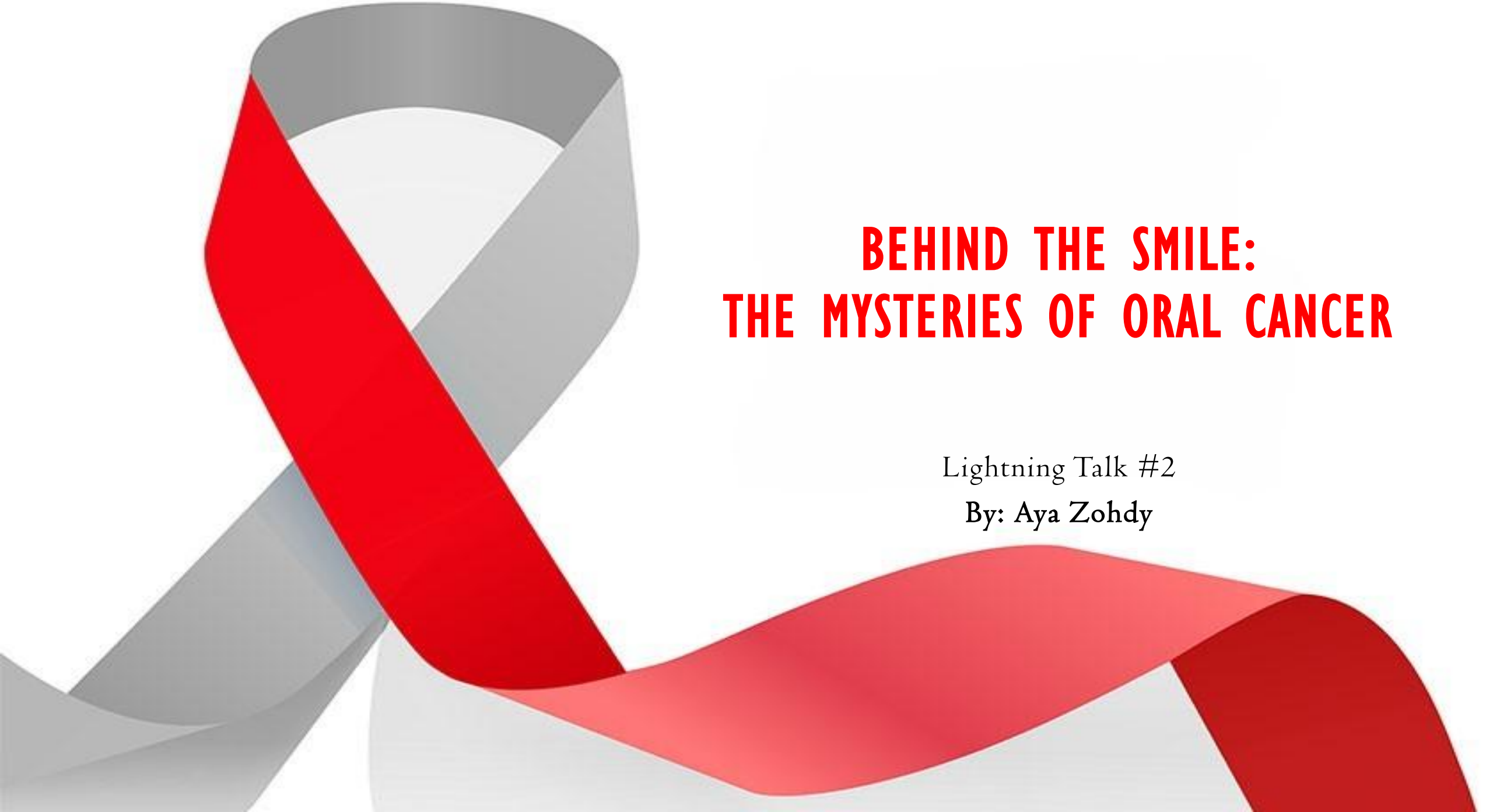
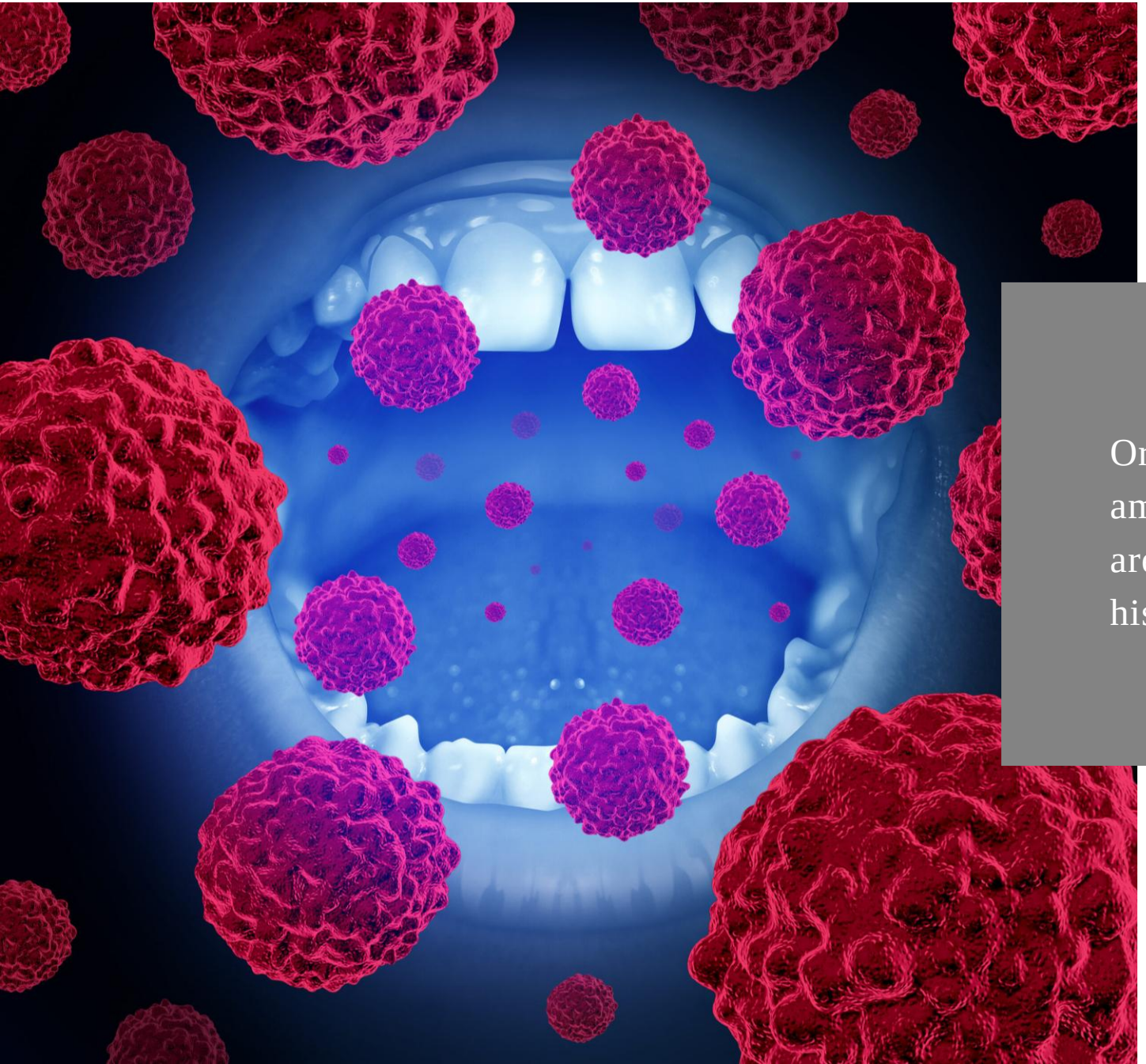


# BEHIND THE SMILE: THE MYSTERIES OF ORAL CANCER

Lightning Talk #2

By: Aya Zohdy



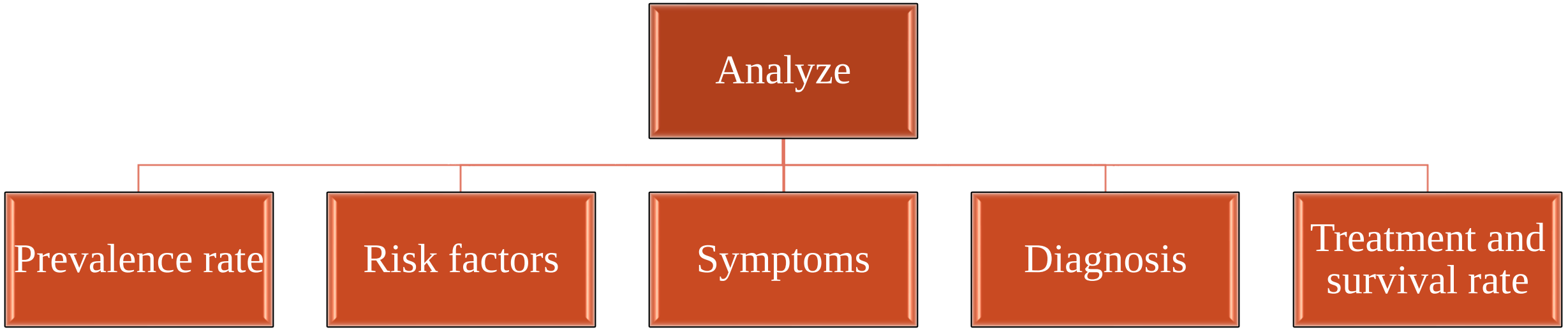
# STATEMENT OF PROBLEM

Oral cancer is one of cancer types that increase among population lately and unfortunately there are still group of population who still didn’t know his symptoms, incidence rate and causes etc.

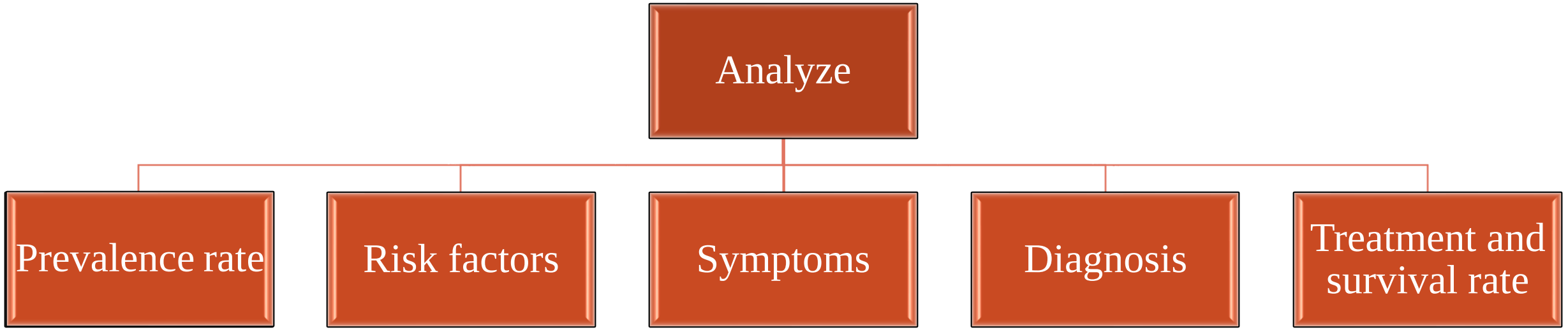
# THE AIM

The aim of this project is to analyze oral cancer from different aspects to provide **actionable insights for Dentists and public health awareness campaigns** and **improve screening strategies and the Public Health Strategies and Policies.**

# APPROACHES


Analyze
Prevalence rate
Risk factors
Symptoms
Diagnosis
Treatment and survival rate

# APPROACHES


Analyze
Prevalence rate
Risk factors
Symptoms
Diagnosis
Treatment and survival rate

Prevalence rate

# APPROACHES

Which countries are the most affected by cancer? → For High-risk Populations

Which gender are the most affected by cancer? → For Biological & Behavioral Risk Factors

Top 3 most affected ages? → For Public Health Strategy and Screening Programs

Are the family cancer history increase incidence rate? → For Personal Care (Reinforces the behavior of the person).

Risk factors

# APPROACHES

Did the habits and daily routine predict the occurrence of the oral cancer?

- Rank the most dangerous habits
- Public Health Strategy and Screening Programs
- Regional and cultural risk patterns

Is there relation between HPV and oral cancer?

- Confirms that oral cancer is HPV-Driven
- Prevention and vaccination

Did the diet decrease the occurrence of oral cancer?

- Diet as a source of protective compounds
- Public health recommendations
- Economic considerations

Symptoms

# APPROACHES

What are the most common symptoms?

- Early detection and screening
- Recognize the red flag symptoms
- Guiding clinical classification and resource allocation

Did all oral cancer show the same symptoms?

- Guiding the clinical examination
- Expect the prognosis and staging

Diagnosis

# APPROACHES

When mostly the tumor diagnosed and in which size?

- Expect the harsh reality
- Economic and human cost of late diagnosis

Did the early diagnosis main small size of tumor?

- Confirming this relationship is powerful because it impacts on treatment options, survival rate and economic and personal burden.

Top 5 early diagnosed countries?

- Highlights effective public health strategies and policies
- Identifies global disparities and opportunities for intervention

Treatment and survival rate

# APPROACHES

| | |
|---|---|
| Is there relation between the type of treatment and survival rate? | Informing Standard of Care |
| Is there relation between the size and stage of tumor and survival rate? | Informing Consent |
| | Identifies the most effective treatment protocols |
| Did the cost of treatment affect survival rate? | Show indirectly the affordability of the patient |
| What is the average of economic burden in top 5 affected countries? | Identify the patient needs |
| | Measure indirect cost of illness and severity |
| | Patient support system programs from health policy |

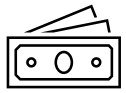
# AUDIENCES

DENTISTS

PUBLIC HEALTH OFFICIALS

RESEARCHERS

ORGANIZERS OF AWARENESS CAMPAIGNS



POLICYMAKERS

# DATA OVERVIEW

The dataset (Oral Cancer Prediction Dataset) is based on real-world oral cancer statistics, aligning with global health reports.

**Patients information**

Country – Age - Gender

**Symptoms**

Oral Lesions - Unexplained Bleeding - Difficulty Swallowing - White or Red Patches in Mouth

**Risk factors**

Tobacco Use - Alcohol Consumption - HPV Infection - Betel Quid Use - Chronic Sun Exposure - Poor Oral Hygiene - Diet (Fruits & Vegetables Intake) - Family History of Cancer - Compromised Immune System

**Diagnosis**

Tumor Size (cm) - Cancer Stage - Early Diagnosis - Oral Cancer (Diagnosis)

**Treatment, survival rate and economic burden**

Treatment Type - Survival Rate (5-Year, %) - Cost of Treatment (USD) - Economic Burden (Lost Workdays per Year)

# EXPLORATORY DATA ANALYSIS (EDA)

80,000 + Patients

17 Countries

25 columns

16 - 101 Patients age

Both Gender

4 Cancer stages

Cancered + non-cancered patients

4 Types of treatment

0 missing data

**Data sources:** World Health Organization (WHO) – GLOBOCAN Reports National Cancer Institute (NCI) – Cancer Data Oral Cancer Foundation – Risk Factors & Statistics Academic Research Papers & Studies on Oral Cancer Epidemiology Country-Specific Cancer Registries & Public Health Reports

# ANALYSIS TOOLS

PYTHON

SQL

POWER BI

# THANK YOU