

Nutrição e Hábitos Alimentares

-MINERAÇÃO DE DADOS -

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Introdução

Para este trabalho de Mineração de dados vamos desenvolver um sistema baseado em Inteligência Artificial sobre o tema: **Nutrição - Hábitos alimentares**

- ❏ A aplicação irá utilizar um chatbot/virtual assistant multiagente para vida saudável, que integre dados dos utilizadores com conhecimento científico
- ❏ Pretende-se oferecer aos utilizadores informações claras e práticas sobre como adotar hábitos alimentares mais saudáveis, com o objetivo de simplificar e tornar mais acessível o entendimento sobre alimentação equilibrada

Motivação / Objetivos

A motivação para realizar um estudo sobre nutrição e hábitos alimentares surge da crescente preocupação com a saúde pública, em especial no que diz respeito aos padrões alimentares da população.

Nos dias de hoje, as doenças relacionadas à má alimentação, como obesidade, diabetes tipo 2 e doenças cardiovasculares, têm se tornado cada vez mais prevalentes.

Como estes problemas têm raízes em hábitos alimentares inadequados, pretendemos que este projeto possa ajudar a preveni-los.

Alguns dos objetivos deste projeto são:

- ☐ Analisar padrões e preferências alimentares da população.
- ☐ Fornecer informações e relatórios claros aos utilizadores.
- ☐ Oferecer recomendações personalizadas para melhorar a saúde do utilizador.

Trabalho Realizado

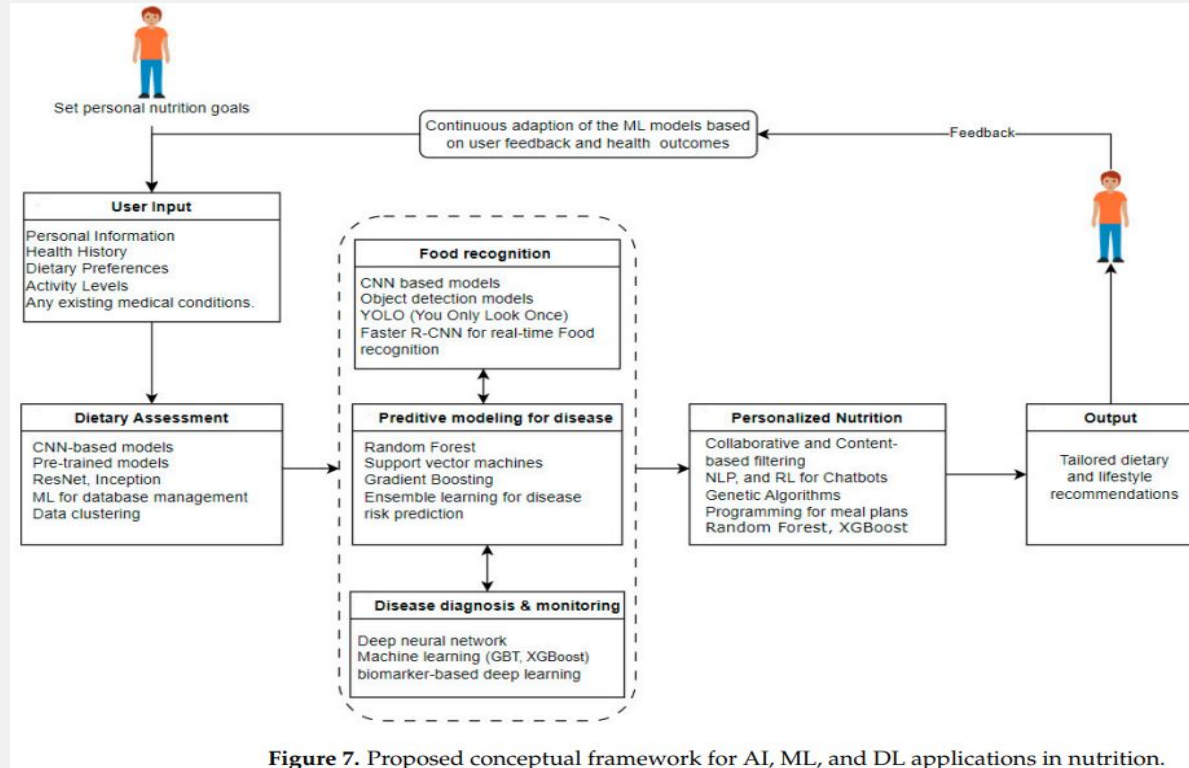


Figure 7. Proposed conceptual framework for AI, ML, and DL applications in nutrition.

Tagne Poupi Theodore Armand 1, Kintoh Allen Nfor 2, Jung-In Kim 1 and Hee-Cheol Kim. Applications of Artificial Intelligence, Machine Learning, and Deep Learning in Nutrition: A Systematic Review

Trabalho Realizado

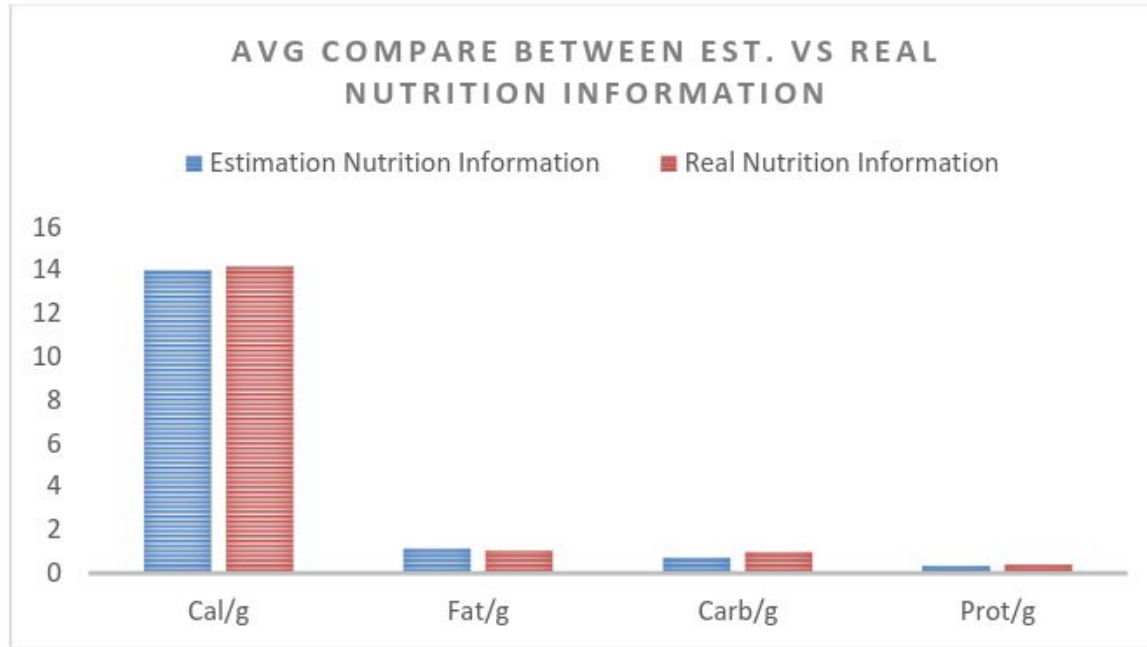


Figure 4. Accuracy rate ingredient prediction for proposed model

Tagne Poupi Theodore Armand 1, Kintoh Allen Nfor 2, Jung-In Kim 1 and Hee-Cheol Kim. Applications of Artificial Intelligence, Machine Learning, and Deep Learning in Nutrition: A Systematic Review

Trabalho Realizado

Lacuna existente: Ainda não existem soluções eficazes para a análise em tempo real de dados nutricionais e hábitos alimentares, integrando diferentes fontes de informação de forma dinâmica.

Contributo do projeto: Desenvolvimento de uma ferramenta inovadora que combina análise contextual e consulta inteligente a dados nutricionais, garantindo informações atualizadas e alinhadas com as diretrizes de saúde.

Capacidade de resposta do agente

- Alimentação Saudável: O agente poderá fornecer informações sobre os alimentos mais indicados para uma alimentação equilibrada,
- Vitaminas e Nutrientes: O agente será capaz de explicar os benefícios e as fontes alimentares de algumas vitaminas e nutrientes essenciais,
- Planos de dietas e metas nutricionais: Ajudar os utilizadores a estabelecer metas nutricionais específicas,
- Dicas sobre a preparação de refeições: O agente deve ser útil ao sugerir receitas saudáveis.

Fontes e metodologia

Metodologia de pesquisa escolhida / Methodology

- Keywords:
 - definition of the most relevant keywords for our topic
 - Eating habits, nutrition, health, well-being, behaviors, diseases, prevention, etc
- Use of keywords in Databases:
 - selection of relevant databases
 - **PubMed, OMS**, Literatura Acadêmica , **Centers for Disease Control and Prevention, Scholar**, Web of Science, IEEE, and Scopus
- Selection of most relevant documents
 - most relevant information based on our opinion
 - articles, blogs, websites, etc.

Fontes e metodologia

Fontes encontradas :

Artigo 1 : The importance of habits in eating behaviour. An overview and recommendations for future research

Appetite 57 (2011) 585–596

Contents lists available at ScienceDirect

 **Appetite**
journal homepage: www.elsevier.com/locate/appet

Research review

The importance of habits in eating behaviour. An overview and recommendations for future research

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Rewards/punishments

ABSTRACT

There is ample evidence to suggest that a significant part of daily eating behaviours consists of habits. In line with this, the concept of habit is increasingly incorporated into studies investigating the behavioural and psychosocial determinants of food choice, yielding evidence that habit is one of the most powerful predictors of eating behaviour. Research shows that habitual behaviour is fundamentally different from non-habitual behaviour: when behaviour is habitual, people require little information to make decisions, intentions are poor predictors of behaviour, and behaviour is triggered by situational cues. These insights have vast implications for research in the food domain that are only just beginning to be addressed. Also, theorizing on habits has important implications for behaviour change interventions, yet few interventions that are based on habit theory have been tested in a food context. The present article provides an overview of habit research and discusses possibilities to increase our knowledge of the role of habits in eating behaviour. It is shown that interventions targeting habitual behaviour can try to (i) change the situation that triggers the habitual behaviour, (ii) promote or inhibit the habitual response and (iii) change relevant contingencies. These insights can act as a starting point for future intervention research.

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<https://www.sciencedirect.com/science/article/pii/S0195666311005265>

Contents

Fontes e metodologia

Fontes encontradas :

Artigo 2 : Essentials of Healthy Eating: A Guide

FEATURES



Essentials of Healthy Eating: A Guide

Patrick J. Skerrett, MA, and Walter C. Willett, MD, DrPH

Enough solid evidence now exists to offer women several fundamental strategies for healthy eating. They include emphasizing healthful unsaturated fats, whole grains, good protein “packages,” and fruits and vegetables; limiting consumption of trans and saturated fats, highly refined grains, and sugary beverages; and taking a multivitamin with folic acid and extra vitamin D as a nutritional safety net. A diet based on these principles is healthy through virtually all life stages, from young adulthood through planning for pregnancy, pregnancy, and on into old age. *J Midwifery Womens Health* 2010;55:492–501 © 2010 by the American College of Nurse-Midwives.

keywords: cancer, cardiovascular disease, diet, fertility, health, pregnancy

INTRODUCTION

“What is a healthy diet?” Many clinicians find themselves at a loss to answer this common question from patients. The difficulty of offering a simple answer is understandable. The overwhelming volume of data generated by food and nutrition researchers coupled with sometimes contradictory findings, the seeming flip-flops in recommendations, and the flood of misinformation in diet books and the media can make it seem as though explaining the essentials of healthy eating is akin to describing the intricacies of particle physics. That is unfortunate, because there are now enough solid strands of evidence from reliable sources to weave simple but compelling recommendations about diet.

In the United States and other developed countries, the average woman can expect to live 80 years or more.¹ With

essential strategies. Compelling data from the Nurses’ Health Study show that women who followed a healthy lifestyle pattern that includes these four strategies were 80% less likely to develop cardiovascular disease over a 14-year period compared to all other women in the study.² A companion study, the Health Professionals Follow-up Study, showed that similar healthy choices were beneficial in men, even among those who were taking medications to lower blood pressure or cholesterol.⁴

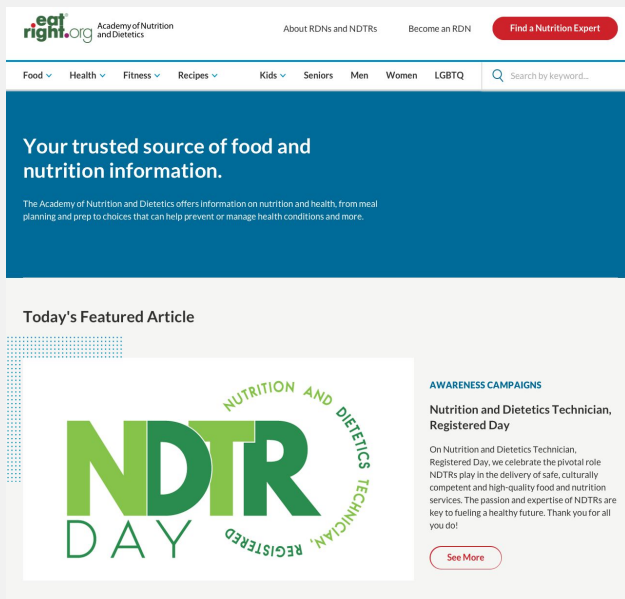
In this article, we present evidence-based elements of healthful nutrition and an overview of healthy dietary patterns. We also touch on three special situations: diet and fertility, diet and pregnancy, and diet and weight loss.

DIETARY FAT

<https://www.sciencedirect.com/science/article/pii/S1526952310002308>

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Fontes encontradas - site 1: EatRight.org



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Today's Featured Article

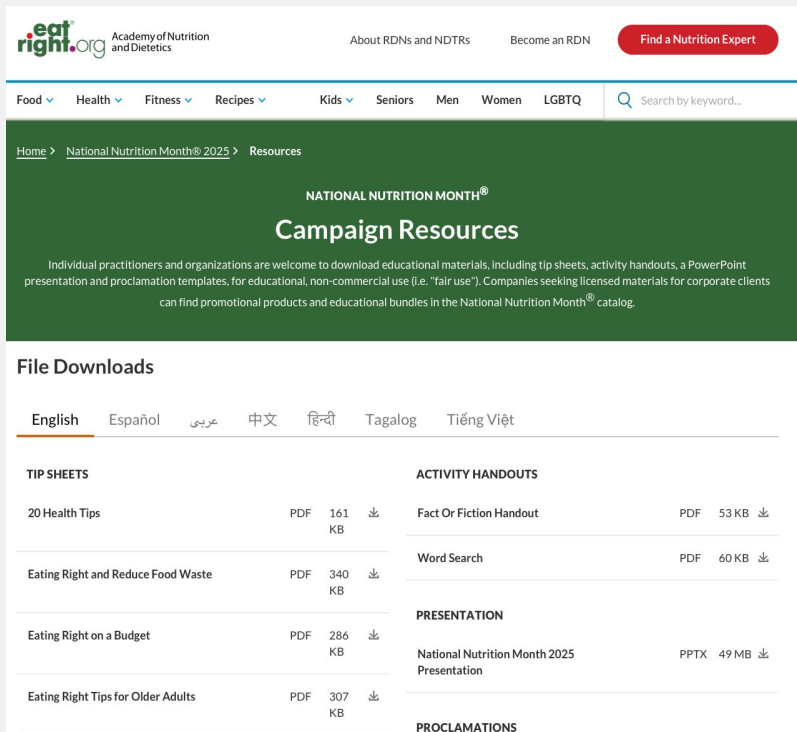
NDTR DAY NUTRITION AND DIETETICS TECHNICIAN, REGISTERED

AWARENESS CAMPAIGNS

Nutrition and Dietetics Technician, Registered Day

On Nutrition and Dietetics Technician, Registered Day, we celebrate the pivotal role NDTRs play in the delivery of safe, culturally competent and high-quality food and nutrition services. The passion and expertise of NDTRs are key to fueling a healthy future. Thank you for all you do!

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NATIONAL NUTRITION MONTH®

Campaign Resources

Individual practitioners and organizations are welcome to download educational materials, including tip sheets, activity handouts, a PowerPoint presentation and proclamation templates, for educational, non-commercial use (i.e. "fair use"). Companies seeking licensed materials for corporate clients can find promotional products and educational bundles in the National Nutrition Month® catalog.

File Downloads

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TIP SHEETS

20 Health Tips	PDF	161 KB	↓
Eating Right and Reduce Food Waste	PDF	340 KB	↓
Eating Right on a Budget	PDF	286 KB	↓
Eating Right Tips for Older Adults	PDF	307 KB	↓

ACTIVITY HANDOUTS

Fact Or Fiction Handout	PDF	53 KB	↓
Word Search	PDF	60 KB	↓

PRESENTATION

National Nutrition Month 2025 Presentation	PPTX	49 MB	↓
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PROCLAMATIONS

<https://www.eatright.org/national-nutrition-month/resources>

Fontes e metodologia

Fontes encontradas - site 1 : EatRight.org

FOOD GROUPS

Fruits
Vegetables
Grains
Protein Foods
Dairy and Alternatives
Fats

HOME FOOD SAFETY

Wash and Separate Foods
Safe Cooking and Prep
Cleaning Tips
Safe Food Storage

PLANNING

Smart Shopping
Meals and Snacks
Away from Home
Food Security and Sustainability

FOOD PREPARATION

Cooking Tips
Kitchen Tools
Herbs and Spices
Seasonal Foods

CULTURAL CUISINES AND TRADITIONS

African
African American
Central and South American
East Asian
European
Indian
Middle Eastern and South Asian
Holidays and Celebrations
Celebratory Dates

ESSENTIAL NUTRIENTS

Vitamins
Minerals
Protein
Fats
Water
Carbohydrates
Supplements

PREGNANCY

Fertility and Reproduction
Prenatal Nutrition
Breastfeeding and Formula
Baby's First Foods

HEALTH CONDITIONS

Allergies and Intolerances
Arthritis and Inflammation
Bone Health and Osteoporosis
Cardiovascular Health/Heart
Disease/Hypertension
Cancer
Celiac Disease
Diabetes
Digestive and Gastrointestinal
Eating Disorders
Endocrine Disorders
HIV/AIDS
Intellectual Disabilities
Kidney Disease
Malnutrition and Deficiencies


WELLNESS

Awareness Campaigns
Nutrition Panels and Food Labels
Diet Trends
Healthful Habits
Mental Health
Vegetarian and Plant-Based
Weight and Body Positivity

















<https://www.eatright.org/national-nutrition-month/resources>

Fontes e metodologia


Fontes encontradas - site 2 : Open Food Facts

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 Aquafina 33cl - pepsi 	 Lait - Jaouda - 500.0 	 Eau de source - Cristaline - 1.5 L 	 Fromage blanc nature - MILKY FOOD PROFESSIONAL - 1kg 

<https://world.openfoodfacts.org/>


Prince Chocolate Cookies - LuMondelez - 100g

This product page is not complete. You can help to complete it by editing it and adding more data from the photos we have, or by taking more photos using the app for [Android](#) or [iPhone/iOS](#). Thank you!

Barcode: 7622210449283(EAN / EAN-13) 


Common name: BISCUITS FOURRES (35%) PARFUM CHOCOLAT

Quantity: 100g

Packaging: Packet, Etui en carton, Film en plastique, Hôpde film-packet

Brands: LuMondelez

Categories: Snacks, Sweet snacks, Cocoa and its products




Labels, certifications, awards: Triman, Sin gluten 

Link to the product page on the official site of the producer: <https://www.lu.fr/prince>

Stores: Carrefour Market, Magasins U, Auchan, Intermarché, Carrefour, Casino, Cora, B1, carrefour.fr, Netto, Bannette, E.Leclerc

Countries where sold: Algeria, Belgium, France, French Polynesia, Germany, Guadeloupe, Hungary, Luxembourg, Martinique, Morocco, New Caledonia, Réunion, Spain, Switzerland, United States

Matching with your preferences

 Nutri-Score E Lower nutritional quality	 Ultra-processed foods 8 ultra-processing markers	 Green-Score not computed Unknown environmental impact
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Extração e organização dos dados

-> Extração dos dados

Bibliotecas do Python: Scrapy, PDFminer, etc

-> Processamento de Texto

NLP (Processamento de Linguagem Natural)

Tokenização

Extração de Palavras-chave

-> Organização dos dados

Uso de Metadados: Organizar os artigos por autor, data de publicação, tópico/tema (ex: vitaminas, minerais, dietas), e tipo de pesquisa (ex: estudo clínico, meta-análise).

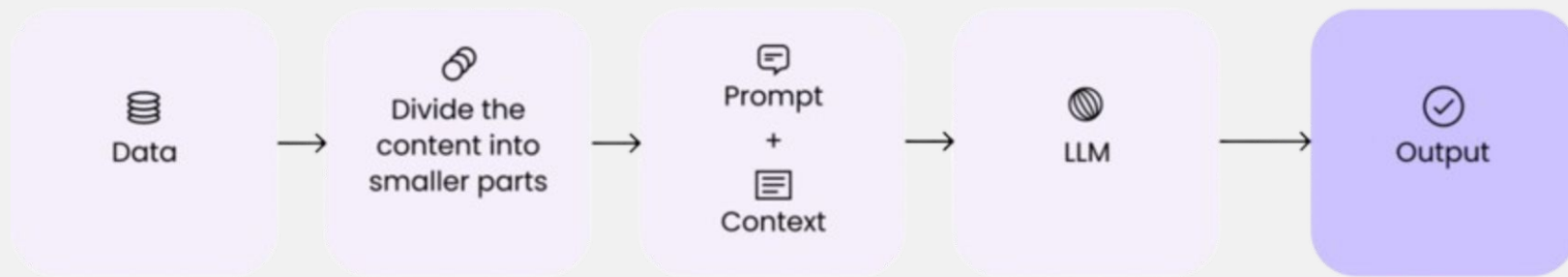
-> Armazenamento em Banco de Dados

MongoDB

-> Integração dos dados no RAG

Retrieval Augmented Generation

The RAG process



Conclusão e Referências

- [1] S. J. S. H. D. G.-J. D. B. Jonathan van't Rieta *, «The importance of habits in eating behaviour. An overview and recommendations for future research.». [Online]. Disponível em: <https://www.sciencedirect.com/science/article/pii/S0195666311005265>
- [2] P. J. S. MA, «Essentials of Healthy Eating: A Guide». [Online]. Disponível em: <https://www.sciencedirect.com/science/article/pii/S1526952310002308>
- [3] A. of Nutrition e Dietetics, «EatRight.org». [Online]. Disponível em: <https://www.eatright.org/national-nutrition-month/resources>
- [4] O. F. Facts, «A collaborative, free and open database of food products from around the world.». [Online]. Disponível em: <https://world.openfoodfacts.org/>
- [5] J.-I. K. 1. Tagne Poupi Theodore Armand 1 Kintoh Allen Nfor 2 e H.-C. Kim, «Applications of Artificial Intelligence, Machine Learning, and Deep Learning in Nutrition: A Systematic Review». [Online]. Disponível em: <https://pmc.ncbi.nlm.nih.gov/articles/PMC11013624/pdf/nutrients-16-01073.pdf>
- [6] W. Mustafa Al-Saffar, «Nutrition information estimation from food photos using machine learning based on multiple datasets». [Online]. Disponível em: <https://www.beei.org/index.php/EEI/article/view/4007/3275>
- [7] P. C. C. Hellas Cena, «Defining a Healthy Diet: Evidence for the Role of Contemporary Dietary Patterns in Health and Disease». [Online]. Disponível em: <https://pmc.ncbi.nlm.nih.gov/articles/PMC7071223/>
- [8] S. - Serviço Nacional de Saúde, «Infográfico INSA: Obesidade Infantil». [Online]. Disponível em: <https://www.insa.min-saude.pt/infografico-insa-obesidade-infantil/>
- [9] PORDATA, «TAXA DE OBESIDADE». [Online]. Disponível em: <https://www.pordata.pt/pt/estatisticas/saude/estado-de-saude/taxa-de-obesidade>
- [10] M. —, W. b. C. C.-S. Medically reviewed by Angelica Balingit, «What are the benefits of eating healthy?». [Online]. Disponível em: <https://www.medicalnewstoday.com/articles/322268>
- [11] C. C. N. —, W. b. L. R. Medically reviewed by Grant Tinsley Ph.D., «29 nutrition tips for better health and longevity». [Online]. Disponível em: <https://www.medicalnewstoday.com/articles/nutrition-tips#what-to-drink>
- [12] L. M. M.S., «20 Top Healthy Eating Habits, According to a Dietitian». [Online]. Disponível em: <https://www.eatingwell.com/article/7938737/top-healthy-eating-habits-according-to-a-dietitian/>
- [13] W. H. Organization, «Health topics.». [Online]. Disponível em: <https://www.who.int/health-topics/>

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