**PROBLEM STATEMENT FOR PUBLIC HEALTH AWARENESS PROJECT**

**Abstract :**

Public health campaigns aim to promote awareness, increase knowledge, and encourage a target population to adopt desirable attitudes and behaviors. Assessing their reach from a multidimensional perspective through information technology can facilitate the development of more effective campaigns in public health response.

**Methods :**

We scrutinized seven data sources from different perspectives to assess a health campaign launched in Brazil named “Syphilis No!”. This campaign is part of an Agenda for strategic actions to reduce syphilis in Brazil which includes dissemination of educommunication materials to remind people of the importance of syphilis prevention, emphasizing “test, treat and cure” concept. We developed a multidimensional analysis framework and implemented an information system to process the data from a time series perspective, and assessed the effects over time, both before and after the campaign. We descriptively analyzed data related to the campaign, including e-news, search engine activity, online courses, serological tests, medication distribution and case notification rates.

**Findings :**

Regarding search engine activity, we observed the highest volume of search during the first week of campaigns in 2018 (between November 25th and December 7th). Nevertheless, analyzing this data in a trend plot revealed sustained growth until the end of 2019. From March 2018, the amount of e-news posts related to syphilis in Brazil, indexed by Google, followed an increasing slope, with a record peak in October 2019. In addition, data showed that 12 new online courses related to syphilis disease were available on the AVASUS Platform Learning Management System (LMS), to support efforts to promote lifelong learning for health professionals, teachers, and students. These courses reached more than 22,000 students between February 2019 and September 2020. Serological test data showed that the number of tests carried out in 2019 were 375·18% more than in 2015, even accounting for population growth. Finally, starting from the middle of 2018, the syphilis case notification rates followed a decreasing curve.

**Interpretation :**

From this perspective, the “Syphilis No!” Project was a positive influence, inducing policy to fight syphilis in Brazil by supporting the implementation of a testing, treatment, and cure agenda (#TesteTrateCure). Certainly, this inference was made by analyzing multidimensional aspects and because, prior to 2018, the country had largely neglected this disease, with no records of communication actions during that period.

**Methods :**

This article aims to present an exploratory and descriptive analysis of data, considering three dimensions of the national Agenda for Strategic Actions to Reduce Syphilis in Brazil [13]: communication, education, and epidemiological surveillance. This analysis is supported by a multidimensional analysis framework and information system, developed by using time series decomposition analysis to assess variables of interest over time.

**Study aims :**

**The research questions in this study are as follows:**

**RQ1** - How were the campaign actions grouped and distributed over time? Reasoning: Understand whether the campaign ran throughout the entire period or if there were breaks in between. Gaps in the data may make a time series study unfeasible, as it seeks to correlate the daily scope of actions. In addition, understanding how the actions were grouped can provide insight into the type of audience sought.

**RQ2** - How has the population’s interest in the topic changed over time on the Internet? Was there an increase in spontaneous news on the topic on the Internet? Reasoning: Internet search trends may be useful to assess population health-seeking behavior, and to compare observations before and after the awareness campaign. In addition, spontaneous e-news can support campaign actions by sharing information more freely.

**RQ3** - How has the offer of courses and population engagement in technical and scientific learning on the topic changed over time? Reasoning: The engagement of health professionals, teachers and students can be seen as a strategy for the improvement of professional training, from the perspective of permanent education.

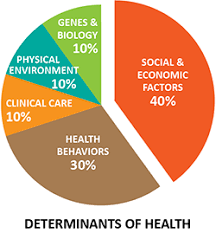
**RQ4** - How have indicators related to testing, treatment, and number of syphilis cases changed over time? Reasoning: Analyzing variations in the number of syphilis tests carried out, medication distributed and case notification rates in the pre- and post-campaign period to identify changes in epidemiological surveillance data.

**Data sources usage :**

In a health campaign, we could analyze several data sources. Table 1 shows all data obtained by Hermes. “Syphilis No!” campaign data was obtained through an internal cooperation between Federal University of Rio Grande do Norte (UFRN) and the Ministry of Health in Brazil.

Subsequently, it was manually inserted through a user interface using Hermes system. E-news data was obtained via Google Search API. Interest Over Time was collected using Google Trends. Massive Open Online Courses (MOOCs) data was collected from SUS’ Virtual Learning Environment (AVASUS) platform. Serological test data was obtained from SIA/SUS (Outpatient Information System of the Unified Health System) using web scraping.

Medication distributions were obtained through SISMAT (Integrated Material Management System) provided by the MoH. Notification cases were extracted from SINAN (Information System for Notifiable Diseases), available at MoH webpage

**Piechart : **

**Conclusion :**

Smoking is a major public health problem, and it is important to address this problem through effective public health awareness campaigns. This project aims to increase awareness among youth and young adults about the dangers of smoking and to promote smoke-free lifestyles. By educating young people about the risks of smoking, we can help to prevent them from becoming addicted to nicotine and from developing smoking-related diseases later in life. This project will contribute to improving public health by reducing the prevalence of smoking and the associated health risks.

In addition to summarizing the main points of the problem statement and reiterating the importance of addressing the problem, the conclusion should also be forward-looking. It should discuss the next steps for the project and how the project will be evaluated. For example, the conclusion might discuss how the project team will collect data on the project's impact and how they will use this data to improve the project in the future.

Overall, the conclusion of a problem statement for a public health awareness project should be clear, concise, and persuasive. It should convince the reader that the problem is important and that the project is a viable solution.