**Concept Note**

**Improving dietary patterns using AI, to reduce the risk of diseases for a healthier population**

**The main goal** of the research is to investigate the correlation between food safety practices and the prevalence of chronic diseases, with a specific focus on how artificial intelligence can be utilized to improve food safety measures and reduce the risk of chronic diseases. The study aims to explore the impact of AI on enhancing food safety practices, identify key factors contributing to chronic disease development, and assess the effectiveness of current regulations in preventing chronic diseases.

Additionally, the research will evaluate the relationship between food safety knowledge and practices among the population and examine the potential impact of environmental factors on food safety and chronic diseases. **The ultimate goal** is to identify opportunities for collaboration among public health agencies, AI developers and other stakeholders to enhance food safety measures and reduce the burden of chronic diseases in the population.

**Research objectives** for studying the correlation between food safety practices and chronic diseases include:

1.      To Determine the impact of artificial intelligence on improving food safety measures and reducing the risk of chronic diseases. Through the evaluation of the cause-effect relationship as well as the exploration of the interactive relationship probability-impact. This will enable a clearer picture, not just of what happens, but also of taking preventive measures in order to increase food safety.

2.      To Assess the Impact of Food Safety practices on Chronic Diseases: Investigate the extent to which food safety practices contribute to the development or exacerbation of chronic diseases (e.g., diabetes, cardiovascular diseases, cancer, etc.).

3.      To Identify High-Risk Foods: Determine which specific types of foods are most commonly associated with chronic diseases, and identify the primary components responsible for these health risks.

4.      To Assess Dietary Patterns and Chronic Disease Risk: Analyze the relationship between long-term dietary patterns, including consumption of processed foods, additives, preservatives, and chronic disease risk factors, such as obesity, hypertension, and metabolic syndrome.

5.      To Assess Socioeconomic and Environmental Factors: Investigate the influence of socioeconomic factors (income, education, access to healthy food options) and environmental factors (pollution, climate change) on food safety and chronic disease outcomes.

**Multi-Actor & Multidisciplinary Collaboration**

Key Partners to Include:

* Food quality and safety experts
* AI & Data Science Institutes
* Nutrition & Public Health Experts
* Food/Health Authorities
* SMEs developing digital health tools
* NGOs working in food literacy and vulnerable communities

**Societal Impact & Policy Relevance**

* Supports **healthier populations and reduced healthcare costs**
* Provides **actionable evidence for food policy makers**
* Bridges **personal and global health** goals

**Expected results**

Upon completion of all project activities, several important results may emerge:

1. Identification of the link between food safety and chronic diseases, including the effects of dietary patterns on the development of diseases such as cardiovascular diseases, diabetes, and cancer.

2. Analysis of data from selected studies to identify study methodology, sample size, population characteristics, and results related to chronic diseases.

3. Interpretation of meta-analysis findings to assess the relationship between food safety and chronic diseases, taking into account possible biases and heterogeneity among studies.

4. Evaluation of the impact of artificial intelligence in identifying and analyzing complex relationships between food safety indicators and chronic diseases.

5. Preparation of scientific publications and presentations to disseminate project results to the scientific community and stakeholders in the field of food safety and public health.

6. Organization of a Scientific Activity (Round Table) to discuss the importance of using artificial intelligence in improving food safety and its impact on population health, involving field experts and representatives from relevant institutions and associations.

**These results will contribute to the development of strategies for food safety and public health, offering new knowledge and guidelines to promote healthy eating and prevent chronic diseases related to unsafe food practices.**

**Suggested Work Package Outline**

| **WP** | **Title** | **Focus** |
| --- | --- | --- |
| WP1 | Project Coordination | Management, ethics, data governance |
| WP2 | Data Collection & AI Development | Integrating nutrition, health, lifestyle datasets |
| WP3 | Personalized Nutrition Algorithms | Tailored AI diet suggestions and risk assessment |
| WP4 | Tool & Platform Development | Building and testing consumer-facing tools |
| WP5 | Piloting & Evaluation | In schools, clinics, and community settings |
| WP6 | Impact Assessment & Policy Integration | Health, socio-economic, and environmental outcomes |
| WP7 | Communication, Dissemination & Exploitation | Stakeholder engagement, policy briefings, and scalability |