATING HABITS

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Sedentary lifestyles are becoming more and more common nowadays. Today machines do a lot of the work that used to be done by Man. There is a marked decrease in physical activity, which leads to an increase in chronic diseases, accompanied also by an unbalanced diet.

The aim of the work was to demonstrate how habits, smoking, eating and se-dentary habits can become routine for the academic population and how the same can influence health, especially in times of pandemic COVID-19.

To conduct the study a literature review and a survey on the topic of "Smoking, sedentary, poor eating habits" was conducted.

From this survey, we found that most of the population do not smoke (73.5%) but live with smokers and are aware of the risks of tobacco consumption (100%).

Regarding the practice of physical exercise, 66.3% of respondents practice physical exercise, although more than half of them (34.2%) only do it once or twice a week. Associated with an active lifestyle, we can observe that there is also a greater concern with eating. Even so, we can see that adherence to fast food is significant (53%).

In short, university life is conducive to an unstable, unbalanced and variable diet combined with tobacco consumption and good/bad physical activity.

In the future as environmental health technicians we can and should alert to the existence of a possible problem in academic populations so that they can make a positive impact on both their well-being and their health.

Keywords: Sedentary lifestyle; Smoking; Physical activity; Academic populations; Unbalanced diet

EATING BEHAVIORS DURING THE PANDEMIC

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The eating behavior is conceptualized from the reactions to food, involving all actions related to the act of eating "with whom to eat, where to eat, what to eat and how to eat", before and at the time of food intake. The eating attitudes that define eating behaviors are influenced by many factors, such as psychological, emotional, social, religious, and all other environmental and internal factors. In situations such as pandemics, it's common for the frequency of negative emotions and stress to increase, this seems to be generally associated with unhealthy eating behavior changes.

The purpose of this study was to evaluate eating behaviors in the adult population during a pandemic. A bibliographic research on the subject was carried out and a survey was applied to the adult population.

Of the 204 respondents, it was found that 61.3% of the study population had not changed their eating habits. Thus, 75.5% exercised in the last pandemic months, 81.9% chose to drink water with meals, compared to 8.8% who chose to drink soda, and 94.6% ate fruits or vegetables daily. In contrast, 93.1% of respondents perceive that due to poor eating habits, the pandemic caused health problems.

It was concluded that even with the pandemic the surveyed population maintains a balanced diet. It is necessary that good habits are maintained, thus opting to consume fruits and vegetables, drink water and exercise.

Keywords: eating behaviors, pandemic, food, health, exercise

RISK BEHAVIORS IN HIGHER EDUCATION STUDENTS

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The pandemic caused by COVID-19 is the largest public health emergency in recent decades. Besides the concerns at the level of the population's physical health, this situation seems to be having consequences especially on the mental health of young adults.

This research aimed to: characterize the mental health of university students, in terms of depressive symptoms, stress and anxiety; identify the prevalence of risky sexual behaviors; and identify the patterns of alcohol and tobacco, in terms of quantity and frequency of consumption, before and during lockdown.

For this purpose, a bibliographic review was carried out on the subject and the elaboration of a questionnaire that counted on the participation of 113 students from different academic years.

The results indicate that during lockdown these individuals tried to stay healthy in terms of diet and physical activity and made an effort to maintain the same consumption of substances such as alcohol and tobacco. The most worrying data focuses on the mental health of these students where 83.9% of them felt more depressed and anxious and 92.9% have no motivation in online classes.

The health of higher education students is an important public health issue, and it is important to find mechanisms to prevent and reduce its impacts.

Keywords: Risk behavior, University students, Mental health, Pandemic

THE IMPLICATIONS OF TELEWORKING AND DISTANCE LEARNING IN A PANDEMIC CONTEXT

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In the current situation in which we live, the Pandemic a word of Greek origin which means "all the people", in this case the Covid-19 which is a highly contagious disease bringing with it new habits and routines that we have not yet knew. In this work we intended to address the implications of telework and distance learning in a pandemic context.

The goal of this study was to evaluate the physical, mental, social and economic impact of telework and distance learning on people.

A questionnaire was applied where some of the following questions were addressed, Are you feeling physically more debilitated? With telework/ distance learning do you feel more anxiety and stress? or do you feel that you are more productive in what regime?

In relation to telework and distance learning, there are different opinions: for example, more than 70% of people feel more stressed and anxious about these new regimes, but on the other hand, when it comes to food, 59% of people think that their alimentation has not worsened. Finally, we rate the level of happiness of respondents that contrary to the results that we expected, we have achieved very positive results, demonstrating that most 60% of the people are happy.

In conclusion, we can withdraw that the implications of telework and distance learning in a pandemic context had a varied results where mental and physical health stand out on the negative side and on the positive side, food and economics stand out.

Keywords: Teleworking, Distance Learning, Mental Health, Productivity, Pandemic

INFECTIONS ASSOCIATED WITH HEALTH CARE

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Healthcare-associated infection is a localized or systemic infection resulting from an adverse reaction to the presence of an infectious agent or its toxin.

The hands of health care workers are the most common vehicle for the transmission of microorganisms from one patient to another, from one body site to another in the same patient, and from a contaminated environment to patients.

As hand hygiene is an extremely important factor in preventing healthcare-associated infections, this study aimed to assess the knowledge and good practices of hand hygiene among healthcare professionals.

The preparation of this study involved the analysis of articles related to this topic and the completion of a questionnaire applied to 30 professionals in Family Health Units.

All respondents considered hand hygiene important, however 20% could not define this concept. They also refer that they don't use nail polish but, on the other hand, 23% use adornments on their hands/arm. Hand hygiene is a habit difficult to change, many professionals wash their hands according to their needs, since we found that all of them claimed that they practice the "5 moments" for hand hygiene, but when asked what those moments are, only 13% knew the correct answer.

More training should be implemented in order to increase the knowledge of professionals about this practice. Since, through the questionnaires, we concluded that there should be an improvement in certain parameters, both in terms of knowledge and practice.

Keywords: hand hygiene, healthcare-associated infections, the "5 moments", knowledge, good practice

CLIMATE CHANGE AND ITS IMPLICATIONS FOR PUBLIC HEALTH AND THE ENVIRONMENT - LEVEL OF KNOWLEDGE AND ATTITUDES OF THE POPULATION

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Climate change is a variation in climate that persists for decades or longer. They can be due to natural causes or to human activities with effects on the composition of the atmosphere. Climate change causes changes in the physical environment and in living beings, compromising all ecosystems.

This study aimed to determine the level of knowledge of the general population about climate change, its implications for public health and the environment, as well as to understand the attitudes of the population to combat this problem on a global scale. To this end, we conducted a literature search and applied a questionnaire to the population under study.

Of the 199 respondents, 99% believe in the existence of climate change and 98% are aware that Climate Change can negatively influence health. 70.4% guarantee that educational establishments are at the origin of their knowledge on Climate Change and 92.9% indicated respiratory diseases as an influence of Climate Change on Health. Carbon dioxide, with 98%, is indicated as the greatest cause of the Greenhouse Effect, on a par with oil producers, with 71.4%. To combat and prevent it, 75.4% stated that they separate waste for recycling in their daily lives. It was concluded that the population has knowledge and awareness of the definition of Climate Change and its implications, however, in view of the studies and the visible facts of changes in the environment, the insight shown is not evident in the current reality since we live in a constant increase of the imbalance of ecosystems as a result of anthropic actions.

Keywords: Climate Change, Environment, Health, Climate, Anthropogenic

ACADEMIC QUALITY OF LIFE OF HIGHER EDUCATION STUDENTS

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The impact of early academic life coupled with the context of the COVID-19 pandemic can affect both school adaptation, health and the performance of university students.

The present study aimed to highlight the consequences that the pandemic caused on students and to compare the quality of academic life in a pandemic context with the quality of academic life in the context of an academic year in person.

For data collection, bibliographic searches were carried out and a questionnaire was applied, directed to university students, in which a total of 45 responses were obtained.

From the results obtained, we can evidence that classes with distance learning regime is affecting the quality of life of students. The data show us that 90.9% of students feel more anxious during this year, compared to previous years of teaching and that 73.3% of students find it difficult to get good grades during this regime and that 86.7% of students believe that the distance learning regime has affected adaptation in higher education.

We conclude that university students are more anxious, with a higher level of stress and less motivation during the pandemic, compared to an academic year of face-to-face regime. Some recommended suggestions for reducing stress and anxiety are: create a routine, to help organize the day and practice physical activities to relieve stress and anxiety.

Keywords: students; COVID-19 pandemic; academic quality of life; Presential regime; Distance learning regime.

PROMOTING HEALTHY LIFESTYLES

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The need for populations to maintain healthy lifestyles is essential, as it helps in disease prevention, quality of life and well-being.

This study aimed to evaluate lifestyles before and during the pandemic and how they can affect or improve the quality of life of the population.

The methodology consisted of reviewing the literature and applying a questionnaire to 88 individuals in the general population where the population's life habits were evaluated, including diet, physical exercise, sleep habits.

It was verified regarding the consumption of fast food (fast food) and canned food went from 47.7% before the pandemic, to 54.5% during the pandemic and in terms of consumption of sugary and fatty foods went from 51.1% to 54.5%. In addition, 37.5% of the individuals spent an average of 6 hours per day in front of the computer or other equipment with a screen and 77.3% reported that the use of these equipments increased during the pandemic. 30.7% of the population usually feels anxiety and stress. In turn, physical exercise also lost its place in the routine of many who always practiced from 14.8% to 12.5%.

It is essential to promote healthy lifestyles so that each individual reflects on their habits to improve or maintain them in order to avoid future diseases, ensuring their own physical and psychological well-being and allowing the population to acquire a more favorable resilience capacity whatever reality the world is going through.

Keywords: Healthy lifestyles, health promotion, collective health, quality of life.

Keywords: Healthy lifestyles, health promotion, collective health, quality of life

EARLY SCHOOL LEAVING OF HIGHER EDUCATION STUDENTS

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Early school leaving of higher education have gained greater political and social visibility and have also been the subject of reflection by the scientific community and higher education institutions. Although many people complete the course in which they enrol, there are also many who do not finish it. The reasons that often lie behind a decision to drop out are economic, personal and institutional.

The main objective of this scientific article is to identify the factors that influence, or have influenced, the school dropout of higher education students. Also, to understand if the current pandemic has been one of the main factors for higher education dropouts.

In order to carry out the study, a questionnaire was given to students or former students.

From the study carried out, it was obtained that female students were more likely to drop out of higher education, around 62.5%, and most of them did so in the first year of education (50%). Regarding the level of education of the parents, the results were discrepant, but most of them had secondary school education or less. It is also concluded that the relationship with colleagues did not influence the decision of any of the respondents and that the reasons for the decision were the fact that the students did not identify with the course they chose, the lack of money and also the lack of motivation due to the online study regime in times of pandemic. On the other hand, it was asked if any of the respondents would resume their studies and most of them are interested in doing so (75%), but not in the same course. In discussion, it is concluded that students try to make an effort to remain motivated.

In conclusion, adherence to the survey was low. However, the main conclusions drawn are that economic, personal and institutional factors, as predicted, were the main reasons for dropping out of higher education and that, the current Covid-19 pandemic plays an influential role in the same.

Keywords: Early school leaving; higher education; academic activities; reasons

VECTORS AND INFECTIOUS DISEASES

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Infectious diseases are diseases caused by microorganisms such as viruses, bacteria, protozoa or fungi, which when there is some change in the immune system and other clinical condition these microorganisms can proliferate, causing disease and facilitate the entry of other microorganisms.

The objective of this work was to evaluate the population's knowledge regarding infectious vectors and diseases and their effects on the life and health of populations, as well as to analyze methods of prevention of these diseases.

The methodology was the literature review on the subject and the application of a questionnaire, aimed at the population of young students, where knowledge about these diseases, their risks and their prevention was evaluated.

From the results, 87% of the respondents answered correctly about what is meant by infectious diseases, and 93.3% correctly reported how they can be contracted. The diseases most mentioned by 60% of respondents were Zika and Malaria and 53.3% mention cholera as the waterborne disease. Regarding the prevention of these diseases, 50% of respondents correctly mention one of these measures.

In this work it is notorious that the population should be more informed and sensitized on this theme, very important for Public Health. Pamphlets to raise awareness of this subject should be distributed and public campaigns, such as lectures and interviews with important figures on the subject, should be distributed.

Keywords: Diseases, human life, transmission, vaccination.

THE HISTORY OF THE DEAF IN PORTUGAL AND IN THE WORLD

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Introduction: The way deaf people were seen by society have been changing throughout the years. Nowadays, technological and pedagogical society's advance have been integrating itself, although inclusion barriers still exist in Portugal as well as the rest of the world.

Objective: Understand the historical development for deaf people in Portugal and in the rest of the world as well the integration difficulties.

Methodologies: A research has been done in SciELO, Google Scholar and PubMed data base platforms. In a range of 13 searched articles, only 7 were related with the objective.

Results: Not only it was possible to verify a diversity in the way deaf people were seen amongst several civilizations like Greece or Germany, as well as to obtain a positive evolution notion of the community rights.

Conclusion: Deaf community's social and clinical treatment development has been promoting the community integration as the time progresses, however some barriers still exist and need to be tear down, for example, Sign Language isn't something intrinsic to our society. Deaf Community keeps fighting to outcome all this barriers and to be even more integrated with nowadays society. In conclusion it is expected that in the future new goals will be achieved as well as good results in deaf people's favour.

Keywords: Deafness, History, Portugal, World

THE COCHLEAR IMPLANT AND THE DEAF CONSTRUCT

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Background: The cochlear implant is an electronic device recommended for individuals with severe to profound hearing loss. There are several points of view and opinions, depending on the community that builds them, which arose an open discussion up until today. Aim: Approach the impact of the cochlear implant in the deaf and hearing community and the different opinions towards the deaf construct. Methodology: Resorting to the PubMed, b-on, SciELO, and Academic Google databases, using the keywords “Cochlear Implant”, “Deaf Community”, “Sensorineural Hearing Loss” in Portuguese and English, obtaining a total of 30 articles. Results: After applying the inclusion criteria, such as the date of the article being greater than 2004, the type of hearing loss and the association between the deaf construct and the implants, and the exclusion criteria being the language of the articles differing from Portuguese or English, 26 articles remained for analysis. Discussion: The cochlear implant is a surgically implanted device that directly stimulates the auditory nerve, providing auditory sensations. There are several opinions concerning its implantation, which end up generating several obstacles because many view it as a solution, but from the deaf community's point of view, it's considered a threat to their identity and culture. Conclusion: The cochlear implant provides better development of an individual's communication when implanted early, in contrast, it may lead to conflicts in the future in terms of identity. Although it's accepted by the majority of society, there still are obstacles in the deaf community concerning this kind of (re)habilitation.

Keywords: Cochlear implant; Deaf community; Sensorineural hearing loss

FACILITATING STRATEGIES IN COMMUNICATING WITH THE DEAF

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Introduction: Facilitating strategies for communicating with the Deaf include basic rules of common sense, namely, speaking face to face, speaking slowly, repeating several times, using writing as a means of communication, etc. The evolution of technology has allowed the development of new strategies that have come to facilitate communication with these individuals.

Objective: To understand which strategies facilitate communication between norms - hearing and deaf people, as well as knowing how they help in their insertion with society.

Methods: A literature review was carried out in the databases, PubMed, b-on and Academic Google, using the keywords "communication strategies", "Deaf" and "Sign Language", in Portuguese and in English. Of the 15 articles found, 10 articles were selected according to the purpose of our study.

Results: Although the facilitating strategies have evolved over the years, it is still important, the continuous awareness of hearing people, for communication with the Deaf. The Government also has an important role, in the implementation and legislation, in order to obtain a better insertion of these in society. Education and access to health should use strategies that facilitate communication with the Deaf, in order to provide them with a better quality of life. Another important pillar in the lives of these individuals is the family, mainly in outlining their identity.

Conclusion: The communication strategies, such as, writing, frontal and slow speaking, as well as the development of platforms, related to the Portuguese Sign Language, allow to reduce the communication barriers between these individuals and the normal listeners.

Keywords: Communication strategies; Sign language; Deaf community; deafness

FUNDAMENTAL ASPECTS OF THE CHARACTERIZATION OF THE DEAF PERSON

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Introduction: Worldwide, about half a billion people (8% of the world's population) have a hearing loss. The age at which hearing loss is detected is of enormous importance for an early diagnosis and rehabilitation / habilitation. This aims to mitigate any difficulties that may subsequently exist in the cognitive development of language, in personal and social well-being, and in the inclusion / exclusion of the individual in society.

Objective: To evaluate the factors of inclusion of the deaf individual, as well as their acceptance.

Methodologies: A search was made in the "SciELO", "Researchgate" and "Google Scholar" databases, with the keywords "deaf community", "inclusion", "exclusion", in Portuguese and in English, obtaining a total of 22 articles, excluding 9 of these for not being compatible with the objective of the study.

Results: Over time, the deaf community has been included in society, however there is still exclusion in several situations such as access to education, health, employment, among others. Sign Language, by being recognized, has facilitated the insertion of individuals as a deaf community.

Conclusion: Although sign language is more recognized, most of the hearing community does not have the knowledge to understand deaf individuals since the study of sign language is not included in the curriculum. Due to the lack of this integration, there is a noticeable lack of empathy between these two communities, thus generating a negative impact.

Keywords: deaf community; inclusion; exclusion

EARLY REPOLARIZATION SYNDROME

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Early Repolarization Syndrome is one of the “J-wave syndromes”, which presents a typical electrocardiographic pattern. The early repolarization pattern can be observed in 1% up to 13% of the overall population, mainly in young male African-American athletes. However, for many years, the early repolarization pattern was considered a clinical benign condition. Recent studies demonstrated an association between early repolarization and sudden cardiac death, which is why it's called Early Repolarization Syndrome. An early repolarization pattern is relatively common on surface ECGs in the overall population, but in most cases individuals are asymptomatic. The episodes of sudden cardiac death associated with early repolarization pattern, are caused by Idiopathic Ventricular Fibrillation that can lead to a fatal outcome. In these cases, the clinical approach is the implantable cardioverter defibrillator and pharmacological treatment. The diagnosis of this syndrome is a clinical challenge, due to the discrepancy between the frequently found early repolarization pattern on ECG and the low incidence of sudden cardiac deaths related to early repolarization syndrome.

Keywords: Early repolarization syndrome; J-Wave; Idiopathic ventricular fibrillation; Sudden cardiac death; Implantable cardioverter defibrillator

BRUGADA SYNDROME

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Brugada syndrome is a rare, autosomal mode, inherited arrhythmia syndrome associated with risk of ventricular fibrillation and sudden cardiac death in a structurally normal heart. The prevalence varies among regions and ethnicities, affecting mostly males (aged 40/45 years at diagnosis).

Diagnosis is based on a characteristic electrocardiographic pattern (coved type ST-segment elevation ≥ 2 mm followed by a negative T-wave in ≥ 1 of the right precordial leads V1 to V2), observed either spontaneously or during a sodium-channel blocker test, however patients can remain asymptomatic.

If the electrophysiological testing is confirmatory, the current main therapy is an implantable cardioverter-defibrillator, but radiofrequency catheter ablation has been reported as an effective new treatment.

Several pathogenic genes have been identified as associated with the disease, but SCN5A is the most prevalent one.

Keywords: Brugada syndrome; Inherited arrhythmia; Sudden cardiac death

MYOCARDIOPATHY TAKOTSUBO

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Takosubo's cardiomyopathy, broken heart syndrome or stress-induced cardiomyopathy is a disease that affects the heart muscle, and can occur suddenly after a situation of intense emotional or physical stress, whether the death of a loved one, the loss of job, the end of an affective relationship, among others, mainly affecting women who are going through a post-menopausal period, the elderly and those with neurological or psychiatric disorders.

It is characterized by an acute and reversible dysfunction of the left ventricular apical segment and in response, electrocardiographic changes and symptoms similar to an acute coronary syndrome will be generated, and may present precordial pain, changes in the T wave, the ST segment, the interval QT on the electrocardiogram and increased cardiac enzymes. However, without any involvement or obstruction of the coronary arteries. Thus, the performance of a hemodynamic study is essential for its diagnostic confirmation.

In this syndrome, there is a temporary interruption of the normal pumping function of the heart only in the left ventricle, the rest of the heart continues to function normally.

The name Takosubo is a consequence of the dilated morphology of the left ventricle, which is similar to a Japanese jar.

Keywords: Takosubo's cardiomyopathy; Cardiomyopathy; Left ventricle

HOLIDAY HEART SYNDROME

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In our days the alcoholic drink it's present in people's life and the cardiovascular effects it's known at long time ago. The mostly researches has been focused on benefit effects when drink moderated or in bad consequences when taken intensely in a long period of time. Holiday heart syndrome was recognized for the first time in the early of ages 70 when Philip Ettinger verify the occurrence of variation of heartbeat on persons apparently healthy without any clinical evidence of heart disease, after an episode of excessive consume of alcohol. This occurrence was more frequently after weekends holidays and parties like Christmas and New Year. This celebrations was known for being related to the excessive ingestion of alcohol, as well as dietary exaggerations and less of hours of sleep. It's possible to happen in frequently drinkers as much in a non-regular drinker.

The most common arrhythmia associated to this syndrome it's the Atrial Fibrillation. Palpitations, syncope, pression or precordial pain and dyspnea are the principal symptoms, however, some people could be asymptomatic. According the research realized by the Melbourne's University in Australia, the risk of having a heart attack increases 4% during holidays, in consequence of the symptoms could be easier mistaken with the famous hangover.

Keywords: Holiday Heart Syndrome; Alcohol, Variation of heart beat; Atrial fibrillation

TORSADES DE POINTES

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Torsades de Pointes is a rare cardiac pathology. It is a different polymorphic ventricular tachycardia which is discovered/diagnosed/detected through the QRS complex oscillations relative to the isoelectric line of the electrocardiogram. QRS complexes are fast and very irregular around the isoelectric line. This action is directly related to the extension of the QT segment, which can be congenital (inherited due to a dominant autosomal) or drug-induced (antiarrhythmic drugs, for example).

Patients who have a long QT are more likely to suffer from Torsades de Pointes, which is also more prevalent in women. The most common symptoms are palpitations and syncope.

When not treated or poorly accompanied by a professional, Torsades de Pointes can evolve into something worse, such as ventricular fibrillation and, consequently, cardiac arrest.

Further investigation has shown that the risk factors for this type of tachycardia are mainly the variables that cause a long QT interval, and that women are more predisposed to this condition.

Keywords: Polymorphic ventricular tachycardia; Ventricular fibrillation;

CARDIAC COMPLICATIONS OF COVID-19

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The novel coronavirus disease 2019, otherwise known as COVID-19, is a global pandemic with primary respiratory manifestations in those who are symptomatic. It has spread to a massive number of countries with a rapidly growing number of affected patients. Although it causes severe respiratory infections in humans, accumulating data have demonstrated cardiac complications and poor outcome in patients with COVID-19. A large percent of patients have underlying cardiovascular disease, and they are at a high risk of developing cardiac complications. Underlying cardiovascular disease is associated with more severe manifestations of COVID-19 and higher rates of mortality. COVID-19 can have both primary (arrhythmias, myocardial infarction, and myocarditis) and secondary (myocardial injury/biomarker elevation and heart failure) cardiac involvement. The cardiovascular problems that may occur in patients with COVID-19 have no single cause; they are due to both direct effects of the viral load on the cells of the heart, and indirect effects resulting from the immune and inflammatory response to the infection. This paper seeks to expose the varied cardiac manifestations of covid-19, with emphasis on a clinical case study of a patient who developed cardiac problems associated with thromboembolism due to the coronavirus. COVID-19 has been associated with a range of cardiovascular manifestations including thrombo-embolism. Pulmonary embolism (PE) causing antero-septal/anterior ST elevations that mimic myocardial infarction have previously been described.

Keywords: Cardiac complications; COVID -19; Pulmonary embolism

ATHLETIC HEART SYNDROME

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Young athletes are considered to be the healthiest group in society. However, although rare, here are still reports of sudden death or cardiac arrest on the playing fields because usually some type of heart problem, in particular a hypertrophic cardiomyopathy, is mistaken with the athletic heart syndrome.

The athletic heart syndrome is a non-pathological condition that refers to not normal changes in the heart of people who regularly perform intense aerobic exercise and also in people who perform weight training exercises of greater intensity.

The interpretation of the electrocardiogram may allow the identification of changes associated with cardiac pathology that may or may not condition the practice of physical exercises. In this context, it is essential to recognize the electrocardiographic patterns that represent the structural and electrical remodeling resulting from adaptation to continuous exercise.

Keywords: Athletic heart; Exercise; Electrocardiogram

DILATED CARDIOMYOPATHY

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Dilated cardiomyopathy is the most common disease affecting the myocardium, with a rate of 6/100 000 per year, accounting for 25% of the cases of heart failure. It is characterized mainly by left ventricular systolic dysfunction, with decreased ejection fraction, which causes the activation of compensatory mechanisms to maintain cardiac output, leading to an increase in mass and volume. Its etiology is varied, and may be due to infections, genetic, toxic causes, among others, and about 50% is idiopathic (no know cause). It has a variable prognosis, depending on several factors, and may cause sudden death.

In general, the prognosis worsens with the decrease in functional capacity. Clinically, dilated cardiomyopathy is described by presenting exertional dyspnea, fatigue, palpitations, syncope, peripheral edema, or even asymptomatic.

Keywords: Dilated cardiomyopathy; Ventricular dysfunction; Sudden death.

HYPERTENSIVE EMERGENCY - MALIGNANT HTA

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Uncontrolled high blood pressure (BP), or hypertension, can progress to a hypertensive crisis, defined as an abrupt elevation of systolic BP ≥ 180 mmHg or a diastolic BP ≥ 110 mmHg. Hypertensive crisis can be further classified as hypertensive urgency or hypertensive emergency (HE). The first has no end-organ damage and the blood pressure doesn't need to be controlled immediately, while the second one is related to end-organ damage, including cardiac, renal, and neurologic injury, that requires immediate treatment with rapid reduction of BP. There are different types of hypertension emergencies which include hypertensive encephalopathy, acute coronary syndromes, pulmonary edema, stroke, aortic dissection, and eclampsia.

Malignant hypertension can be differentiated from HE by a differential diagnosis and it is characterized by renal insufficiency, severe left ventricular hypertrophy, severe retinopathy with exudates and retinal hemorrhages with or without papilledema, which can be fatal. The diagnosis isn't always easy for this disease is rare.

This poster will discuss this disease's physiopathology, symptoms, diagnosis and treatment, finishing with a clinical case about a 38-year-old woman who suffered from hypertensive emergency with clinical signs of thrombotic microangiopathy.

Keywords: Hypertension emergency; Malignant hypertension; End-organ damage.

WOLFF-PARKINSON-WHITE SYNDROME

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The Wolff-Parkinson-White Syndrome is the most common form of ventricular pre-excitement and is known for the presence of an accessory atrioventricular conduction pathway. Most patients remain asymptomatic, however when symptoms occur, they are due to tachyarrhythmias, the most common are paroxysmal supraventricular tachycardia (orthodromic or antidromic) and atrial fibrillation. Patients with WPW syndrome typically have a slightly higher risk of sudden cardiac death when compared to the healthy population. On the ECG, a sinus P wave is observed (except if there are other variations), a short PR gap (<0.12 seconds) and an enlarged QRS complex, due to the presence of the delta wave that points ventricular pre-excitement. Although there are several therapies, radiofrequency catheter ablation is therapy frequent treatment for patients with symptomatic tachyarrhythmias.

Keywords: Wolff-Parkinson-White; Tachycardia; Paroxysmal; Sudden death;

COMMOTIO CORDIS

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Commotio Cordis is Latin etymology for “agitation of the heart”. Mechanism by which a sudden impact on the chest causes sufficient mechanical energy to cause inadequate depolarization of the heart, and consequent unstable dysrhythmia. In most cases, it causes sudden death in the absence of cardiac damage or its adjacent structures. It's quite rare due to the need for precision in impact, time, and angle. The most affected are boys with 14/15 years, this may be a result for the most participation in sports of impact, which increase the risk factors of commotio cordis.

The arrhythmias provoked are diverse and likewise depend on the severity of the trauma. The most frequent being: sinus tachycardia/bradycardia, atrial fibrillation, RBBB, AV blocks. Ventricular Tachycardias and ventricular fibrillations are possible, but rare, as they only occur in severe cases. Some may even be secondary to hemorrhage or ischemia provoked by the trauma. Any patients who suffer less drastic injuries may be asymptomatic and will only generate an arrhythmia or conduction disturbance later.

I will speak about a rare case of a 14-year-old boy who survived after suffering from commotio cordis. He suffered a knee impact on his chest, resulting in loss of consciousness. This case will show us that commotio cordis may be associated with factors other than ventricular fibrillation.

Keywords: *Commotio cordis*; Unstable dysrhythmia; Sudden death

SICK SINUS SYNDROME

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Sick Sinus Syndrome presents a variety of conditions that involve sinus node dysfunction which predominantly affects elderly people.

This can result from either intrinsic causes such as degenerative fibrosis or from extrinsic factors like the case of pharmacological factors. Usually, people with Sinus Nodule Syndrome are asymptomatic or manifest very subtle symptoms, others may experience dizziness and even syncope.

The diagnosis is based on the result of the electrocardiogram in conjunction with the patient's symptoms.

The diagnosis is based on the manifestations of the electrocardiogram, such as sinoatrial blocks and alternating patterns of bradycardia and tachycardia (bradycardia-tachycardia syndrome) in conjunction with the patient's symptoms.

Keywords: Sick Sinus Syndrome; Electrocardiogram; Symptoms

RESTRICTIVE CARDIOMYOPATHY

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Restrictive cardiomyopathy is characterized by a decrease in myocardial distensibility with consequent diastolic dysfunction and restriction to ventricular filling. As such, there is an increase in ventricular pressures. Therefore, there is a direct involvement of the myocardium. This pathology is one of the least common types of cardiomyopathy and it is also one of the least known and most prevalent in childhood. It does not have a known cause, but it can be based on several triggering factors, for example endomyocardial fibrosis, which is characteristic in some populations.

In this Poster I intend to analyze some articles about the same topic and come to a conclusion about the effects of this disease on children, from the bad prognosis of the same, to the risks they entail.

Keywords: Restrictive Myocardiopathy; Pediatrics; Risks

SYNDROME X

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X syndrome heart disease is also known as microvascular angina, it consists of cardiac dysfunction causing angina in patients with normal epicardial coronary arteries on angiography, this term is used to describe patients who have typical chest pain that is relieved by rest or nitroglycerin, ST segment depression during exercise and angiographically normal coronary arteries. The prognosis is not as benign as it was believed years ago; therefore, in patients with angina and a normal epicardial coronary, a clinical and imaging evaluation is necessary to detect a functionally significant ischemia.

This work reports a middle-aged patient with a history of smoking and hypercholesterolemia, palpitations, anxiety disorders and typical gym effort, and in 2011 she was diagnosed with syndrome x, there will be shown electrocardiographic and echocardiographic images, among others

Keywords: Keywords: X syndrome; Coronary arteries disease; Ischemia.

MYOCARDIOPATHY HYPERTROPHIC

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Hypertrophic cardiomyopathy is the most common genetic heart disease. Its main features are left ventricular and septal hypertrophy, without ventricular cavity dilation, which happens in the absence of other pathologies that cause that alteration.

HCM may present itself from an asymptomatic condition to a deadly one, when sudden cardiac death or refractory heart failure takes place in young people and athletes. Near half the patients have a positive family history, it being a dominant autosomal disease, and there have been identified several gene mutations capable of causing such disorder. It has a prevalence of 1:500 individuals.

After data recollection from several articles, it was acknowledged that HCM is the most common genetic heart disease with high mortality potential, since it is the sudden death cause among the young population. Nonetheless, the development of imaging techniques have made it possible to establish an early diagnosis and prognosis of HCM. In the future, procedures intended to change the natural progression of the disease may be carried out.

Keywords: Hypertrophic cardiomyopathy; Sudden death; Dominant autosomal mutation

WELLENS SYNDROME - THE FORGOTTEN DIAGNOSIS

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Wellens syndrome was first described in 1982 by Wellens and his colleagues in patients presenting with a clinical picture of unstable angina. The assessment of pain in a routine in emergency health services. The electrocardiogram shows specific alterations of the T wave morphology in precordial leads that are associated with critical stenosis of the proximal segment of the left anterior descending coronary artery. Electrocardiography and cardiac enzyme levels are important tools in the investigation of these patients, however negative results may actually be overlooking the identification of some conditions. Its recognition on the electrocardiogram is very important, as this syndrome represents an extensive anterior infarction that has reperused. The assessment of chest pain is a routine in emergency health services. Although this is a common complaint with a broad differential diagnosis. The major concern is the possibility of acute coronary syndrome (ACS)

Electrocardiography and cardiac enzyme levels are important tools in the investigation of the patients however negative results may actually be overlooking the identification of some conditions. We report the case of a female patient with angina whose baseline tests in the emergency room were negative for changes suggestive of ischemic heart disease.

The Wellens syndrome a recently described disease is a variant of unstable angina which is not identified may result in significant morbidity and mortality.

Keywords: Wellens syndrome; Unstable angina; Acute coronary syndrome

VITAMIN A IN PREGNANCY AND LACTATION

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Introduction: Vitamin A is an essential lipo-soluble nutrient with crucial functions for normal vision, gene expression, growth, immune function, and reproduction. In the particular life stage that we are going to explore, the need for vitamin A is increased. The intake of vitamin A during pregnancy should reach 700µg ER/d and in breastfeeding woman the intake should be 1300 µg ER/d.

Objective: Demonstrate the importance of vitamin A in pregnancy, fetal development and lactation.

Methodology: Review of several articles published in the last 5 years and supporting bibliography related. The research was conducted on PubMed, ScienceDirect and Scielo with the key-words "vitamin A", "pregnancy" and "lactation" with the determinant "AND". After reading the abstracts of 13 articles, 4 were used.

Results: Studies show that vitamin A intake in pregnant women influences directly the available retinol for the fetus, which is important for fetal development and vital function.

Other studies have shown that there is a prevalence of inadequate vitamin A intake of women in childbearing potential, pregnant and breastfeeding age, that translate into sequels in the childs.

Conclusion: The need for vitamin A during pregnancy is critical not only for fetal growth and development, but also for health outcomes of the mother.

That being said, it is so much important ensuring optimal vitamin A intake because these are a critical period of growth and establishment of long-term health.

Keywords: Keywords: Vitamin A; Gestation; Lactation; Vitamin A deficiency

ROLE OF ZINC IN ANOREXIA NERVOSA

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Introduction: Anorexia nervosa (AN) is a severe, biological brain disorder characterized by intense and intentional weight loss using extremely rigid diets with an unrestrained search for thinness with significant medical risks. Zinc deficiency has been implicated in AN and zinc is important in a large range of processes in the brain. The daily zinc recommendation for men is 11mg and for women 8mg.

Objectives: To understand the relationship between zinc deficit anorexia nervosa development and treatment.

Methods: A literature was carried out in Science Direct, PubMed and Google Scholar databases with the following keywords and expressions: zinc, “zinc and disease” and “zinc and anorexia nervosa”. Articles published in the last 10 years were considered. A total of 15 articles were analyzed. After reviewing the title, we selected 10 articles which got narrowed down to 6 full readings after analyzing abstracts.

Results: Zinc supplementation reduces biochemical evidence of zinc deficiency and corrects anomalies related to neurotransmitters, such as changes at the brain level. The zinc brain levels of anorexia nervosa patients are altered due to the pathophysiology of the disease. It was verified that the oral zinc supplementation promotes weight gain and increase in the muscle mass of the patient with AN.

Conclusion: This literature review shown that zinc supplementation should be encouraged in the treatment of AN.

Keywords: Keywords: zinc, anorexia nervosa, deficit of zinc

MAGNESIUM AND DEPRESSION

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Introduction: Magnesium is one of the most essential elements in the human body and it has strong anti-inflammatory effects, that's why a higher intake of magnesium is associated with lower levels of inflammation markers. It's also well known that depression is one of the most important problems of human health.

The biological mechanisms that potentially underlie the association between magnesium and depression remain unclear but may involve the central nervous system, stress axis and oxidative pathways.

Aim: The aim of this study is to examine the association of dietary magnesium intake with risk of depression.

Methods: Literature review was conducted in Google Académico, Pubmed, databases, using the keywords "magnésio e depressão", "magnesium and depression" and "magnesium in depression". The selection of the articles was made based on the year of publication (2016-2020), title, summary and full reading, articles in Portuguese and English were chosen. 5 articles were filtered and proceeding the reading of those who fit the theme, having at the same 5 articles.

Results: During our review and analysis, we realized that exists a linear relationship between magnesium intake and depression. This finding suggests that increased consumption of foods rich in magnesium such as nuts, green vegetables, and whole grains may be advocated for the prevention of depression.

Conclusion: Overall, the majority of evidence supports an inverse association between magnesium and the development of depression, as well as the antidepressant properties of magnesium. It is needed to do additional studies to obtain better results.

Keywords: "magnesium"; "depression".

IS VITAMIN K A POSSIBLE TREATMENT FOR COVID-19? A REVIEW OF THE LITERATURE

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Introduction: The relationship between severe COVID-19 cases and thromboembolism is well established in the literature. Vitamin K, particularly its K2 variant (menaquinone), is being studied as an important factor in the prevention of thromboembolism and for its role in the inhibition of calcification of arterial walls.

Purpose/Objective: This literature review intends to answer the following research question: Can vitamin K help in the treatment of COVID-19?

Methodology: A systematic literature review was conducted based on scientific, peer-reviewed, papers from PubMed. A search was made on the 14th of April 2021, including the terms ("COVID*" OR "SARS-CoV-2") AND ("vitamin k" NOT "vitamin k antagonist*"), resulting 17 articles, of which 12 were excluded for not fitting within the research question or for not being peer-reviewed. The 5 articles corpus was classified in terms of article type (one theoretical and four empirical), methodology used, objective(s), and main results.

Results: Molecular simulations show that vitamin K can be effective on the inhibition of certain SARS-CoV-2 proteins. Clinical studies suggest a connection between vitamin K deficiency and severe COVID -19 cases. It is also described a mechanism through which vitamin K deficiency, namely in its extra-hepatic functions, may lead to higher probability of coagulopathies (through inactive protein S), and arterial calcification (through inactive matrix Gla protein). The latter proposition was verified in an empirical study.

Conclusions: Overall, this review found some indications of a beneficial effect of vitamin K in the treatment of COVID -19. Nevertheless, robust randomized control trials are necessary to validate the relationships suggested.

Keywords: Vitamin K; COVID-19; Literature review

VITAMIN E: FOOD OR SUPPLEMENTATION? WHICH ONE?

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Introduction: There are a few ways to get the amount of vitamin E our bodies need. We can get it through a rich diet of vitamin E or from supplementation. The lack of this vitamin can cause some pathologies such as anemia, muscle problems, and many others. It is also a potent antioxidant and, therefore, more stressed individuals, practitioners of physical activities and smokers need greater higher contributions.

Objective: Study and analyze which of the two methods to obtain this vitamin is healthier and brings more benefits to the body and what's the impact on human health.

Methodology: As a basis for our work, we conducted a search on PubMed with the key-words "vitamin E", "benefits", "supplementation", "food" which resulted in a selection of two articles about how to get vitamin E through diet and supplementation.

Results: It is through diet that vitamin E brings the greatest benefits such as: reducing brain disorders like cognitive decline and Alzheimer's disease; helping newborn develop. Unlike supplements that divided into two doses, high and low, with low doses bringing more benefits than high doses, these still do not outweigh the benefits of a diet rich in vitamin E.

Conclusion: The balanced diet should be the priority way to achieve the nutritional recommendations of Vitamin E

Keywords: "vitamin E"; "benefits"; "supplementation"; "food"

THE EFFECT OF VITAMIN C SUPPLEMENTATION ON SKIN

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Introduction: Vitamin C also known as ascorbic acid is an essential micronutrient for human beings. The beneficial effects most popular are on the immune system as well as an antioxidant. Its potential regarding the skin and healing aren't common knowledge.

Objective: Study the effects of vitamin C supplementation on skin regeneration, healing and protection.

Methodology: A review of several articles took us to PubMed and ScienceDirect using expressions like "Vitamin C" "Healing" "Skin" "Benefits" "Ascorbic acid" with the determinant "AND" from the last 10 years and 774 articles were obtained. Firstly they were selected by the titles and then an abstract analysis was made, only 8 articles being chosen. Lastly, after reading all the articles we developed intensively 5.

Results: Ascorbic acid has a good therapeutic potential on a variety of dermatological diseases. It has significant protection against some skin alteration such as acne scars or regeneration after injury since it improves collagen synthesis. In addition it helps decrease melanin synthesis leading to antioxidant protection against Ultraviolet-induced damage. The low-dose oral administration (ie, 60 mg/d) of vitamin C may be an effective form of treatment after skeletal muscle injuries.

Conclusion: While it is a safe supplement, it lacks clinical testing and research prior to implementation, regardless of whether it enhances collagen synthesis and tissue healing.

Keywords: "Vitamin C" "Healing" "Skin" "Benefits" "Ascorbic acid"

DOES CALCIUM SUPPLEMENTATION AFFECT CARDIOVASCULAR HEALTH?

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Introduction: Calcium is a crucial mineral in the human diet. However, there has been a longstanding concern in relation to its ideal intake. Some people can't achieve its recommended daily absorption (1000 mg/d for men aged 18 to 70 years and women aged 18 to 50 years and 1200 mg/d for men 70 years and older and women 50 years and older) through diet, so they need supplementation. Despite that, adults are not very informed or even not conscious of the possible side effects of high calcium intake.

Objective: Analyze the correlation between calcium supplementation and cardiovascular risk.

Methods: Literature review was carried out through PubMed and Science Direct platforms, using the expressions "Calcium supplementation" and "Cardiovascular risk". It was obtained two hundred and fifteen articles published in the last six years. After reading the titles and abstracts, twenty-one articles were selected. At last, by full reading, five articles were included.

Results: A notable number of studies have reported a bond of calcium supplementation with adverse cardiovascular events, even though high dietary calcium intake was shown to have a protective effect. As the possibility of cardiovascular events is mainly observed in studies with higher doses of calcium supplements (1000–2000 mg), lower doses seem to be safe. In addition, men with an intake of supplemental calcium superior to 1000 mg/d had drastically elevated the risk of total cardiovascular disease death.

Conclusion: Some recent studies have revealed that excessive calcium intake might increase the risks of cardiovascular diseases.

Keywords: "Calcium"; "Calcium supplementation"; "Cardiovascular risk".

THE EFFECT OF IRON IN ALZHEIMER'S DISEASE

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Introduction: Iron is essential for the body and is obtained through the diet, but it can also be toxic in excess, as it participates in reactions that generate free radicals, associated with cellular damage. Alzheimer's disease is a dementia that causes a deterioration of several cognitive functions because fibrillar tangles and senile plaques makes communication between nerve cells impossible.

Objective: To acquire knowledge about iron levels in Alzheimer's disease, its accumulation in the brain and what happens during the development of the disease. We will also analyze the new cell death pathway, ferroptosis, which is important in neurodegeneration.

Methods: Platforms like PubMed and ScienceDirect were used in the literature research. 1954 articles were found and 5 were selected according to relevance. The keywords "iron" "Alzheimer's disease" "ferro" "Alzheimer" "ferroptosis" were used and articles published in the last 15 years were taken into consideration.

Results: A review of the published articles showed that Iron is linked to Alzheimer's, since there is considerably more iron in patients with Alzheimer's as in a healthy brain. It was found that the interaction between Amyloid- β peptide ($A\beta$) and iron is one of the factors responsible for the aggregation and deposition of $A\beta$ that leads to the formation of senile plaques, which blocks signaling between cells at synapses.

Conclusion: It was concluded that not much is known about an interaction between iron and Alzheimer's and that in order to reach a cure, much research is still needed. It is known that iron is essential to the brain but in excess it is harmful and can lead to oxidative reactions generating oxidative stress that will be responsible for neurodegeneration.

Keywords: "ferro" "ferroptosis" "iron" "Alzheimer" "Alzheimer's disease"

FOLIC ACID SUPPLEMENTATION IN OBESE PREGNANT WOMEN

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Introduction: Vitamin B9, known as Folic Acid, is one of the most widely used supplements by women during pregnancy. Folic Acid is important to DNA development, placenta formation, preventing Neural Tube Defects (NTDs) in the fetus and lowering the risk of pre-eclampsia in pregnancy. Obese women are at a higher risk for having a child with a NTD.

Objectives: In order to understand whether a higher dose influenced the reduction in the risk of children of obese women developing NTDs, we expose the potential mechanisms triggering for folate deficiency and discuss the main considerations for the use of higher doses of this vitamin in obese pregnant women.

Methods: An online search was conducted in PubMed. A literature review of the research articles, published in the last 5 years, using the keywords “obese women”, “folic acid supplement”, and “pregnancy”, was the chosen method. Using the keywords above, it was obtained 27 articles. It was included in this study 4 articles, after title and abstract analysis, and full reading.

Results: The evidence of the involvement of several folate-related pathways implies increased folic acid supplementation in obese women compared to others. However, physiological absorption of folic acid is limited and the possible effects of the unmetabolised portion on the mother and child are not yet known.

Conclusion: There is an urgent need for more research on this subject. And at the moment personalised pre-conception counselling on folate level, lifestyle and medical conditions is the most recommended.

Keywords: Folic acid, pregnant women, obesity and supplementation

VITAMIN D DEFICIENCY IN THE PORTUGUESE POPULATION: WHAT ARE WE MISSING?

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Introduction: Vitamin D is a prohormone known for its essential role in calcium homeostasis and bone metabolism. Vitamin D deficiency increases the risk of rickets and osteoporosis, and other diseases such as: Diabetes, Obesity, Arterial hypertension and Rheumatoid arthritis. Currently, it is known that a large part of the Portuguese population suffers from Vitamin D deficiency, in association with changes in lifestyle.

Objectives: Understanding Vitamin D deficiency in the Portuguese Population and main risk factors.

Methods: Research was conducted on PubMed, Science Direct and Google Scholar, using as keywords: “vitamin D”, “deficiency”, “Obesity”, “Portugal” and was restricted to articles published after 2013, performing a total of 8 articles analyzed.

Results/Discussion: In Portugal, 66% of adults present Vitamin D deficiency, where winter, living in Azores, older age and Obesity are the main risk factors. Despite its favorable climate and the adoption of the Mediterranean diet, presents, in an unexpected way, a deficiency of vitamin D levels. Are the standardized values adjusted to the reality of Portugal or would it be advisable to revise according to the recommended doses? Would it be sensible to encourage a short-term sun exposure without sunscreen protection? Would it make sense to resort to supplementation during winter?

Conclusion: High prevalence of vitamin D deficiency observed in the Portuguese population and the contributor risk factors show the need of intervention both at individual and social level. Certainly, further studies are necessary in order to understand what we may be missing.

Keywords: Vitamin D, deficiency, Obesity, Portugal

THE ROLE OF POTASSIUM IN CARDIOVASCULAR HEALTH

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Introduction: Potassium intake is essential for the proper functioning of human body, since it is present in various constituents of the human body.

Objective: Understand the importance of potassium in cardiovascular health, more specifically in hypertension.

Methodology: The selection of the articles resulted from research on several platforms, such as Pubmed, SciELO and Science Direct with the key-words "potassium", "health", "cardiovascular disease" with the determinant "AND". The articles were selected by the titles, followed by an analysis of the abstract and by that, 5 out of 12 articles were chosen.

Results: Potassium proved to be an essential mineral for human health. It's presence in cells, nerves and muscles and its significant role in the body homeostasis it's very important. It has the power to neutralize the effects of high sodium intake, reducing blood pressure that lowers hypertension and consequently improves cardiovascular health.

Conclusion: A diet restricted in sodium quantity and rich in potassium intake, with recommended doses, works as a strategy to prevent and/or control hypertension and decrease cardiovascular morbidity and mortality.

Keywords: Potassium intake; Sodium to potassium ratio; Hypertension; Blood pressure.

VITAMIN B12 CONTRIBUTION IN THE PREVENTION AND FIGHT OF DEPRESSION

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Introduction: Vitamin B12, also known as cobalamin, is an essential micronutrient for the production of neurotransmitters that stimulate mood. The deficiency of this vitamin has been correlated with the increased risk of developing mood disorders, such as depression.

Objective: The aim of this research was to get an overall understanding about the relationship between the vitamin B12 levels and development, prevention and/or improvement of depression.

Methods: The research was performed using the keywords “vitamin B12”, “cobalamin”, “depression”, “depressive symptoms” in PubMed ScienceDirect and Google academic database, including only the articles published between 2010 and 2021, which analyzed a relationship between vitamin B12 levels and depression.

Results: This research was founded in 16 articles. Among them 12 articles associated the deficiency of B12 with depression or the risk of developing depression, 2 articles associated the high levels of B12 with the capacity of preventing depression, 2 articles did not find a relationship between high levels of B12 and improvements on depression, but 3 articles reported improvements on antidepressants effects when these were consumed along with vitamin B12 supplements.

Conclusion: Low levels of B12 have been associated with depression and the increased risk of developing depression. However, it is not clear if high levels of vitamin B12, granted by supplementation, contribute to fight and prevent depression being necessary to perform more studies to achieve more concrete evidence.

Keywords: Vitamin B12; Cobalamin; Depression

TRAPS IN THE IDENTIFICATION OF PACEMAKER DYSFUNCTIONS

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The surface EKG (electrocardiogram) consists in recording cardiac potentials using electrodes placed on the upper and lower limbs and on the left precordial region, which represents the total electrical activity of the heart. The intracavitary electrogram (IEGM) registers the same cardiac potential, through the stimulation lead, however, it only registers the electrical activity of an area located between the electrodes. Despite both registering the same potential, the IEGM still has the ability to register myo-potentials and electromagnetic interferences, presenting more complete information compared to the EKG. The real-time IEGM is still a safe method for assessing the pace and parameters of cardiac devices during the follow-up, however there are situations in which it is only possible to clarify and confirm certain visible changes in the IEGM with the simultaneous use of the surface EKG.

In this way, we will present the clinical case of an adult male, 81 years old, who implanted a definitive pacemaker VDD mode in October 2020 due to a ventricular atrial block 2nd degree Mobitz II after an extraction of the previous pacing system for systemic infection/endocarditis, presenting as pre-implantation symptomatology tiredness and bradycardia.

The presentation of this case is intended to demonstrate the advantage of simultaneous use of the surface EKG and the IEGM to identify and resolve pacemaker dysfunctions in the follow-up.

Keywords: Pacemaker; EKG; Eletrograms; Device Failure.

THE USE OF PROBIOTICS NOWADAYS

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INTRODUCTION: The intestinal microbiota plays an important role in both human health and disease, and the supplementation of the diet with probiotics and prebiotics may ensure an appropriate equilibrium of this microbiota. Probiotics are live microorganisms that, when administered in adequate amounts, confer a health benefit on the host.

OBJECTIVES: This review presents the state of the art about the use of probiotics, reporting the benefits these food ingredients provide for the human health, and the possible mechanisms involved. Other aspects, such as distinction of probiotics, prebiotics and symbiotic are also discussed.

METHODS: This literature review was carried out through bibliographic research in the scientific databases Science direct, "Google Scholar and "PubMed, using the following keywords: Probiotics, Intestinal Microbiota, host, mechanism of action, gastrointestinal and extra-intestinal pathology, Lactobacillus spp., Bifidobacterium spp., Saccharomyces boulardii. We considered the period between 2006 and 2019.

RESULTS: Probiotics promote the balance of the intestinal microbiota, through the production of bacteriostatic substances and through competition with pathogens and their toxins for adherence to the intestinal epithelium. Its physiological, immunological and anti-pathogenic effects on host, seem to have benefit in the prevention and treatment of some gastrointestinal and extra-intestinal pathology, of character inflammatory, infectious and neoplastic.

CONCLUSION: A healthy and balanced intestinal microbiota results in a normal performance of the host's physiological functions, which will ensure improvement in the individual's quality of life. The effect of probiotic microorganisms and prebiotic ingredients can be enhanced, through their association, giving rise to symbiotic functional foods.

Keywords: Probiotics, Intestinal Microbiota, host, mechanism of action, gastrointestinal

FRUIT INTAKE AND ITS CONTRIBUTION TO WEIGHT CONTROL

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Introduction: Several studies show that increased fruit intake affects weight loss and maintenance and the risk of overweight or obesity.

Objective: Demonstrate the effect of fruit consumption on weight control.

Methodology: A review of several articles guided us to PubMed and Science Direct using the keywords "fruit" "weight control" "obesity" with the determinant "and" from the last 10 years. They were first selected by titles, then an abstract analysis was made, only 6 being chosen. Lastly, after reading all the articles we only covered 4.

Results: A diet rich in fruit plays an important role against obesity since anti-obesity effects are greater than pro-obesity effects in most cases, as shown in this review. We know that fruits provide more satiety and therefore a loss of hunger, which causes a decrease in energy consumption, which modulates the energy metabolism.

Conclusion: In summary, the amount of fruit in the daily diet has a negative relationship with weight gain, but there is still insufficient strong evidence to establish a convincing mechanism.

Keywords: "fruits" " weight control" "obesity"

GLUTEN AND CELIAC DISEASE

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Introduction: Gluten is the main storage protein of wheat grains. Triggered by the ingestion of gluten there is an autoimmune disorder with increasing diagnosis rates, the celiac disease (CD), which only effective treatment available is a gluten-free diet. However, it is difficult to adhere and may result in a psychological and social burden for patients.

Objective: To analyse what could improve celiac disease patients' quality life with special emphasis on the gluten-free diet (GFD) and discuss the properties of the gluten proteins. Disorders associated with Grain food consumption such as non-celiac gluten sensitivity and wheat allergy were also analyzed.

Methods: A comprehensive literature search was carried out on PubMed, ScienceDirect and Scielo to identify peer-reviewed articles on gluten-free diet in celiac disease published until 2016. Search strategies included the keywords: "celiac disease", "gluten-free diet", "gluten tolerance" and "gluten". 12 articles were chosen by their title, consequently, analysed each abstract. After reading each article carefully, only 8 were used.

Results: The compilation of the selected articles allowed the understanding of gluten, the clinical aspects of the celiac disease, the importance of a gluten-free diet in this enteropathy and other pathologies associated with gluten consumption.

Conclusion: As the primary treatment for the celiac disease, a gluten-free diet should be balanced and based on a combination of naturally gluten-free foods and certified processed gluten-free products, yet, the diet must be reserved to subjects with symptoms. However, this topic is still controversial and deserves further study, especially, on how to measure and improve adherence to a gluten-free diet.

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

INFLAMMATORY BOWEL DISEASES AND THE DIET

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Introduction: The Inflammatory Bowel Disease (IBD) has two types: Ulcerative Colitis (UC) and Crohn's Disease (CD). The triggering factor of this disease is still unknown; although it is believed that factors such as genetics, environment and microbiota may play a crucial role in the emergence of both variants. The influence of diet in IBD has been investigated, knowing that it plays a very fundamental role in the control of this disease.

Objective: Understand the two variants of IBD and the relation of both with the diet and thus know what type of diet to adopt.

Methods: Through the search of several informative documents and articles on this topic on platforms such as SciELO and PubMed, using expressions like "Inflammatory Bowel Disease", "Diet", "Crohn's disease" and "Ulcerative colitis". After the search, 14 articles were selected, 9 of which were used for the final analysis.

Results: It has been proven that the diet is an important factor in the treatment of a patient suffering from IBD. Nevertheless, it should be noted that the supervision by a professional is advised to improve the quality of a patient's life.

Conclusion: Although there are no specific dietary requirements for variants of IBD, it is advised for those suffering from IBD to keep their diet as natural as possible, along with adopting some general hygiene rules to minimise the symptoms, to result in a better quality of life for the patient.

Keywords: "Inflammatory Bowel Disease"; "Diet"; "Crohn's disease"; "Ulcerative colitis".

THE ROLE OF FRUITS IN WEIGHT CONTROL

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Introduction: Overweight and obesity are some of the most challenging and growing public health problems worldwide. Several national and international organizations recommend an increase in fruit intake to decrease the risk of developing lifestyle-related diseases, including overweight and obesity.

Objectives: The aim of this study is to examine the association of the role of fruits in weight control

Methods: A literature was carried out in Science Direct, PubMed and Google Scholar databases with the following keywords and expressions: “fruit consumption in Portugal”, “weight control”, “fruit varieties”, “O papel das frutas no controlo do peso”, “o consumo de fruta em Portugal”, “excesso de peso” and “fruta e peso corporal”. Articles published in the last 8 years were considered. A total of 15 articles in Portuguese and English were analyzed. After reviewing the title, we selected 10 articles which got narrowed down to 5 full readings after breaking down the abstract.

Results: The results showed that fruit intake helps to reduce the risk of overweight and obesity and point to a possible inverse association between fruit consumption and overweight

Conclusion: We conclude that fruit consumption can contribute to obesity rather than weight reduction. However, some of the articles analyzed demonstrate that most types of fruits have anti-obesity effects. Thus, due to its effects, as well as its content of vitamins and minerals, health organizations suggest the consumption of fruits for weight reduction.

Keywords: “fruit”; “weight control”; “Obesity”

CELIAC DISEASE AND GLUTEN: NUTRITIONAL IMPACT OF GLUTEN-FREE DIETS IN CHILDREN WITH CELIAC DISEASE

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The only treatment currently available do celiac disease (CD) is the avoidance of gluten throughout life. However, recent studies indicate that a gluten-free diet (GFD) may have limitations on the nutritional level. Therefore, this work aims to understand the nutritional impact of GFD on children with CD. A systematic review of the literature was carried out based on recent and peer-reviewed scientific articles in PubMed database. The query used included the terms “gluten-free diet”, “children”, “nutrition” and “celiac disease” and respective variants. Of the 61 resulting articles, 56 were excluded for not meeting the defined inclusion criteria or for not meeting the research question. Most studies point to the absence of significant differences in terms of energy consumption in children with CD on a GFD when compared to healthy controls. Although not unanimous, some studies show higher consumption of fat by celiac children. In terms of micronutrient intake, there is consensus on the low consumption of folates and selenium by children with CD compared to healthy controls. A study also demonstrated a deficient intake of vitamin D in both children with CD and healthy controls. Overall, it cannot be concluded that a GFD leads to increased nutritional imbalances for children with CD. Imbalances were found both in children who follow a GFD and in those who do not. Therefore, the work of dietitians with children and their families is highlighted, more particularly those with CD, because, unlike their healthy peers, they face increased challenges in managing their diet.

Keywords: Celiac disease; children; gluten-free diet; nutrition.

FOOD ADDITIVES - PECTIN

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Background: Food additives are added to foods to increase the product's durability or to enhance or modify its organoleptic properties. Pectin is a complex polysaccharide present in the cell wall of fruits and vegetables, used in the food industry because it is a thickening, gelling, stabilizing and emulsifying agent.

Aim: Understand how pectin is obtained and used in the food industry as a food additive and what are the advantages of its use in different foodstuffs.

Methodology: A literature review was carried out, using scientific research bases such as "PubMed" and "ScienceDirect", crossing the descriptors "food additives", "pectin" and "food industry". After full reading of the articles, 27 published between 2011 and 2021 were selected.

Results: Pectin is obtained from natural compounds such as fruit peels or plant residues. Several methods of pectin extraction are known to improve the yield, time and quality of the products obtained. This additive can be used as a fat substitute in ice cream and cakes; starch substitute in puddings; to improve the organoleptic properties of meat and cheese sauces and to coat minimally processed apples to improve their conservation. It was also found that pectin films incorporated with orange oil or clove essential oil can be used as an antimicrobial material in food packaging.

Conclusion: Pectin is an additive that has advantages for the food industry as it increases the shelf life of food and improves its organoleptic and nutritional characteristics.

Keywords: "Food additives", "Pectin", "Food industry"

NANOENCAPSULATION OF CURCUMIN AND HEALTH BENEFITS

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Introduction: Curcumin is a polyphenol naturally present in the curcuma rhizome. It is considered a preservative, flavoring and natural coloring agent, and there has been a growing interest in its use in both food and pharmaceutical industry. This is due to the countless beneficial properties for the health of the individual. Despite this, its use for therapeutic purposes has some limitations, namely low bioavailability and solubility in aqueous solutions. Therefore, nanoencapsulation has emerged as an innovative method capable of improving the stability, biodegradability and biocompatibility of some active compounds, such as curcumin.

Methods: A search was carried out in several scientific databases, from 2016 to 2021, using the following keywords in the title: “nanoencapsulation”, “nanotechnology”, “curcumin”, “food safety” and “food science”.

Results: Through the analysis of the selected articles, which included in vitro and in vivo studies, it was possible to verify the existence of several curcumin nanotransport systems. Using nanoencapsulation, it was observed a high encapsulation efficiency, an increase in the bioavailability of the compound, highlighting its anti-cancer activity.

Conclusion: It was found that the curcumin nanoencapsulation potentiated its anti-inflammatory, antioxidant, anticancer and antimicrobial properties. However, it is necessary to carry out more studies for application in humans.

Keywords: nanoencapsulation, curcumin, nanotechnology, anticarcinogenic, food technology

STARCH AND CHITOSAN POLYSACCHARIDES IN EDIBLE FILMS AND COATINGS

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Introduction: Edible films and coatings are materials that are formed by layers of biopolymers and their goal is to wrap food products and preserve its properties. Since this new form of food packaging is edible and biodegradable, the consumer can choose whether to ingest it or discard it without any biological or environmental prejudice, helping to solve the issue created by plastic packaging.

Aims: Understand the role of different polysaccharides, such as chitosan and starch, used to make edible films and coatings.

Methodology: Data collection was carried out through scientific databases Pubmed, Scielo and Science direct, using as research expressions: “polysaccharide” OR “chitosan” OR “starch” AND “food packaging” OR “edible films”, applying a filter that restricted the research of the expressions in the title or abstract. The results, published in the last 10 years, were first analyzed by title, then abstract and finally full text reading.

Results: In general, these polysaccharides have good carbon dioxide and oxygen barriers, but they have poor water vapor barriers. Chitosan presents acceptable mechanical properties and starch presents better mechanical properties when it has a higher amylose content. Other biopolymers can be added to form blends, such as lipids, to improve the poor water vapor barriers and to enhance the mechanical properties it's possible to add components such as proteins and plasticizers. . Also, it's possible to make bioactive films by the addition of antimicrobials and antioxidants such as essential oils.

Conclusion: Chitosan and starch are renewable and low cost and show interesting film-forming activities.

Keywords: “polysaccharide” OR “chitosan” OR “starch” AND “food packaging” OR “edible films”,

SALICORNIA: APPLICABILITY AND HEALTH EFFECTS

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Background: Salicornia spp. is a halophytic plant species, because it has several secondary metabolites of bioactive defense, which allows it to tolerate hypersaline environments. Although it is part of an emerging area of research, its versatility is already known, and in relation to the food sector, it is known that it can be consumed in its natural state, raw in salads, cooked, fermented, canned or dehydrated.

Aim: To explore the utility of salicornia, particularly in the food sector, and the impact of its use on consumer health.

Methodologies: For this review, searches of articles for the last 10 years were conducted in scientific databases using the terms "salicornia", "salicornia and health" and "salicornia food technology". After full reading of the articles, 25 were selected.

Results: Salicornia presents beneficial health effects such as hypoglycemic, hypolipemic, antioxidant and protection against cancer, due to being a natural source of antioxidants, important phytochemical and minerals compounds such as iron, magnesium, calcium and potassium. About its applicability, its use is evident in several areas, including food.

Conclusion: Salicornia is a good alternative to salt due to its nutritional and mineral contents. However, the origin of this plant should be taken into account, as well as the control of its processing due to heavy metals and mycotoxins, respectively, which can be a health hazard.

Keywords: salicornia, salicornia and health, salicornia food technology

INULIN - APPLICATIONS IN FOOD INDUSTRY AND HEALTH BENEFITS

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Inulin is a polysaccharide that belongs to a group of non-digestible carbohydrates called fructans. It is also considered a type of fiber with a low energy density, hypoglycemic properties and is present in several fruits and vegetables. It's main source of extraction is the root of chicory and has numerous applications in the food industry and health benefits.

Study the properties of inulin, it's its applicability and it's benefits on health.

A search was carried out in databases with the keywords "inulin", "benefits", "applicability", "food technology" selecting articles from the last 10 years after their full reading.

Inulin is used in the food industry as a substitute for fat or sugar, to improve the texture and profitability of products. It has been shown to have health benefits in terms of lipid profile, gastrointestinal tract, cancer, regulation of food intake and production of nutrients.

Inulin has numerous health benefits. It is important to carry out further studies on possible functional components, since they have advantages at an industrial level due to their versatility and profitability, allowing to have a nutritionally interesting product with low energy density.

Keywords: inulin; benefits; applicability; food technology

FOOD BY-PRODUCTS: FRUIT AND VEGETABLES

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Introduction: The food industry is marked by the high volume of waste produced with the highest number of losses seen in fruits and vegetables. The agri-food industry is currently one of the main drivers of economic development worldwide. Waste recovery is considered of high importance and offers new opportunities for economic development in many sectors. Thus, it is known that it is urgent to improve the use of fruits and vegetables by minimizing waste production and creating new food sources.

Objectives: To understand the problem of waste generated by the food industry, the possibility of reusing it and its importance for economic issues and environmental sustainability.

Methods: For this research, we used the scientific databases, using as keywords "fruit", "vegetables" and "by-products". After the exclusion of articles prior to 2011, non-scientific, non-relevant abstracts and full reading, we selected 25.

Results: A large part of the by-products produced in the fruit and vegetable sector consists of the skin/shell, the seeds and the stalks. These are used to enrich the products, with various applications such as reducing the loss of nutrients, increasing the content of dietary fiber and decreasing the glycemic index.

Conclusion: The valorization of agri-food waste and by-products presents itself today, not only as a necessity, but also as an opportunity to obtain new products, having a great impact on the economy of industries.

Keywords: "fruit", "vegetables" and "by-products"

TRANSGENIC FOODS: A LITERATURE REVIEW

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Introduction: Transgenic foods can be defined as living organisms, in which the genetic material has been altered. This process occurs in an artificial way, which means that there is no natural mating and / or recombination but instead the transfer of one or more genes attributed by characteristic of one organism to another, modified through genetic engineering.

Aim: The purpose of this poster is to make known what transgenic foods are, what they serve for and what are their advantages and disadvantages at a socioeconomic, environmental, ethical and health level.

Methods: A search for scientific articles was carried out on the platforms Pubmed, Hubmed, Science Direct, Scielo, with the keywords “Transgenic foods” or “Genetically modified organisms” and “Health”, in Portuguese and English, using a time line between 2011 and 2021. After full reading, 27 articles were selected.

Results: Genetically modified (GM) foods can have an economic, nutritional, environmental and health impact on herbicide and pesticide tolerance. Literacy is one of the main barriers to the acceptance of this type of food, preventing a large part of the population from making conscious choices.

Conclusion: GM food technology has been showing great advantages for humans. Despite this, there are still some concerns regarding socio-economic and environmental aspects, which can indirectly affect the population and, consequently, their health. Further studies are needed to accurately understand the impact that this technology has on the ecosystem.

Keywords: Genetically modified foods; biotechnology; agriculture; health; economy.

EGG SUBSTITUTES IN FOOD PRODUCTION

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Introduction: Eggs assume an important role in the human diet due to their nutritional value and versatility. Nevertheless, the food industry has been looking for egg substitutes for several reasons associated with health concerns, religious beliefs, food preferences, economic factors, environmental impact, adding nutritional and functional value to the confections.

Objectives: The aim of this paper is to present substitutes and additives used in the food industry for partial or total replacement of the egg in different food preparations. It is also intended to identify the main advantages and disadvantages mentioned by the studies regarding the replacement of the egg.

Methods: A systematic review of the literature was carried out, using the following keywords: "egg replacement", "eggless cake" and "food industry", in the NCBI databases, particularly PubMed, Science Direct and B-On, in the 2016 – 2021 year range. A total of 287 articles were found, 51 of them were selected after reading the title and abstract. These were read in full, resulting in the selection of 30 articles in line with the topic addressed.

Results: Several egg substitutes were identified, based on proteins from animal or vegetable origin, food additives, hydrocolloids or emulsifiers, or others such as bananas, chia seeds or flaxseeds. Nevertheless, finding egg substitutes maintaining organoleptic, physical, rheological and nutritional properties is an arduous task.

Conclusion: Egg substitutes seems to be a great option in case of food allergies or specific food diets. However, further studies are needed to find substitutes with a comparable nutritional profile.

Keywords: egg replacement, eggless cake, food industry

THE APPLICABILITY OF HYDROCOLLOIDS IN THE FOOD INDUSTRY

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Introduction: Currently, there is an increased investment in the development of the food industry, particularly in the creation of new products that aim to meet consumer needs. Thus, arises the use of hydrocolloids as thickeners, gelling agents, emulsifiers, stabilizers, fat replacers, clarifying agents, flocculation agents, turbidity agents and whipping agents, seeking to improve emulsion stability, water retention capacity, texture and appearance.

Aim: To understand the main applications of hydrocolloids in food technology.

Methods: The research was carried out on scientific databases using key-words as: "Food hydrocolloids" AND "Food technology" OR "Gums" OR "Food industry".

Results: According to the studies analyzed, the most pertinent ideas were selected to carry out this review. Natural hydrocolloids can be classified according to their origin, which can be vegetable, animal, microorganisms and seaweed. They can have several applications in the food industry and in several food processes. The most common applications are in Bakery and Pastry, Durability and Freezing, where they essentially play the roles of thickeners, emulsifiers and stabilizers, this way they can improve and innovate food technologies.

Conclusion: Hydrocolloids are currently present in consumers day-to-day lives and play an important role in the advancement of the food industry, in terms of their ability to meet the requirements imposed by society. It is noteworthy the importance that they may acquire in the future by its wide applicability.

Keywords: "Food hydrocolloids", "Food technology", "Gums", "Food industry".

INTERACTION OF ORAL CONTRACEPTIVES WITH FOLATE ABSORPTION

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Introduction: Oral contraceptives are prescription drugs, used by a large proportion of women since early adolescence. It is suggested that oral contraceptives in women of childbearing age are associated with a state of impaired folate, but a clinically controversial result.

Objective: To approach and analyze the effect of interaction between oral contraceptives and folate absorption.

Methodology: A literature review was conducted in the Pubmed and Google Scholar databases using the keywords "folate", "contraceptive", "oral contraceptives", "vitamin B9". 12 papers, published between 2000-2021, were analysed by the abstract and later 9 articles were thoroughly analysed and selected.

Results: Although several initial studies have concluded that oral contraceptives inhibit folate absorption, decreasing serum levels of folate, most of them were carried out when the estrogen content of contraceptives was high. In addition, the interpretation of the results of many of these studies is controversial, since not all controls were included for being influencing factors. Currently, it is estimated that diet is the main cause of folate deficit, and is not necessarily related to taking oral contraceptives.

Conclusion: The currently available data do not allow us to conclude whether contraceptives really inhibit folate absorption or not. Besides the fact that folate levels can be influenced by external factors, the hormonal content of oral contraceptives has also been changing over the decades, making it difficult to draw conclusions regarding the current population and contraceptive formulas.

Keywords: "Folate", "contraceptive", "oral contraceptives", "vitamin B9"

ABUSE OF LAXATIVES IN BULIMIA

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Background: Bulimia nervosa is characterized by periods of binge eating, followed by periods where methods to compensate for the lack of control are used to not put on weight through, for example, the abuse of laxatives. Laxatives are a drug that, when consumed in the proper dose, can be beneficial. However, it should be noted that its overuse can lead to several adverse consequences.

Aim: This study aimed to demonstrate the severe consequences caused by the abuse of laxatives to compensate for binge eating in patients with Bulimia Nervosa.

Material & Methods: A literature review was conducted. The research was performed in PubMed and ScienceDirect databases, using the key words “bulimia nervosa”, “potassium depletion”, “hypokalemia”, “purgatives”, “AND”, “laxatives abuse”, considering papers published in the last 10 years. We obtained 821 articles and 6 were selected after full reading.

Results: Data shows that laxative abuse is of particular concern when stimulant types are used such as senna, cascara or bisacodyl. Laxative abuse is often associated with metabolic alkalosis and renal chloride wasting as well as hypokalemia. It can also lead to local effects including rectal prolapse, diarrhea, constipation, hemorrhoids, and hematochezia. The development of constipation and edema can lead to weight gain, make it especially difficult for patients with eating disorders who have long-term laxative use to stop their laxative use habit.

Discussion/Conclusion: The intervention of a multidisciplinary team is indispensable for the treatment to ensure the necessary supply of micronutrients and recover the state of health.

Keywords: laxatives abuse; purgatives; potassium depletion; hypokalemia; bulimia nervosa.

INFLUENCE OF METFORMIN ON THE ABSORPTION OF VITAMIN B12

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Introduction: Metformin is the most widely used drug in treating diabetes mellitus type 2. Despite being the most prescribed oral antidiabetic drug, its use has disadvantages such as vitamin B12 malabsorption.

Objective: To understand the influence of treatment with metformin on the absorption of vitamin B12 in diabetic patients.

Methods: A literature review was carried out in the PubMed and ScienceDirect database with the keywords: "Metformin and vitamin B12". The accessed articles were published in the last ten years (2010-2021), resulting in 50 articles, of which 12 were read in their entirety and included in this bibliographic review.

Results: After analyzing the various studies, we found an association between high doses of metformin and low levels of vitamin B12 in diabetic patients. This means the daily consumption of 3 or more metformin tablets is highly related to low plasma levels of vitamin B12, regardless of gender and age.

Conclusion: In the long term, treatment with metformin increases the risk of vitamin B12 deficiency. Therefore, it is suggested to measure vitamin B12 concentrations regularly during treatment with metformin. If low levels of the vitamin are detected, it should be treated before progressing to complications associated with its deficit.

Keywords: "Metformin and vitamin B12"

INTERACTION BETWEEN DRUGS AND MINERALS: TETRACYCLINES AND IRON

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Background: Drug-nutrient interactions can result in changes in the absorption, distribution and elimination of a drug or nutrient, which can compromise the therapeutic response and or the nutritional status. Tetracyclines belong to a group of antibiotics, a subclass of polyketides, particularly effective against gram-positive, gram-negative and protozoan bacteria. They are used in the prophylaxis and treatment of human and animal infections and growth promoters in animal feed.

Aim: Understand the effect of tetracyclines on the human body and their interaction with iron.

Material & Methods: The literature review was conducted in the databases PubMed, ScienceDirect and Scielo with the keywords: “tetracyclines”, “iron”, “interaction”, “effect” and “antibiotics”. Afterwards, articles were selected by title, then abstract and finally by full reading, obtained 30 papers with some interest of which were selected 18 that respond to the objective of this work.

Results: The basis of the mechanism of action of tetracyclines is on blocking protein synthesis. Tetracyclines bind to metal ions present in the biological environment. That is, their bioavailability is affected by these bonds. Iron is an essential nutrient for most bacteria and is an important factor in establishing infections. However, tetracyclines have a strong iron-chelating activity which decreases their bioavailability.

Conclusion: Finally, it is important to take into account the interactions between drugs and nutrients so that neither the effectiveness of the drug nor the bioavailability of a certain nutrient is compromised.

Keywords: tetracyclines, iron, interaction, effect, antibiotics

ORLISTAT RELATED TO DECREASED FAT ABSORPTION

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Introduction: Orlistat is one of the drugs approved by the Food and Drug Administration and the European Medicines Agency that can be used in a long-term way to promote weight loss by suppressing appetite or decreasing fat absorption.

Objective: Assessing the relationship between Orlistat and fat absorption.

Methods: A literature review was conducted in the PubMed and Science Direct databases using the keywords: absorption; pharmacotherapy; fats; orlistat. The articles consulted were published in the last ten years, and the primary search identified 253 articles. After screening the title and abstract, 18 potentially eligible studies were retrieved for full text review. Of these 18 articles, 8 were excluded and 10 were included in the bibliographic review.

Results: Treatment with orlistat is accompanied by a significant loss of body weight, not influenced by the duration of treatment with this drug, as is the case with plasma changes in triglycerides and HDL-cholesterol. Furthermore, it is unlikely that the effect of orlistat on lipid levels will decrease over time because its potency on fat absorption has remained the same after 44 weeks of treatment.

Conclusion: In summary, pharmacotherapy may be relevant in addition to diet and exercise as a therapeutic option to achieve the reported weight loss target of 5-10% to reduce cardiovascular risk and maintain this achievement over time.

Keywords: Absorption; Pharmacotherapy; Fats; Orlistat.

PROTON PUMP INHIBITORS AND THEIR EFFECTS ON SERUM CONCENTRATIONS OF VITAMINS AND MINERALS

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Introduction: Proton pump inhibitors (PPIs) are gastric acid-suppressing agents due to their safety and high efficacy are commonly used to treat gastroesophageal reflux disease, peptic ulcers, dyspepsia, and esophagitis.

Aim: To understand the effects on serum concentrations of vitamins and minerals arising from long-term use of PPIs.

Method: A literature review was performed in the Pubmed and Sciencedirect databases using the terms "proton pump inhibitors", "vitamins", and "minerals". Ten articles in English, published after 2013, were analyzed in full papers.

Results: The reduction of gastric acid content by PPIs affects the absorption of vitamins and minerals. There will be a decrease in the biotransformation of the ferric to ferrous form regarding iron, hindering its absorption. The same happens with calcium, with a reduction in its reabsorption from the bones, increasing the risk of bone fracture. In individuals over 65 years old, there is an increased risk of hypomagnesemia when using PPIs, as they lead to intracellular magnesium depletion. There will be decreased bioavailability of vitamins C and B12, as B12 will not release from the dietary protein because gastric acid is responsible for its cleavage.

Conclusion: The use of unnecessary PPI or long-term therapy should be carefully monitored or restricted. An important consideration is the baseline status of vitamin and mineral levels in individuals receiving PPIs. Their effects on absorption of these may not be sufficient to lead to nutritional deficiencies.

Keywords: "proton pump inhibitors", "vitamins", "minerals"

GLUCAGON AND APETITTE: CORRELATION WITH OBESITY, DIABETES AND KETOGENIC DIET

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Background: Glucagon is a pancreatic peptide and has been recognized as counter-regulating the insulin hormone preventing hypoglycemia, although it has shown effects on the appetite regulation.

Aim: Verify the correlation between glucagon and appetite reduction and its consequences on weight loss and diabetes.

Methods: A literature review with articles from the last 10 years was conducted in PubMed and ScienceDirect, using the keywords “glucagon”, “GPL-1”, “appetite”, “ketogenic”, “diabetes” and “obesity” resulting in 268 articles from which 32 were chosen initially by the title, then by the reading of the abstract. After the selection criteria, 20 were selected both in portuguese and english.

Results: Glucagon and its analogues have demonstrated to increase satiety by slowing the intestinal emptying and suppression of ghrelin. Therefore, it reduces food intake and decreases nutrient absorption rate, promoting weight loss and glycemia regulation. It also has been shown that a ketogenic diet can increase glucagon concentration.

Conclusion: With this study, we verified a correlation between glucagon and satiety, resulting in a potential diabetes and obesity treatment.

Keywords: “Glucagon”, “GLP-1”, “Appetite”, “Diabetes”, “Obesity”

DIURETICS AND HEART FAILURE

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Heart failure is a disease that is manifested by the inability to transport blood and encounter the body's oxygen and nutrient needs. Diuretics are drugs that act directly on the kidney, and can be classified according to where they work, and by their mechanism of action. Loop diuretics and thiazides are used to treat various diseases, such as heart failure. Understand the diuretic therapy in patients with heart failure. Literature review was conducted in the databases PubMed and ScienceDirect. This research was restricted to information and review articles, published in the last 15 years using the following keywords: "Diuretics"; "Thiazide Diuretics"; "Loop Diuretics" and "Heart Failure". After title and abstract analysis of 162 articles, it was selected 30 and from that, after full reading it was included in this study 10 articles. Loop diuretics are used initially to remove excess extracellular volume in heart failure. Thereafter, in combination with loop diuretics, thiazides are administered to induce a greater diuretic effect. The use of loop diuretics and thiazides is associated with some adverse effects, such as deficit of electrolytes, particularly sodium and potassium. Understanding the renal physiology and pharmacokinetics of diuretics is essential for the effective use of these drugs, as well as for understanding their benefits in the treatment of heart failure. The resulting electrolyte deficit is associated with several risks, such as cardiac arrhythmia.

Keywords: Diuretics; Cardiac Insufficiency; Thiazides; Loop Diuretics

GALENIC FORMS OBTAINED BY DISTILLATION

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Distillation is a technique for separating substances by the difference between their boiling points, using a distiller. The technique consists of the application of heat to form two phases, one liquid and the other gaseous. The process was, for a long time, associated with obtaining the philosopher's stone that would aim at curing diseases. Currently, the technique is quite relevant, for example, at an industrial level. The work aims to describe the distillation process and the contribution of this technique to obtain galenical forms. For the collection of information, the use of Google Scholar and credible sites was used.

The technique aims at the separation of compounds, of liquid forms, with different boiling points, allowing the extraction of certain components effectively. It also presents security, simplicity and low cost. In the pharmaceutical industry, the process represents one of the main methods of isolation and purification of substances, which is mainly applied to obtain hydrolases and alcoholates. Hydrolates are by-products of the distillation of plants, from which it is intended to extract their oils with properties that allow direct skin use or as part of other pharmaceutical formulations. Alcoholates are preparations of vegetable origin obtained by alcoholic maceration and subsequent distillation, with topical use or components of other galenic forms.

Keywords: Distillation; separation of substances; galenical forms; alcoholates; hydrolates

GASTRORESISTANT GALENIC FORMULATIONS

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Small intestine is a preferred route for drug absorption, so gastroresistant formulations have been developed. The aim is to prevent the action of gastric acid, breaking down the drug only in the intestine. It protects drugs that decompose in an acidic environment, extends their bio-availability, promotes a successful treatment and prevents discomfort and nausea due to gastric irritation. Shellac in alcoholic solution, formaldehyde, cellulosic film and sucrose are used in the enteric coating of drugs, just like more other materials. In the classic dragers making process of tablets, the insulating layer is optional, but that is the layer that provides gastroresistant properties. The coating of hard jelly capsules with formaldehyde, cellulosic films or shellac in alcoholic solution provides gastroresistant properties. Pellets are spherical agglomerates of solid particles, varying between 500-1500 μm . They are encapsulated by gelatin capsules, but is the enteric coating surrounding each of the particles that gives gastroresistance. In conclusion, gastroresistant galenic formulations are essential since they prevent the dissolution of the drugs in an acidic environment, prevent the emetic effect of some active substances and protect the gastric mucosa. In addition, various gastroresistant pharmaceutical forms are available on the market, such as tablets, dragers, capsules and pellets.

Keywords: Gastroresistant Formulations, Enteric Coating, Galenic Forms

PHARMACEUTICAL PELLETS

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Pellets are agglomerates of solid particles, consisting of fine powders of active substances and excipients, with an ideal spherical shape for the coating process, being administered orally. These are transformed into pharmaceutical forms, such as tablets or capsules, which disintegrate in the stomach or small intestine, releasing the Pellets. Pellets can be characterized physically and can be influenced by several factors. For them to be protected against actions by the environment and / or the biological environment, to control their release and absorption in relation to the time or place of action and to act pharmacologically effectively and safely, they were coated with capsules or tablets.

Pelletization consists of the production of Pellets, and it is done through three processes: by melted granulation, wet granulation and extrusion / spherization. To ensure their stability and chemical properties in an acidic environment, Pellets can be coated with a film consisting of two layers. There are two coating techniques: liquid coating or powder coating. The use of this pharmaceutical form can bring many advantages such as the reduction of gastrointestinal irritation, greater control over the release of active substances and improved bioavailability, etc., bringing benefits to both patients and the industry.

Keywords: Pellets; Pelletization; Gastroresistant Coating

NANOSPHERES

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Nanospheres are polymeric nanoparticles, carriers of drugs that have a diameter of less than 1µm. These are formed by a polymeric matrix, where the drug may become retained or absorbed. They do not have oil in their composition. This transport system is used primarily in oral administration, parenterally and ophthalmic route. Nanospheres can be used to encapsulate fragrance components and vitamins. They have characteristics that may allow, for example, fragrances to remain on the skin for a long period of time, another example is vitamin C nanospheres, that are a type of molecule that provides a integral protection of the active ingredient, in this case vitamin C. This technology avoids their features being degraded, releasing them into the deepest layers of the skin, where they will actually have an effect at a cellular level, offering an action of aging treatment, antioxidant protection and depigmentation of the skin. The production of nanospheres and nanocapsules takes place in a similar way, differing exclusively in the existence of oil in the organic phase.

The absence or presence of oil causes a significant difference in features of the nanoparticles: the use of oil in this method causes the formation of nanoparticles with differentiated nucleus (oil) coated by a polymer capsule (NC), on the other hand, the absence of oil causes the formation of nanoparticles of the polymeric matrix type (NE).

Nanoparticle release systems offer numerous advantages when compared to other conventional dosage.

Keywords: Nanospheres; Nanocapsules; Oil

NANOCAPSULES

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Nanotechnology is the technique of manufacturing entities that have dimensions smaller than 100 nanometers. Nanotechnology applied to pharmaceutical sciences has provided the discovery of new diagnostic and therapeutic opportunities for diverse diseases. Nanocapsules are systems with reservoirs where it is possible to identify a differentiated liquid core, oil or water, surrounded by solid material, polymeric shell. In which the active substance is dissolved and its submicrometric diameter can vary between 10 to 1000 nm. The active component, instead of being dissolved in the central oily cavity, can be adsorbed to the polymeric wall. The use of nanocapsules is especially applied to substances that degrade at temperatures above 40°C or that are sensitive to oxidation in the presence of water. They are nanometric vesicular colloidal systems, characterized by having a hollow and oily inner core. A viable alternative for delivering drugs is the transdermal route of administration. The use of lipid transporters for transdermal drug administration appears to be a very promising alternative, as it is predicted that it will lead to an improvement in the diagnosis of diseases. It shows promise in increasing the efficiency of the drug development process. Transporter nanoparticles are used, as these types of transporters have certain characteristics that promote an occlusive effect and increase the bioavailability of drugs on the skin. The stability of nanocapsules is strongly affected by the physical-defined properties of polymers and liquid oils in the preparation and evaluation of the stability of the preparations and to allow determining the distribution profile of the nanostructures.

Keywords: nanocapsules, nanotechnology, nanoparticles; transdermal administration.

SPECIAL TYPES OF SUPPOSITORIES

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Suppositories are pharmaceutical forms of firm consistency, used mainly for rectal administration and intended for local or systemic action. As their formulation do not always provide stability and adequate conservation and sometimes it is necessary to circumvent some therapeutic inconveniences, are used the so-called special types of suppositories: hollow, double layer, dragged, stratified, and with coated granules. Hollow suppositories protect their contents from exposure to air, light, or humidity and separate incompatible drugs. The liposoluble suppositories or double-layer use a high melting point layer and water-soluble, allowing the dissolution in the rectum in a suitable period and protecting them from hot climates. This method provides the best results compared to others.

Dragged suppositories retain their shape at unfavourable ambient temperatures. They are prepared from ovoid suppositories, coated carefully to not exceed the melting temperature of the dough. There is a need to pack them in a package that protects them from humid climates. Layered or stratified suppositories allow the inclusion of incompatible substances in several layers in a suppository. Suppositories with coated granules are long-acting, gradually releasing the active principles in the rectum, allowing the coexistence of several active principles without many incompatibilities between excipients and the possibility of circumventing the changes caused by external agents. To conclude, the use of these special types of suppositories allows, above all, to obtain better conservation and greater therapeutic stability.

Keywords: Special types; Suppositories; Rectal administration

GOOD MANUFACTURING PRACTICES

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Good manufacturing practices (GMP) define the minimum requirements that medicines need to be on market. They are designed to minimize the risks involved in pharmaceutical production. GMPs includes all aspects of production, since raw materials, facilities and equipment to staff training and hygiene so that medicines have high and consistent quality in order to protect the consumer from buying a product that isn't effective or that is dangerous. GMP regulations address issues such as record keeping, staff qualification, sanitation, cleaning, equipment verification, process validation and complaint handling.

The European Medicines Agency (EMA) lead inspections to verify these requirements and plays an important role in harmonizing good practice activities in European Union. GMPs are based on ten basic principles providing documented evidence on how procedures are followed consistently, following every step of the production process providing the entire basis for proper control of good drug manufacturing practices on an industrial scale. In conclusion we can say that it's because GMPs that we can confidently buy medicines and health products with the warranty of their quality, safety and efficacy, since they are subject to very rigorous evaluations.

Keywords: Quality, Inspections, Good Manufacturing Practices, Procedures

LEACHING

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Leaching is a process that fits into unitary mass transfer operations: extractive solids solutions. These extractive processes apply, almost exclusively to solid desiccated drugs and can also occur with liquid or semi solid pharmaceutical forms. Leaching, also known as perlocation or displacement, is a method that consists of submitting a powdered drug placed in a cylindrical or trunk-conical container, to the action of a solvent that passes through it along its entire length, moving from top to bottom. Throughout the process there is a constant renewal of the solvent, which allows the new solvent to contact the drug leading to total extraction. The most widely used solvent is alcohol of various grades and the technique is performed on devices called leachers, displacers or perlocators. This technique is influenced by temperature, excessive agitation of the container and solubilization effect of the content of one or more polymeric additives. Leaching method includes the following steps: drug pulverization, powder wetting, powder conditioning in the leacher, maceration period and leaching itself. In conclusion, leaching is an operation that is carried out until the complete extraction/dissolution of any of the components in the drug subject to it. According to the Portuguese Pharmacopoeia VII, "leaching ends when the liquid that comes out of the leacher is colorless and without the smell or taste of the drug (...)", directly influencing the stability and shelf life of the drugs promoting their conservation.

Keywords: Leaching, Extractive solutions, Stability

EFFERVESCENT PHARMACEUTICAL FORMULAS

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According to Portuguese Pharmacopeia, effervescent pharmaceutical formulas can be defined as being «...non-coated pills that generally contain acids and carbons, bicarbonates, susceptible to reacting quickly in the presence of water, realizing carbon dioxide. They are intended to be dissolved or immersed in water before administration». They stand out in the great group of solid pharmaceutical formulas due to its peculiar features. Their primer advantages of these pharmaceutical forms, when compared to the remain pharmaceutical formulas are, the fact that these present a quicker absorption, because there is no need for a disintegration of the pharmaceutical formula. Another advantage refers to the improved taste as well as a lighter stomach action in the patient, given the fact that CO₂ helps stabilize the gastric mucosa. As for its disadvantages, we can mention his cost, which is more expensive due to the fact that they use a high amount of raw material and they need especial fabric conditions. The packaging materials used can't be the conventional, because those are permeable to humidity. The great instability is another disadvantage, since, if the drug is exposed to moisture, it will degrade due to the triggering of the chemical effervescence reaction. Nowadays, the recent applications of this kind of effervescent pharmaceutical formulas are in FMT (Fast melting tablets), an innovating method in the oral pharmaceutical system that gives us important data about the disintegration/ dissolution of the respective drug.

Keywords: Effervescent pharmaceutical formulas, CO₂, Humidity

LIPOSOMES

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Liposomes are characterized as nanometric vesicles that can have one or more phospholipid bilayers. They simulate certain cell membranes properties which have a significant importance in the study of the consequences of drug-lipid interaction.

Since they're biodegradable, biocompatible and non-immunogenic, they have been highly used in research, therapy and analytical applications. It's known that exists several liposomes such as: conventional liposomes, long circulating liposomes, site specific liposomes and polymorphic liposomes. Liposomes have been the used for several studies that prove their usefulness in the treatment of several pathologies such as cancer, infectious diseases, vaccine development, gene therapy, among others. Due to their structural versatility, size, composition, surface load, membrane fluidity and the ability to incorporate hydrophilic and/or lipophilic drugs, liposomes become a key part for various therapies, increasing the effectiveness of the drugs and lowering their toxicity.

Keywords: Liposomes, Pathologies, Therapies, Drugs

THE AUDITORY BRAINSTEM IMPLANT AND NEUROFIBROMATOSIS TYPE II

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Introduction: The auditory brainstem implant (ABI) is a device used in patients with progressive sensorineural hearing loss which helps restore hearing, namely on patients who suffer from neurofibromatosis type II, a pathology in which the cochlear nerve may present itself severely damaged due to the presence of neoplasms. **Aim:** Approach the impact of the auditory brainstem implant on neurofibromatosis type II. **Methodologies:** Via the databases PubMed, b-on, SciELO and Academic Google, using the keywords: Brainstem implant; Neurofibromatosis Type II; Brainstem Implant and NF2; Risks of the Brainstem Implant; Vestibular Schwannoma and Benefits of the ABI, in Portuguese and English, we obtained a total of 27 articles. After the application of the inclusion criteria, the date of the article being equal or posterior to 2005, and the connection between a pathology and the device in question, and of the exclusion criteria, the languages of the articles being different from Portuguese or English, 16 articles remained for analysis. **Results:** The patients with neurofibromatosis type II, when manifesting symptoms, for example hearing loss, they are evaluated for possible removal of the tumors and posterior insertion of the ABI. ABI emerged to supply the inefficacy of the cochlear implant, with the purpose of directly stimulating the cochlear nucleus, but may cause undesirable effects, such as facial paralysis, subdural hematomas and vertigo. **Conclusion:** The ABI propitiates auditory sensation and better quality of life to the individuals with neurofibromatosis type II who cannot use other conventional devices.

Keywords: Brainstem Implant, Neurofibromatosis II, Congenital Changes, Acoustic Schwannoma.

INNOVATIONS IN COCHLEAR IMPLANTS IN THE LAST DECADE

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Introduction: The cochlear implant is an electrical device that directly stimulates the auditory nerve, through electrodes placed surgically on the cochlea. Cochlear implants represent the main devices used by people with sensorineural hearing loss, and they're often the only option, as in cases of severe and profound hearing loss.

Objective: Based on the literature review, to understand the innovations in cochlear implants that have occurred in the last decade.

Methodologies: The research was carried out through the electronic databases: b-on, PubMed, Google Scholar, using as keywords: cochlear implant; inovations. The official websites of the main implant brands were also consulted: Advanced Bionics; Cochlear; MED-EL; Oticon, obtaining a total of 16 articles. Only articles whose innovations have appeared in the last 10 years were included, resulting in a total of 6 articles.

Results: The technology of cochlear implants has undergone several modifications during the last decade, such as the increase in the autonomy of the device; protection against water and dust, with Ingress Protection (IP68); connectivity (Telecoil, Bluetooth, Wireless ...); etc. However, there are still several possibilities for innovation and improvement, such as the optimization of fully implantable cochlear implants, the minimization of trauma caused by implantation and the optical stimulation of nerve fibers.

Conclusion: Cochlear implants have a long history full of innovations that have resulted in the high-performance devices available today. There are several promising technologies discussed above, which promise to further increase their performance.

Keywords: Cochlear Implant; Inovations; Sensorineural Hearing Loss

CHALLENGES IN THE AURAL REHABILITATION OF PRESBYCUSIS

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Introduction: Presbycusis is a hearing pathology that has been growing exponentially throughout the years. With the technological evolution, new techniques and devices emerged, which gave rise to new challenges in its rehabilitation. Aim: Based on a review of the literature, we intend to analyze the challenges of aural rehabilitation in presbycusis. Methodology: A literature review was carried out in the PubMed, b-on, SciELO, and Academic Google databases, articles were also solicited to the ESTeSC library, using the keywords "Presbycusis", "Hearing aids", "Aural rehabilitation" and "Elderly", in English and Portuguese, obtaining a total of 36 articles. After applying the exclusion criteria, such as denial of access, time period prior to 2010 and, not being written in English or Portuguese, 16 articles were selected for analysis. Results: Hearing aids are the most commonly used devices in the treatment and aural rehabilitation of mild to severe presbycusis. Depending on the type and severity of the hearing loss and the specific necessities of the patient, middle ear implants and cochlear implants may also be adequate solutions in the treatment of presbycusis. Each one of the solutions for this pathology come with its own challenges that can prove to be a barrier to efficient rehabilitation, however, with the quick advance of new technologies, some of those problems can be overcome. Conclusion: The use of hearing aids and implants in the rehabilitation of presbycusis, in agreement with auditory training, not only improves auditory perception, thus easing communication, but also contributes towards the improvement of cognitive functions.

Keywords: Presbycusis; Hearing aids; Aural rehabilitation; Elderly

EVOLUTION OF MIDDLE EAR IMPLANTS

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Introduction: Middle ear implants (IOMs) are electronic devices that can be implanted in whole or in part through surgery, in order to correct a hearing loss. There are three types of IOM: electromagnetic, piezoelectric and electromechanical, varying according to the signal transducer they use in the stimulation system.

Objective: Understand what IOMs are, their types and their main characteristics, as well as the evolution they have undergone over the years.

Methods and Materials: Literature review was carried out in the PubMed, b-on and Academic Google databases, using the keywords "middle ear implants", "evolution" and "hearing loss", in Portuguese and in English. After applying the exclusion criteria, 5 articles were selected, rejecting 9 because they are not compatible with the purpose of our study.

Results: IOMs have evolved over the years. Initially they used only semi-implantable technology, and later, with the development of technology in relation to microphones and batteries, it evolved into a fully implantable device. The purpose is to correct hearing loss by stimulating the ossicular chain or middle ear. Previously, these implants were used only for purely sensory hearing losses, while nowadays, their use is more comprehensive, being also used for conduction and mixed hearing losses, as is the case of chronic otitis media with residual hearing.

Conclusion: IOMs have evolved from semi-implantable to implantable, due to the technological advancement of certain components, such as the microphone and the battery. This evolution allowed its use for more comprehensive hearing losses, namely, conduction and mixed losses, instead of sensory.

Keywords: Middle Ear Implants, Hearing Loss, Evolution

COCHLEAR IMPLANT'S IMPACT ON CHILDREN'S LIFE

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Introduction: Sensorineural deaf children have major difficult in developing speech, as well as developing knowledge and social skills. Cochlear Implant will make speech acquisition and development way easier for these children, by reducing deafness impact. This hearing rehabilitation method will bring back the hearing capability as well as sound perception and language acquisition for implanted children.

Objective: To study the cochlear implant impact in children's speech developing and to understand the complications that may appear in the process.

Methodologies: It was done a research in "SciELO" and "Pubmed" data base platforms, in the "Google scholar" search engine using the following keywords: "children", "sensorineural deafness" and "cochlear implant", gathering a 21 articles total, 10 were excluded due to objective incompatibilities.

Results: In sensorineural deafness cases, cochlear implant revealed to be an efficient treatment. It is important to do a deafness diagnosis through a wide range of specialized exams so that, when early implanted, makes the social, linguistic and knowledge skills developing possible. The patient is selected to do the surgery using a recommendation criteria descript by Manrique's guidelines (Manrique et. al 2017).

Conclusion: Cochlear implantation has a huge impact in profound deafness children's life quality. Although it's a well succeed and safe process, it is important new ways to upgrade hearing capacity as well as technology access.

Keywords: Cochlear Implant, Sensorineural Deafness, Children, Language

GOOD PRACTICES IN SWIMMING POOL USE

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The recreational practice in swimming pools implies a constant concern for its user's safety and health. There are numerous benefits associated with sports and therapeutic activity in these spaces, as also a set of factors that turn swimming pools into spaces favourable to the occurrence of accidents and the development of disorders, making ensuring adequate conditions in their exploration a priority.

This study's objective was to ascertain and understand the knowledge of the population regarding good practices to be considered when using swimming pools, and to survey the knowledge of the population regarding the risks that originate from bad practices and poor swimming pool management.

For the implementation of the study, a literature review on the subject and a population survey were carried out.

From the results, we infer that, despite most of the surveyed population applying good practices with some frequency when using swimming pools, as is the case of using bathing suits in good hygiene conditions, which is always fulfilled by 92.2% of the population, or getting out of the water whenever they require going to the bathroom (82%), about 25% of users view water quality as being reasonable bad or very bad, and about 36% also make the same assessment regarding air quality.

To achieve safety, hygiene and health conditions for both regulars and swimming pool workers it is essential to enforce health surveillance, to promote well-being and monitor good practices and any intervention needed in improving the quality of swimming pools.

Keywords: Swimming Pools, Good Practices, Hygiene, Health, Safety, Users

WATER QUALITY IN WATER PARKS

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The use of water for recreational purposes can be classified according to the type of contact between the user and the water. The main source of water pollution in swimming pools are the users. Through the transfer of body secretions and the use of personal hygiene products these toxic substances accumulate in the water and they become harmful to our health. The water and the aquatic ecosystems must be frequently evaluated about their physical chemical and biological quality.

This work aims to evaluate the level of knowledge and good practices of the population about the topic Water Quality in Water Parks.

The research method was based on a bibliographic research and analysis of results from a questionnaire about the theme applied on a random population.

From the results obtained we got 301 responses and it seems that there are people who still not make a good use of these parks and they do not have good practices in there (6%). But most people (98.3%) think that it is important to do frequent water analysis and about having specialized teams in the evaluation and control of water quality the majority (97.9%) replied that their existence is also important.

To finish we think that it would be necessary to make some awareness campaigns so that the population could learn a little more about good and hygienic practices in the use of water parks and with that we could prevent possible health risks for the population.

Keywords: Water quality, good practices, water parks, evaluation, source of pollution

BATHING WATER QUALITY

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The Portuguese coast has gained increasing prominence for its excellent bathing areas, which contributes significantly to the promotion of tourism in different regions of the country, consequently raising the quality of life of residents.

As such, it is necessary to ensure protection measures in the use of these sites, which include not only access, infrastructure, and safety of beaches, but also water quality, which is a determining factor for health and environmental quality.

The aim of this study was to assess the level of knowledge and best practices of the population about the quality of bathing water and the implications on public health. As for the methodology, we conducted a survey, using bibliographic research, which we then applied to the general population.

We obtained 249 answers, and 92.4% of the respondents know the concept of bathing water and the blue flag, as well as the good practices in bathing areas, such as not leaving waste in the bathing area (97.6%) and, in the case of smokers, not disposing of cigarette butts in the bathing area (94.8%).

Due to the specificities of each site, measures adapted to these different conditions are needed to more effectively achieve the desired objectives.

It is up to the managing entity of each bathing area to follow up and monitor the sharing and implementation of good practices, and the collective and individual behaviors assumed by the population are determinant in this problematic.

Keywords: bathing areas; environmental quality; good practices; Public Health; blue lag

POOLS - LEVEL OF KNOWLEDGE AND GOOD PRACTICE OF WORKERS

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The evaluation of occupational risks allows Occupational Health and Safety technicians to analyze the risks to which workers are exposed, according to the various tasks they perform, within each professional category. This way, the main risks to which each worker is exposed are identified, allowing the Occupational Health and Safety technician to propose improvement measures, in order to ensure the safety, health, and well-being of workers during the performance of the various tasks.

With this work we intend to find out the knowledge of the workers of a swimming pool and find out the knowledge of the risks of the workers of swimming pools.

For this work, our research method was based on a bibliographic review of the theme and on the collection and later analysis of results from a questionnaire applied to workers, in order to understand their level of knowledge about this theme.

The questionnaire was made available to nautical clubs and swimming pool employees, and 17 answers were obtained. As for the respondents' knowledge of the occupational risks to which they are exposed, we found that 47.1% of the respondents know the risks, 29.4% answered that they do not know, and 23.5% answered maybe. When asked if they apply any protective measures against risks, 58.8% answered yes. As for accidents at work, of the respondents 70.6% had no accidents. About diseases resulting from work, 82.4% answered no.

The research for swimming pools for sports, recreational and/or therapeutic activities has been gradually increasing in recent times, and it is admitted that its use, as a regular physical activity, is a recognized health promotion measure.

Keywords: Risk, worker, pool, health, prevention

PRESENCE OF CYANOBACTERIA IN WATER AND ITS HEALTH CONSEQUENCES

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Cyanobacteria play an important role in nature and in public health. However, cyanobacteria when subjected to environments of high temperature, high luminosity and high nutrient loads, can develop into large densities giving rise to blooms. These may affect human health due to their ability to produce toxins.

The goal of this work is to disseminate and raise awareness of the role of cyanobacteria, identify the impacts and their consequences on public health, and understand the level of knowledge of the population on this subject. An online survey was also administered to a population of different ages and educational backgrounds in order to gain different perspectives for our research.

From the results obtained from our survey, where 54 answers were obtained, it was concluded that a large part of the population understands what cyanobacteria are (63%) and that their presence is harmful to health (92.6%). It should be noted that 75.9% of the respondents can identify that the presence of toxins in water is a consequence for humans and the environment.

It is necessary to raise the awareness and sensitivity of the population to the presence of cyanobacteria in water by implementing policies and training actions, emphasizing the education of young people so that they can subsequently acquire a more sustainable perspective and habits with a view to a better future for our planet and for future generations.

Keywords: cyanobacteria, public health, water, ecosystem, population

ETAR'S IMPACT ON THE ENVIRONMENT AND PUBLIC HEALTH

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Water is increasingly scarce on the planet and as such the human being must be aware of the importance of this resource for life. So the prevention and protection of the environment and public health has become extremely important. Increasingly demanding water quality objectives have been established so that the environment is healthier, with less spread of diseases. In the case of waste water there is legislation with standards on water quality, which requires the existence of Waste Water Station Plant.

In order to observe population data and perceive the perception of the population in relation to the environmental and public health impacts caused by this station, a population survey was conducted to verify data related to the theme in study.

In the survey we got 103 answers and in the question "What is the importance of Waste Water Station Plant?" 88.3% of the surveyed population classified "very important". Less than half (48,5%) of the population considers water treated in these stations for possible future uses to be reliable. It should also be noted that a considerable percentage of populations (85.4%) is aware that not treating waste water has consequences for Public Health.

Therefore, we consider that it is very important to instill a greater awareness in the population about the importance of the Waste Water Station Plant functions because it is notorious that the malfunction or non-existence can have harmful consequences for the environment and public health.

Keywords: Wastewater, Station Plant, Impact, Public Health, Environment

WASTEWATER TREATMENT PLANT (SEWAGE TREATMENT PLANT) - PERCEPTION OF THE POPULATION ABOUT ITS EFFICIENCY

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Water is the natural resource essential to life, so its conservation is one of the major supports for sustainable development. With the emergence of legislation in the area of environment, there is also the obligation to create means of collecting and treating wastewater, aiming to protect the environment and public health. It is then observed the construction of Wastewater Treatment Plants that demonstrate over the years effective improvements in their treatment processes.

This work aims to evaluate the level of knowledge of the Portuguese population regarding the operation and efficiency of plants, developing the theme from an environmental and public health point of view. For this, a questionnaire was applied, with online response, to the Portuguese population on the explored theme.

In the questionnaire, 209 answers were obtained, and most of the respondents had correct knowledge about the theme, knowing what they are, understanding their operation and purpose. It is noteworthy that 86% (209 people) of respondents know what it means Wastewater Treatment Plant, and 52.6% (110 people) revealed to know its purpose. One of the aspects, which we consider worrying, is that 21.4% (37 people) consider the water after being treated in these plants, fit for consumption.

As Environmental Health Technicians, they are responsible for the execution of health surveillance actions of systems, structures and activities that interact with the environment, carrying out health inspections that aim at the knowledge and analysis of the functioning of the infrastructure and equipment of Wastewater Plants.

Keywords: Wastewater Treatment Plant; Knowledge; Efficiency; Quality; Public Health

LEVEL OF KNOWLEDGE AND GOOD PRACTICES FOR *LEGIONELLA*

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The World Health Organization describes *Legionella* spp. as the only member of a diverse population of microorganisms that can colonize human-made waterways, multiplying massively when certain factors are combined.

Legionella spp. is the etiologic agent of bacterial infections, with *Legionella pneumophila* being the most pathogenic species, and exposure to it can cause Legionnaires' disease.

In this study, a literature review was carried out and a questionnaire was applied to assess the levels of knowledge and best practices of the population regarding *Legionella*. Through the questionnaire, it was possible to identify divergent results - 81.8% of the respondents are of the opinion that *Legionella* is "a microorganism that causes a serious respiratory infection". However, on how the infection is transmitted, there is still a significant percentage, 37.7%, who think that *Legionella* is transmitted by "Ingestion of contaminated water".

It can be concluded that although *Legionella* has been talked about a lot lately, the population is not as well informed, as one would expect, since the percentages regarding the level of knowledge are quite considerable.

Environmental Health Technicians make a fundamental contribution in the area of *Legionella* prevention and control by carrying out health inspections, as well as promoting preventive and control activities, providing all technical support in determining corrective measures essential for minimizing the risk.

Keywords: Legionnaires' disease, *Legionella* spp., Prevention, Transmission

CYANOBACTERIA IN PORTUGAL

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Cyanobacteria are prokaryotic organisms capable of photosynthesis. At some environmental conditions, these organisms multiply and reach very high densities called blooms. These blooms will contribute negatively to water quality, representing a risk to public health, due to the ability of certain species to produce toxins. Increasingly, there is poisoning due to the presence of cyanotoxins in water.

The objective of this article was to understand what cyanobacteria are, understand the situation in Portugal in relation to cyanobacteria and to evaluate the levels of knowledge and best practices of the Portuguese population regarding them.

We conducted a research of articles on the subject and applied a questionnaire, with online response, to the Portuguese population. We obtained 50 answers and concluded that the respondents are aware that cyanobacteria are harmful to health (70%), which means they know that these organisms can cause consequences or changes in the body. However, these same respondents are not aware of what kind of consequences they may have (72%), such as for the relation to public health problems. It is concluded that there is a level of knowledge about what cyanobacteria are and that they are harmful to health. However, some knowledge about what kind of consequences may occur is lacking, and it is necessary to inform and sensitize the population on this public health issue.

Keywords: Cyanobacteria , public health, water

THE NEW VARIANTS OF SARS-CoV-2

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SARS-CoV-2 belongs to the Coronavirus family and is responsible for the severe acute respiratory syndrome COVID-19. It is a single-stranded positive virus that comprises a genome of 30,000 nucleotides, consisting of four structural proteins that make the viral envelope: spike (S), envelope, membrane and the nucleocapsid which contains the RNA genome.

Although coronaviruses are single-stranded RNA viruses, they mutate less than most RNA viruses because they have an enzyme that corrects some of the errors that occur during replication. Even so, SARS-CoV-2 can mutate due to errors during the replication of the virus, which will lead to the appearance of different proteins in the virion.

The most relevant mutations are those that affect the protein S, as it plays an important role during the infectious process. The virus uses its affinity for the receptors of the angiotensin-converting enzyme 2 (ACE2) in human cells as a mechanism for cell penetration. The infection process occurs when there is a connection between the protein S receptor-binding domain (RBD) and ACE-2. As a result of these mutations, seven variants have been identified so far, which increase transmissibility but not the severity of the respiratory syndrome.

The SARS-CoV-2 variants are a concern, not only in terms of the severity and transmissibility of the disease due to the presence of the set of mutations, but also by being a threat to the effectiveness of the currently available vaccines.

Keywords: "SARS-CoV-2", "coronavirus", "variants", "COVID-19", "mutation"

THE NEW SARS-COV 2 VARIANTS: WHAT ARE THEY AND HOW DO THEY ARISE?

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In the last few months, the pandemic by the severe acute respiratory syndrome virus, SARS-CoV-2, has been marked by the appearance of different variants. These variants originate from mutations suffered by the virus. The literature points out that the new variants of SARS-CoV-2 are 70% more contagious than the previous ones, spreading more quickly.

The three variants studied show mutations in the Spike glycoprotein, which favours affinity with a receptor cell, creating new interproteins, such as the E484K and N501Y mutations. Another mutation is still present in the studies, the D614G, which makes it possible to increase viral replication in human airway epithelial cells. These mutations favour infectivity and guarantee the stability of the virus. The N501Y mutation is common to the three variants studied, while the E484K is found in only two of them (South African and Brazilian) and the D614G mutation is present only in the British variant. The studies carried out to date allow us to conclude that the South African and Brazilian variants are more lethal due to protein contacts, which makes them a possible threat to the development of vaccines.

The present work intends to understand the main differences between the variants of SARS-CoV-2 of greater expression in the world (British, South African and Brazilian), present in May of 2021, as well as analyse its appearance.

Keywords: SARS-CoV-2, variants, mutations, N501Y

THE IMPACT OF *SALMONELLA* ON HUMAN HEALTH

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Salmonella belongs to a large group of Gram-negative bacteria, the Enterobacteriaceae family. They are anaerobic facultative, rod-shaped and, most of them, potent human pathogens. Salmonellosis is one of the main infections transmitted by food consumption.

Currently, a total of 2610 *Salmonella* serovars have been identified. *enterovidis*, *typhimurium*, *newport*, and *heidelberg* serovars are most commonly associated with human infections. Depending on the species, *Salmonella* infections can have different manifestations.

The main route of transmission is the ingestion of food, including those of animal origin, such as poultry, beef and pork, eggs, and contaminated milk or water. During their production, due to incorrect hygiene practices, these foods are often contaminated with feces from infected animals. In addition, if the equipment, surfaces, or other materials present in food processing environments, industrial or domestic, are improperly cleaned and disinfected, they can also function as a source of the bacteria. Contamination of food by handlers carrying *Salmonella* is uncommon.

After oral ingestion, *Salmonella* invades intestinal epithelial cells, which can recognize pathogenic bacteria and initiate an inflammatory response. A large part of the ingested *Salmonella* is killed by stomach acid, bile, and intestinal defensins.

Most *Salmonella* species are pathogenic to humans, but the characteristics and severity of the diseases they originate are variable, and in the worst scenario it causes serious complications such as septicemia, myocarditis and death.

This work aims to reveal the impact that *Salmonella* can have on the human body and also the forms of food transmission.

Keywords: *Salmonella*, health, animals, salmonellosis

TREATMENT OF *SALMONELLA* WITH ANTIBIOTICS AND PROBIOTICS YEASTS

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Salmonella is a gram-negative bacteria that belongs to the Enterobacteriaceae family, where two species stand out: *Salmonella enterica* and *Salmonella bongori*, which are divided into several serotypes. This genus is a mandatory parasite which necessarily needs a suitable host to complete its life cycle, having the form of a rod and being able to be mobile through flagella. Bacterial infections, such as those caused by *Salmonella*, can be treated with antibiotics. However, many bacteria have developed resistance to antibiotics, which means that they have acquired the ability to fight the action of these drugs. Therefore, it is urgent to implement alternative therapies, where the use of probiotic yeasts can be a good alternative. Regarding the treatment of *Salmonella* by the administration of antibiotics, several studies carried out recently reported a marked increase in antibiotic resistance by these bacteria, in a short period of time. The use of antibiotics was also associated with a change in the normal intestinal microbiome. On the other hand, the use of probiotic yeasts, especially *Saccharomyces boulardii*, proved to be effective in the treatment of typhoid fever, caused by *Salmonella typhi*. However, and despite its benefits for the treatment of *Salmonella*, *Saccharomyces boulardii* has also been associated with adverse side effects, so further studies are essential. With this work we intend to understand the role of probiotic yeasts and antibiotics in the treatment of *Salmonella*.

Keywords: *Salmonella*; Antibiotics; Probiotics Yeasts; Treatment.

SUSHI: IS IT SAFE?

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Sushi is a traditional Japanese dish considered to be very nutritious, containing a variety of foods potentially beneficial to human health. Its consumption has been increasing over the years. Hence, the microbiological study of this food is extremely important, especially when outbreaks of sushi-related foodborne illnesses are becoming more frequent as the time passes. Several studies shows that the consumption of sushi is associated with health benefits, namely reduced meat consumption, increased consumption of fish and vegetables rich in macro and micronutrients, but also with potential dangers, like the presence of bacteria/parasites in raw fish/seafood, resulting in food intoxication and infections. The most reported parasites and bacteria present in raw fish are *Anisakis simplex*, *Listeria monocytogenes* and *Salmonella* which can cause nausea, fever, diarrhea and abdominal pain when consumed by humans. To avoid/reduce food intoxication/infections, studies highlight the correct food storage, avoidance of the consumption of raw/undercooked fish/seafood and irradiation.

It is also important to ensure microbiological control and safety of sushi, combining good hygiene practices and food time/temperature control. The development of new studies can contribute to this field and protect consumers' health.

With this study we aimed to analyze the presence of pathogenic microorganisms in sushi and their inherent dangers for consumption.

Keywords: risk analysis; microbiological quality; parasite; bacteria; sushi.

MICROBIOLOGICAL RISKS ASSOCIATED WITH SUSHI CONSUMPTION

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Sushi is a ready-to-eat food typical from Japanese cuisine, which is characterized by the combination of seasoned rice with other ingredients such as raw fish, vegetables and fruits. Although it's consumed worldwide, it is frequently associated with cases of disease transmission due to contamination of pathogenic microorganisms promoted by the frequent manipulation and use of raw ingredients.

Different pathogenic microorganisms are found in sushi samples' analysis, which the ones standing are: *Listeria monocytogenes*, *Salmonella*, *Escherichia coli*, *Staphylococcus aureus*, Hepatitis A and Norovirus that represent a potential threat to public health. Several studies show that most of these contaminations are due to poor hygiene of surfaces and food handlers, even though in some cases it is due to the low quality of the food used.

Thereby the demand of quality raw material and the need of improving cleaning procedures are highlighted in establishments that sell sushi due to the easy adulteration of the products in case, which don't undergo a thermal process preparation. In addition, enhanced care is needed while handling and preserving the ingredients.

The purpose of this review is to understand the risks associated with sushi consumption and how to prevent them.

Keywords: "sushi", "risk", "microorganisms", "contamination" and "intoxication"

FOOD PARASITES IN FRESH PRODUCTS

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Foods, particularly fresh fruits and vegetables, are particularly vulnerable to contamination by parasites. Microbiological outbreaks associated with the consumption of these products have been increasing over the years, being considered a public health problem in several countries. From the analysis of the articles, it was possible to verify that green vegetables (lettuce, spinach, parsley, basil) and certain fruits (strawberries, blueberries and raspberries) are more susceptible to contamination by parasites, thus being responsible for most of the outbreaks. It has also been shown that *Escherichia coli*, *Cryptosporidium* and *Ciclospora* are the most common parasites present in fresh foods, since they are often eaten raw and with little or no washing, they can be contaminated by food and water handlers or contaminated soil. It was possible to verify that episodes of gastroenteritis and diarrhea are the most common manifestations resulting from contamination.

In short, through microbiological studies on fresh products, carried out with phenotypic, biochemical and molecular techniques, it is possible to properly identify the parasite present in them. In this sense, the reporting of information about outbreaks is crucial for the implementation of appropriate strategies in order to inactivate or reduce the viability of the parasites.

With the present work we intend to understand the impact of contamination by food parasites on human health, through the consumption of fresh food.

Keywords: "Food parasites"; "Parasites in fresh products"

FOODS PRODUCED BY MICROORGANISMS AND THEIR BENEFITS

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Kefir is a fermented milk resulting from the coexistence of bacteria and yeasts that contains more than 50 species of probiotic microorganisms, consisting of lactic acid and acetic acid bacteria, lactose fermenting and non-fermenting yeasts.

By evaluating and comparing results from recent studies, kefir has been shown to exert a broad spectrum and significant effects in modulating the gut microbiota based on the survivability, colonization, and microbial interaction of kefir microorganisms.

The essential beneficial health effects of kefir its microbiota and can be attributed to the ability to increase populations of beneficial microorganisms such as *Lactobacillus*, *Lactococcus* and *Bifidobacterium* in the host gut. Kefir has been shown to contain less lactose than milk and to be effective in reducing exhaled hydrogen and flatulence in lactose intolerant adults when compared with milk.

Due to the symbiotic relationship between bacteria and yeast, diets rich in fermented foods have a clear importance in public health and in the preservation and quality of food. It presents anticancer, antifungal, antibacterial and antioxidant properties, which can reduce the risk of diseases and increase longevity, health and quality of life.

With this work we intend to understand the benefits associated with the ingestion of kefir: a food produced by microorganisms.

Keywords: Fermentation, kefir, microorganisms.

MICROBIOLOGICAL COMPOSITION OF KEFIR

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Kefir is an acidic fermented milk, different from other fermented products due to the particular characteristic of its initial culture: the kefir grains. These contain a relatively stable and specific microbiota enclosed in a matrix of polysaccharides and proteins, where various bacterial species of the lactic acid and acetic acid group and yeasts cohabit, which have probiotic potential.

The consumption of this beverage is related to a variety of health benefits, not only linked to its microbiota, but also due to the presence of some metabolic products such as organic acids, as is the case of the regulation of the microbial composition and consequent change in the intestinal microbiota. In addition to these products, kefiran, the main polysaccharide present in kefir grains, produced mostly by *Lactobacillus kefiranofaciens*.

There is a symbiotic relationship between the various microorganisms present in kefir grains, responsible for lactic and alcoholic fermentation, in which bacteria and yeasts share their bioproducts as sources of energy and mutual microbial growth factors. These microorganisms also produce several metabolites such as lactic acid, antibiotics and others with bactericidal action, which inhibit the development of degrading and pathogenic microorganisms in kefir (*Salmonella*, *Escherichia coli* and *Streptococcus pyrogenes*).

Thus, kefir presents to its consumers a wide variety of beneficial microorganisms and bioactive compounds, being considered a product with great potential as a functional food.

With this work we intend to understand the microbiological composition of kefir and its beneficial properties as a probiotic.

Keywords: “kefir”, “kefir grains”, “microbiology”

IMPORTANCE OF WORK ACCIDENT INVESTIGATION IN THE PERSPECTIVE OF PROACTIVE MANAGEMENT OF PROFESSIONAL RISKS

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With industrial development, the need to take preventive labour measures has led to social awareness in amending and adapting legislation in this area. The performance of companies, in terms of safety and health at work, is closely linked to the existing legislation in their country of origin. An accident at work is an accident that occurs in the workplace and during working hours and produces, directly or indirectly, bodily injury, functional disturbance or disease resulting in a reduction in the ability to work or gain or death. In order to carry out this work, numerous documents related to the Importance of the Investigation of Accidents at Work in the Perspective of Proactive Management of Professional Risks were reviewed, with the aim of reflecting on a positive or negative relationship of work accident investigation from the perspective of proactive management of professional risks. There are 3 models in accident analysis: epidemiological, systemic and sequential, as well as 12 accident investigation methods, which aim at analysis and investigation in order to create actions to prevent and correct existing failures.

The use of formal procedures, analysis and investigation of accidents, is part of the process of Proactive Management, which when comparing the results with standards of reference that are included in the legislation, help to identify, earlier, the areas to be addressed as a priority.

Keywords: Work accidents; Consequences; Proactive management; Investigation; Professional risks

VERIFICATION WITH WORKERS AS A KEY FACTOR IN OCCUPATIONAL RISK MANAGEMENT: IMPLEMENTATION METHODS

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Safety and Health at Work currently plays an important role in organizations.

A proper evaluation of occupational risks represents the basis for an effective Health and Safety Management, being a fundamental tool for the prevention of labour risks and, consequently, for the reduction of accidents at work, occupational diseases and other diseases that are related to work.

This article aims to evaluate the importance of implementing a Workplace Safety and Management System and the effectiveness of the verification process with workers. A bibliographic research was made on the subject and a survey was applied to locksmiths.

Of the 19 workers questioned, it was found that, for the main risks to which they are faced to (noise, falling from a height, manual transport of loads), the existing safety conditions are considered acceptable by the majority. Only 10.5% of the company's workers say they are not informed about the preventive measures that aim to eliminate or minimize the occurrence of risks. Consultation with workers as a commitment to mutual collaboration between the parties in the employment relationship must be noticed as a means of obtaining solutions to the organization's problems and to have more motivated human resources.

The work developed by the Environmental Health Technician is crucial because it acts not only in verification with workers, but also in the assessment and control of risks.

For all these reasons, it is concluded that workers can not be mere recipients of orders, but active and interventional agents.

Keywords: Verification with workers, Prevention, Environmental health, Workplace safety, Risks

ADVANTAGES AND DISADVANTAGES OF APPLYING QUALITATIVE, SEMI-QUANTITATIVE AND QUANTITATIVE METHODS FOR PROFESSIONAL RISK ASSESSMENT

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Risk assessment is defined as the set of techniques used to identify, assess, monitor, and manage events that jeopardize the execution of a project and quantify the magnitude of a risk to workers' health and safety, allowing the employer to adopt the necessary preventive measures. For this risk assessment there are three possible methodologies to implement, qualitative, quantitative, and semi-quantitative methods.

The objective of this work is study the advantages and disadvantages of applying qualitative, semi-quantitative and quantitative methods for the Assessment of Professional Risks.

Qualitative Methodologies, in addition to being simple, do not require calculations or exact identification of the consequences. Likewise, the Semiquantitative Methods identify priorities for intervention through the identification of risks and raise awareness among the different elements of the organization.

In Quantitative Methods, it is considered advantageous to provide objective results, facilitating management's awareness, allowing the analysis of the effect of the implementation of risk control measures, and allowing cost / benefit analysis to be carried out.

The disadvantages found in Qualitative, and Semiquantitative Methodologies emphasize the inexistence of cost-benefit analysis because they are subjective and depend a lot on the experience of the evaluators.

In Quantitative Methods, it is considered disadvantageous to be complex, expensive methods, require experienced human resources and reveal difficulty in the quantitative valuation of decision and communication errors.

Regardless of the method chosen, there must be an opportunity to observe the workplace and the surrounding environment, identify the activities carried out in that location, observe patterns, and consider external factors.

Keywords: Risk assessment; Risk; Qualitative Methods; Semiquantitative methods; Quantitative methods.

METHODOLOGIES FOR BIOLOGICAL RISK ASSESSMENT AND THEIR APPLICATION IN THE CURRENT PANDEMIC CONTEXT

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Biological agents are capable of causing any type of infection, allergy or toxicity in the human body. These can enter our body through the skin, through the mucous membranes, through the respiratory system or even by ingestion, depending on the nature of the activity to which the worker is exposed and the respective work practices.

Biological agents are present in the workplace and are often the cause of infectious diseases, many of them with great potential for contagion, such as SARS-CoV-2.

The objective of this work was to demonstrate the importance of assessment methodologies for biological risks in the current pandemic context and, for this, a bibliographic review was carried out through a search of other scientific articles.

The management of biological risks is a systematic examination that involves all aspects of work that may cause injuries or illnesses to the worker, resulting in a dynamic process carried out in three distinct phases: risk analysis, risk assessment and risk control. The result of the risk assessment makes it possible to identify the appropriate preventive measures and also to assess their applicability.

Risk assessment can take several approaches: quantitative, qualitative and semi-quantitative.

OSH professionals should support employers on risk assessment process, as well as in the development or review of prevention, mitigation and recovery plans.

For the control of this agent to be carried out, several hygiene and sanitary requirements must be defined, such as the definition of a contingency plan, individual protection measures...

Keywords: biological risks; SARS-CoV-2; evaluation methodologies; Preventive measures; Occupational Safety and Health (OSH)

THE IMPORTANCE OF RISK ASSESSMENT AND CONTROL IN THE CURRENT PANDEMIC CONTEXT.

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With the outbreak of the current pandemic (COVID-19) it becomes more important to evaluate and control risks, in order to reduce the transmission rates of COVID-19, thus this is one of the biggest challenges that society and companies have already faced.

The knowledge of the entire population about all risks related to the coronavirus is extremely important, since the evaluation of these should be carried out carefully, in order to allow the creation of preventive measures helping in the creation of procedures in response to emergencies and in the implementation of recommendations by national authorities.

As an objective, we intend to relate the importance that an effective risk assessment and control can have in reducing COVID-19 transmission rates and its consequences. A bibliographic research was carried out on the subject and a questionnaire was applied to the portuguese population.

Of the 151 individuals who were randomly administered a questionnaire, it was found that 95,4% considered it necessary to assess and control risks in a company. Regarding the question about the existence of risks in teleworking, it was observed that 25.2% deny the existence of them. With regard to workers who have been infected and who must adopt other care, compared to those who have never been, 63,6% say there is a difference and 36.4% deny this difference.

The risk assessment is a really important methodology for the identification of risks that coexist in any activity as well as for prioritizing them and the consequent proposal for corrective / preventive measures, aiming at minimizing the effects that the identified risks may harm.

Keywords: Risk assessment and control; Pandemic; Dangers; Preventive measures; Corrective measures

CYSTIC FIBROSIS: CURRENT THERAPEUTIC TARGETS AND FUTURE APPROACHES

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Cystic fibrosis is an autosomal recessive disease that involves mucus and sweat-producing cells. This disease originates thick, sticky mucus that obstructs the pathways, which may affect, for example, the lungs (which can lead to pneumonia) and the gastrointestinal system (intestinal obstruction syndrome).

This pathology is caused by a mutation in the cystic fibrosis transmembrane conductance regulator gene - *CFTR*, altering the protein that regulates the activity of sodium and chloride channels at the cell surface epithelium. This gene is located in 7q31.2, and more than 1900 mutations have been identified, belonging to six different classes.

In terms of the respiratory system, the prevention and control of pulmonary infections is through the administration of prescribed antibiotics, such as azithromycin, tobramycin, among others. In the gastrointestinal system, oral rehydration, osmotic laxatives, and hyperosmolar enemas with contrast are used, as ways of preventing and treating intestinal blocks.

The current and future therapeutic targets are mainly focused on correcting structural and functional abnormalities of the CFTR protein.

A new group of drugs called CFTR modulators are available, which can correct the basic defect in cystic fibrosis, which is, the CFTR protein itself, although the exact mechanism is not fully explained. Some examples of CFTR modulators can be the ivacaftor and the lumacaftor.

Many other compounds that represent the corrective / enhancing activity, in addition to reading and gene transfer agents, are under study.

Keywords: CFTR, mucus, respiratory system, GIT, antibiotics, CFTR modulators

THE HUMAN MICROBIOME AND OBESITY: MOVING BEYOND ASSOCIATIONS

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The gut microbiome is all the microbes that inhabit our intestines whose functions are interconnected with the host's physiology and pathophysiology, influencing multiple aspects of the hosts energetic equilibrium and adiposity and may even respond to its circadian rhythm, which can influence predisposition to obesity. However, establishing a concrete relationship between the gut microbiome and obesity has been a challenge.

Studies on gnotobiotic models have been used to understand the links between the microbiome and obesity, currently being one of the best systems available. The biggest limitation of these studies is that, frequently, they may not completely reproduce observations from human studies. To date, most discoveries about the obesity-microbiome relationship have been made only with a causal relationship to the disease. Thus, it is still necessary to establish a causal role between the microbiota, the development of obesity and energy balance with well-characterized targets and host metabolic pathways. Therefore, studies are needed to explore and establish specific functional links between the microbiome and obesity, and to involve cross-cutting interdisciplinary teams, as an obstacle to progress in this area has been the lack of dialogue and interaction between researchers pursuing microbiological and obesity research.

In addition, the development of innovative technologies and sophisticated bioinformatics tools that integrate data from both the host and the microbiome will facilitate a better understanding of the causal role.

Finally, it is important to involve public-private partnerships to facilitate and support research projects and to inform and involve the community, increasing voluntary participation in clinical studies.

Keywords: Gut Microbiome, Obesity; Metabolic Diseases

MARINE POLLUTION

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The oceans take up practically 71% of the earth's surface and has always been used by the human being since the dawn with various purposes. Marine pollution is a reality that causes serious environmental, economic and social damage.

It takes various forms, such as illegal sewage discharges, oil from ships or large amounts of non-degradable solid waste. However, the one that has been gaining more ground concerns the existing plastics in the ocean, for example, bottles, bags or lids, causing the suffocation of several aquatic species.

Only 9% of the plastic waste is recycled, thus the vast majority ends up in landfills and the environment where microparticles that disintegrate in water and pollute the air, harm marine life and able to finish the food chain.

In this manner, we used the existing articles of several authors and there was a review of the selected literature. An online questionnaire was also applied, at random, on the “Forms” platform in order to assess the level of knowledge of students at the Coimbra Health School.

The questioned state that they are aware of the origin of the waste they find on the beaches and 86% know the consequences of the waste made from thinner plastic.

Therefore, it can be stated that students are aware of both the origin and the consequences that microplastics have on marine ecosystems.

Keywords: Microplastics; Oceans; Plastics; Marine Pollution; Residue

ENVIRONMENTAL PRESERVATION

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With the industrial revolution and the advance in the industrial sector, environmental issues have been gaining more importance. It is necessary to alert the population to the measures of awareness and individual responsibility. Sustainability frames a relationship between man and nature since it is not being able to adequately withstand the excessive burden of anthropic actions and their consequences.

In view of the need to preserve the environment, environmental law principles were created. These aim to provide future generations with the guarantee of preserving quality of life by reconciling economic and social elements. In the course of this work, a questionnaire was applied to the general population, with the objective of evaluating its knowledge about the importance of preserving the environment.

We had a universe of 947 individuals, consisting mostly of females (88.2%) and aged between 36-45 years (29.6%). After a thorough analysis of the results, it was found that 73.2% of our universe considers that the solution of environmental problems goes through the small actions of all in everyday life and, it was found that 88.5% think it very relevant to adopt environmental training /education at all levels of education. Environmental preservation has taken a great deal of breadth in recent years, all derived from the awareness of society negative impacts on the environment. This is because man has realized the seriousness of the situation and assessed that the degradation of the environment became a threat factor to human well-being and quality of life.

Keywords: Environment; Impacts; Preservation; Quality of life; Sustainability.

HOW TO ACT IN CASE OF EARTHQUAKES

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Earthquakes are unavoidable natural events that can have devastating consequences for populations and built heritage. This phenomenon is considered one of the most destructive natural disasters and can cause huge human and economic losses. However, it appears that there is still a lack of public awareness of the problem of seismic risk, which slows down and affects the process of seismic rehabilitation in Portugal.

The purpose of this work is to evaluate the level of knowledge about the protection measures to be applied in an earthquake and to sensitize the population to the adoption of preventive measures. In order to elaborate this work, a research was made on this theme and a survey was applied to the general population.

Of the 311 participants in the study, it was found that about 48.9% said they had already felt an earthquake. The majority of the population knows how to act before, during and after an earthquake. There are countless measures that can be taken to minimize the possible impact of an earthquake on our lives. It is before its occurrence that we should reflect on the behavior to be adopted in case it happens.

The work developed by the Environmental Health Technician is crucial, not only regarding to Public Health and Hygiene and Safety at work, but also for the development of the activity and operation of the facilities, with the goal of promoting the quality of life of users as well as the environment in general.

Keywords: Environmental health, Public health, Safety, Earthquakes, Seismic risk

WATER SAVING

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Water is a fundamental natural resource for life, economic development and to social well-being, having an infinite number of uses, from the simplest to the most complex. Despite being a public good, it has gradually become a scarce resource that needs to be taken care of with a lot of discernment. For the next generations it is important to think about how to produce more and better, always aiming to protect and preserve water resources.

With the present work we intend to make the population aware of an efficient water consumption, as well as to transmit some measures to be adopted in order to create sustainable habits, through a bibliographic review and the administration of a questionnaire to 131 people of the population in general.

The results obtained allowed us to conclude that the population questioned has, in general, adequate sustainable habits, except for the reuse of shower water, where the vast majority don't have this habit.

It was found that 65% of the participants use a watering can and that the majority choose to water the plants in the morning or in the late afternoon.

In addition, we found that most are unaware of the meaning of "conservation" and "saving" of water.

Hence, it's concluded that it's important to highlight the need for changes in certain behaviors, as these can endanger future generations.

For this, it's important to reverse inappropriate habits and inform and advise for more sustainable lifestyles, such as the collection and reuse of wasted water.

Keywords: Water, Conservation, Savings, Sustainable Habits, Reuse

LANDFILLS

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Levels of waste production are high almost everywhere in the world. Portugal produces average quantities in the range of 400 to 450 kg / inhabitant-year. The fate to be given to waste has been a concern that goes back for many years. The objective of the work was to study the population's knowledge about landfills.

Bibliographic research on the topic was carried out and applied online.

It was found that 82.1% of respondents understand landfill as the place where solid waste is deposited on the ground, allowing for safe confinement. However, 14.9% said it was a place where indiscriminate garbage is improperly accumulated. When asked about the reuse of the beds after the closure of the landfills, 69.7% affirm that they do not have knowledge about it.

Until 1996, all the waste collected was considered in landfills without any type of control, concern or study of environmental impacts. According to the 2016 data from the Portuguese Environment Agency, there are 52 landfills in our country, 34 of which are dedicated to the treatment of non-hazardous urban waste.

When it reaches the limit of its capacity, the landfill is subjected to a rigorous process of closing and appropriate landscape arrangement.

We concluded that although 82% of the questioned population was aware of the definition of landfill, there is still a lack of knowledge about issues such as the landfill closest to their residence or the reuse of these sites after closing, just as 38.8% are unaware of the biogas in landfills.

Keywords: Landfills, biogas, waste, environment, treatment

WASTE SEPARATION

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«Waste» is any substance or object that the holder disposes of or has the intention or obligation to dispose of waste separation is the act of separating waste through manual or mechanical processes, without changing its characteristics, with a view to its treatment. This sorting of waste has environmental, economic and social advantages, such as: saving water and energy; reduction in the extraction of raw materials; reduction of the waste management fee; reduction of landfill occupation or waste sent for incineration.

With this work, we intend to make known the importance of waste separation and how we should do it.

A questionnaire was carried out to the population of different age groups and a bibliographic review through research on the theme in order to contribute to a better understanding and knowledge of “Waste Separation”.

It was verified from the sample consisting of 132 individuals, that 78% reported separating the residues and 81.1% know what their final destination is.

There are 4 categories of waste according to Law Decree No. 239/97, including waste, urban, hospital, industrial and agricultural, where it was found that 93.2% of the population has knowledge. In turn, 51.5% say they know the correct order of the waste management hierarchy (prevention, reduction, reuse, recycling, recovery and disposal).

It was thus found that the separation of waste is a fact to be taken into account and, for a more sustainable improvement, it is necessary to have a more active, civic and predominant role.

Keywords: Waste, Waste Separation, Importance of Separation, Waste Categories, Waste Management Hierarchy.

INFLUENCE OF CLIMATE CHANGE ON HEALTH

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The Earth has always been subject to climatic variations that manifest themselves in relatively defined cycles, however with climate change they can have significant impacts on the human population, the increased risk of respiratory problems caused by allergies, asthma, lung disease and cancer of the lung, are consequences of these.

Climate change can increase pressure on water bodies, causing floods, droughts and rising sea levels. Some microorganisms that can naturally develop in polluted water, can cause diseases such as typhoid, cholera and hepatitis.

The destruction of the ozone layer resulting from climate change is associated with the development of skin cancer, suppression of the immune system, in addition to premature aging. As an objective, we intend to relate the effects that climate change can have on the health of the population. A bibliographic research was carried out on the subject and a questionnaire was applied to the Portuguese population.

Of the 141 individuals who were randomly administered a questionnaire, it was found that only 71,6% have some knowledge about the consequences that climate change can have on health, with 28,4% having no knowledge. As for the question about the transmission of diseases through impure waters or contaminated food, it was observed that 7,8% affirm that this transmission does not come from climate change.

An Environmental Health Technician, plays a fundamental role in order to assess and control the risks arising from climate change that may affect public health, and it is important to raise public awareness of this issue.

Keywords: Climate change; public health; impacts; illnesses; pollution.