

# Vitamina D × COVID-19

Ciência e Visualização de Dados em Saúde

Canva

# **EQUIPE**

Carla Ronda

Eduarda Gavião

Leonardo de Queiroz

Maurício Lopes

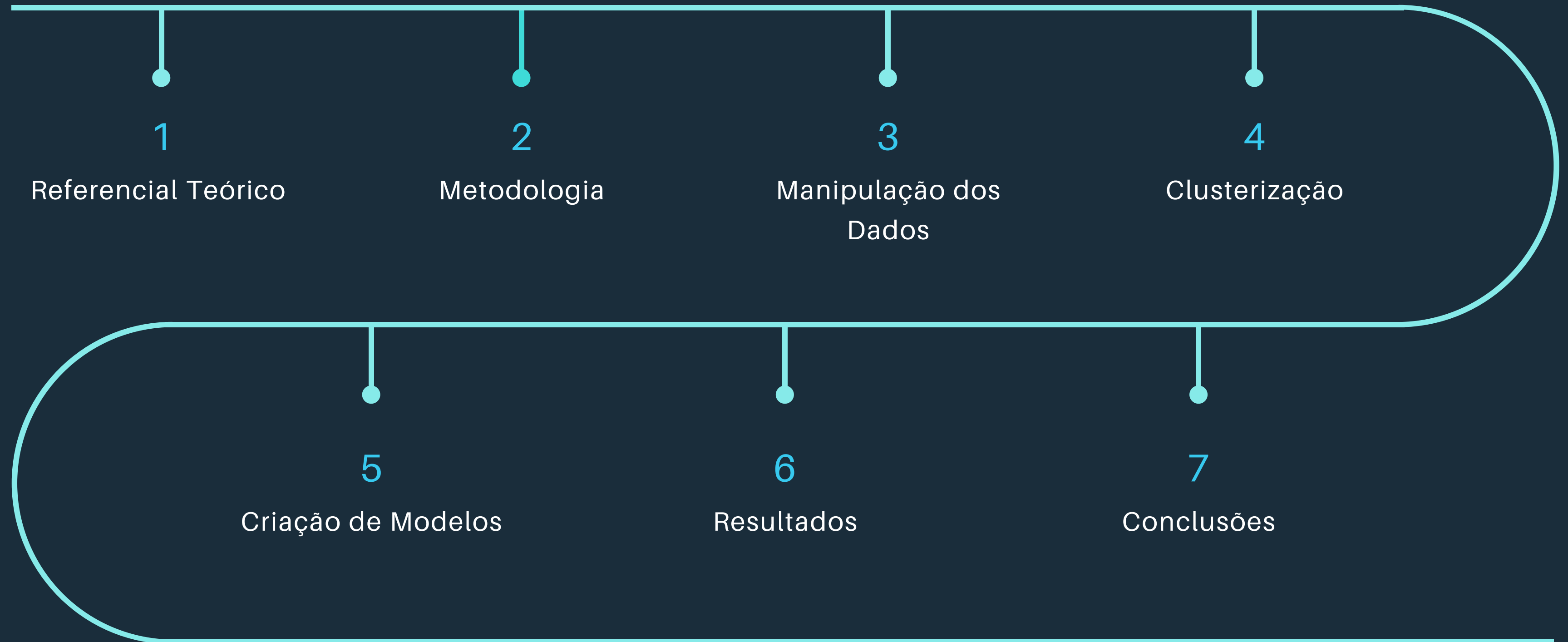
Miguel Angel

VITAMINADOS

D<sub>3</sub>O

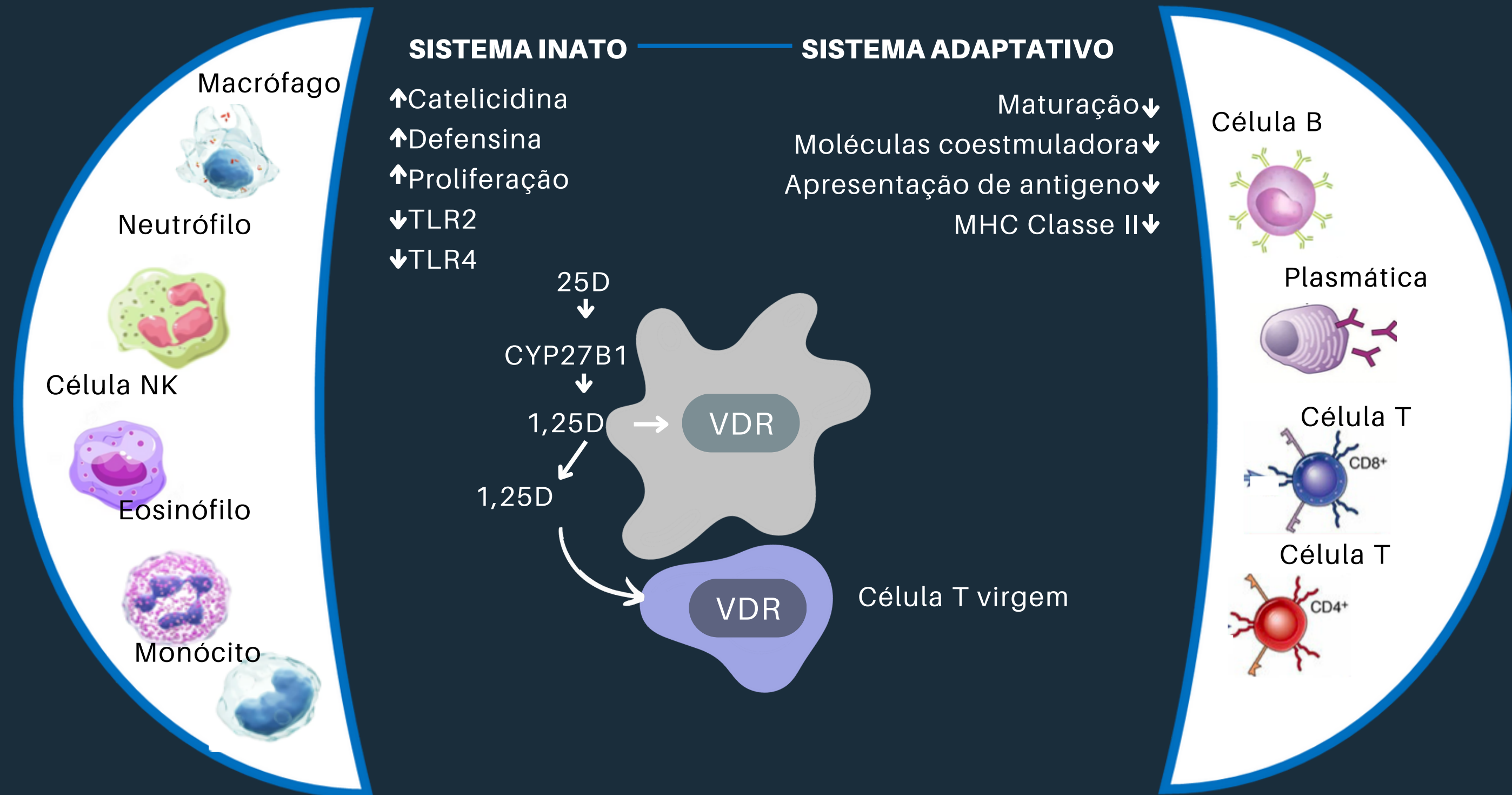
COVID

# CRONOGRAMA



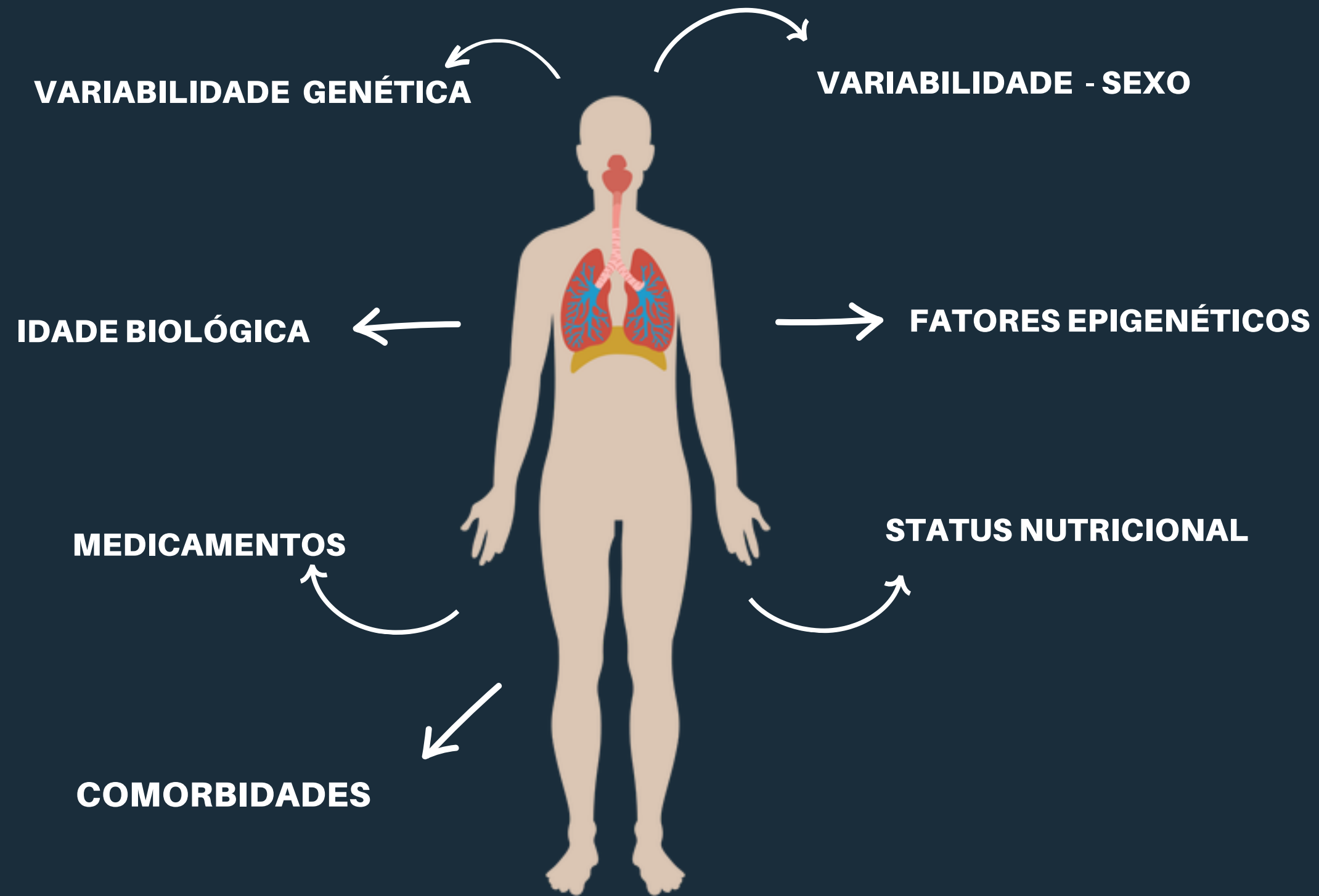
# VITAMINA D

Figura 1 - Mecanismos da Vitamina D no Sistema Imune



Fonte: Autores(2023)

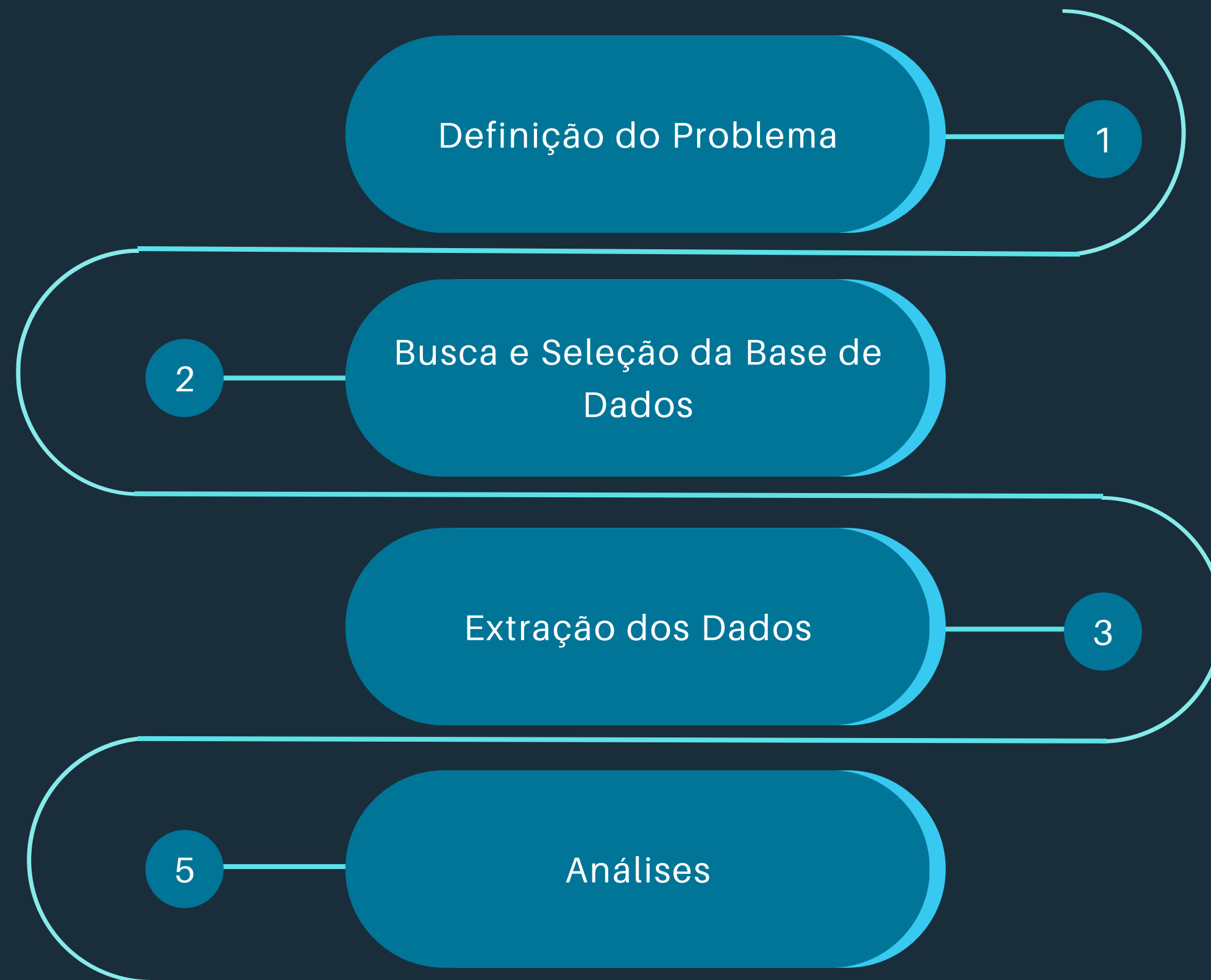
Figura 2 - Fatores que determinam o curso da COVID-19



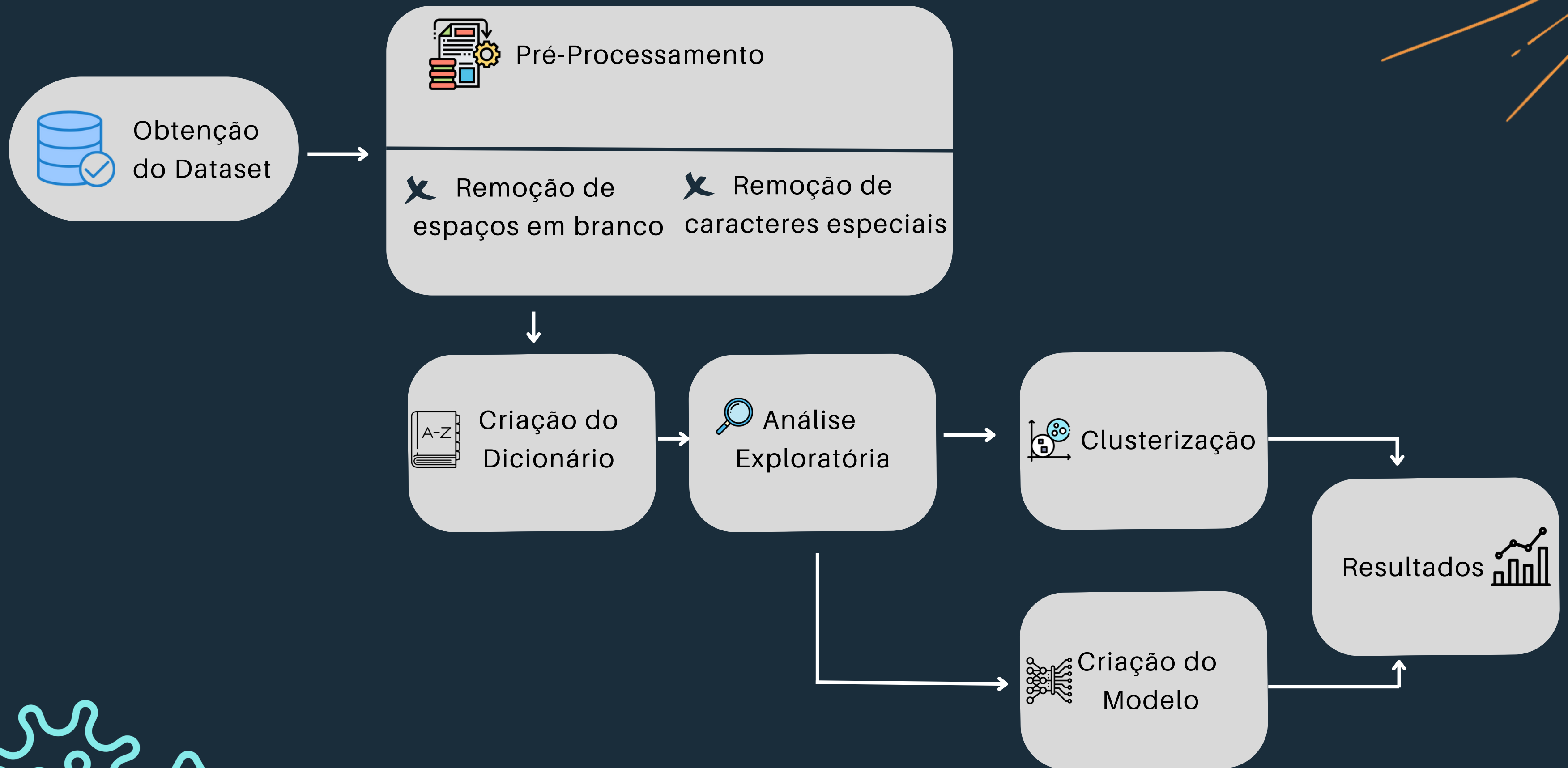
Fonte: Adaptado de Van Eijk et al. J.Pathol (2021)



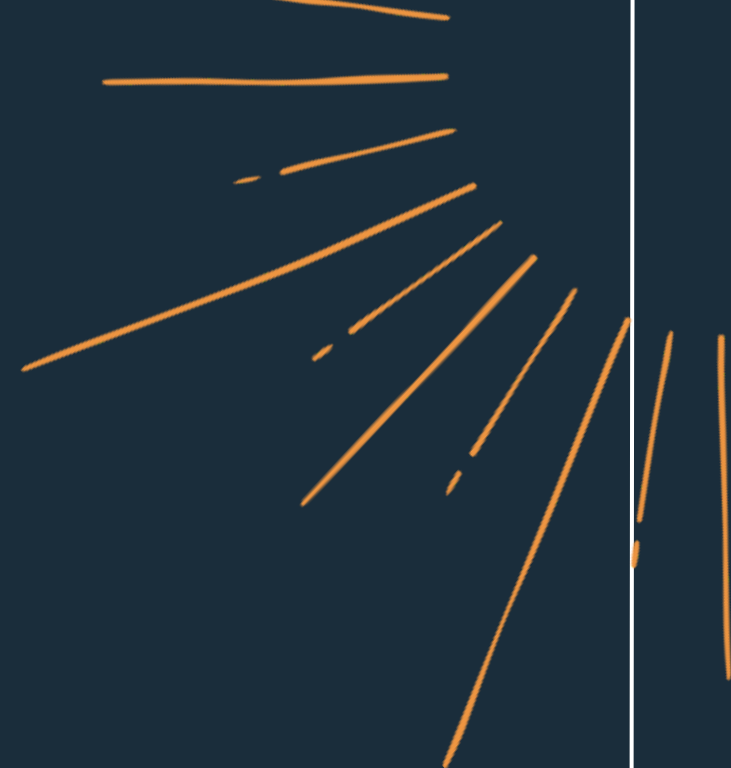
# METODOLOGIA



# WORKFLOW



# O QUE MAIS PODEMOS APRENDER COM OS DADOS?

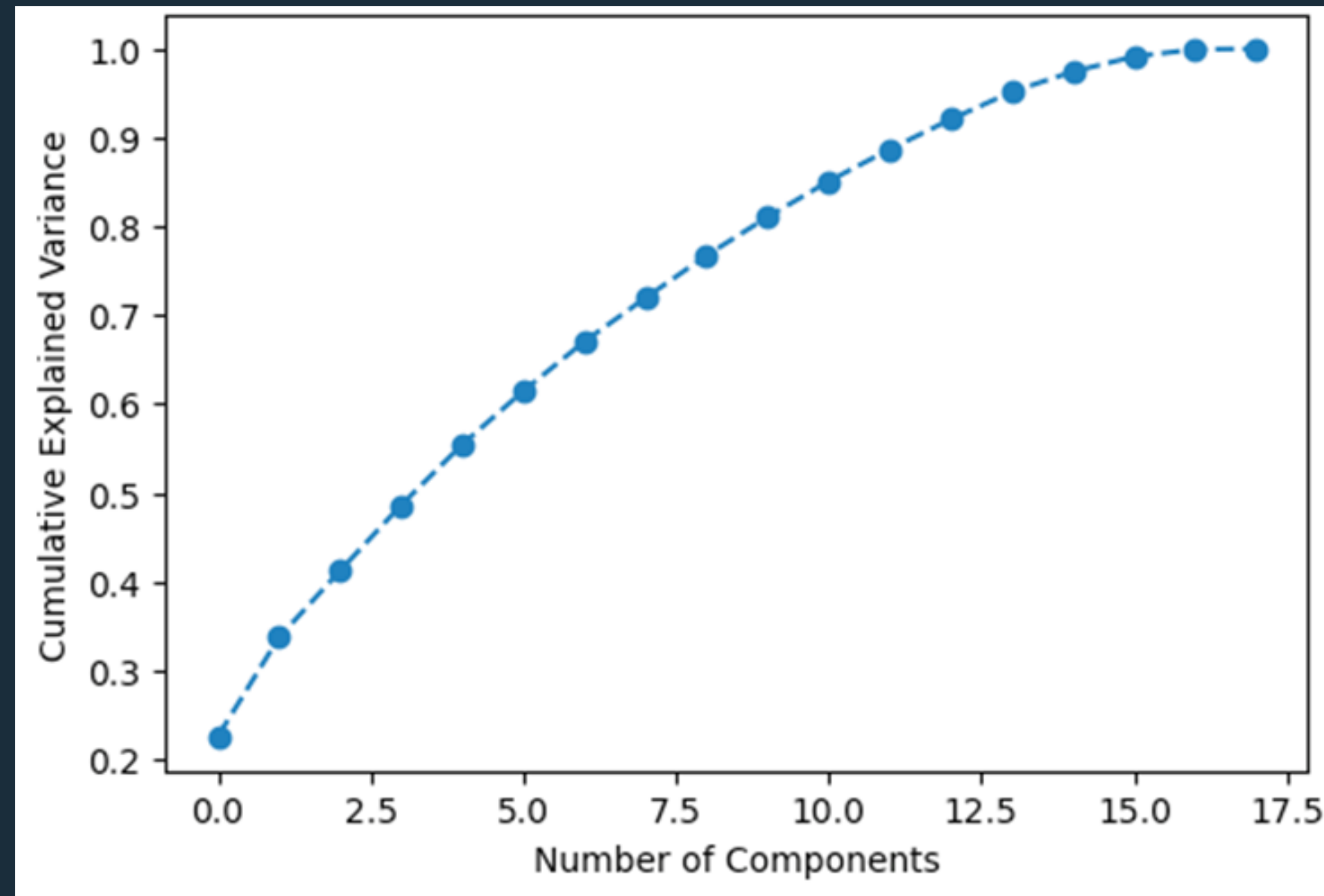




# O QUE MAIS PODEMOS APRENDER COM OS DADOS?

- Análise de componentes principais:

Figura 3 - Variância Acumulada

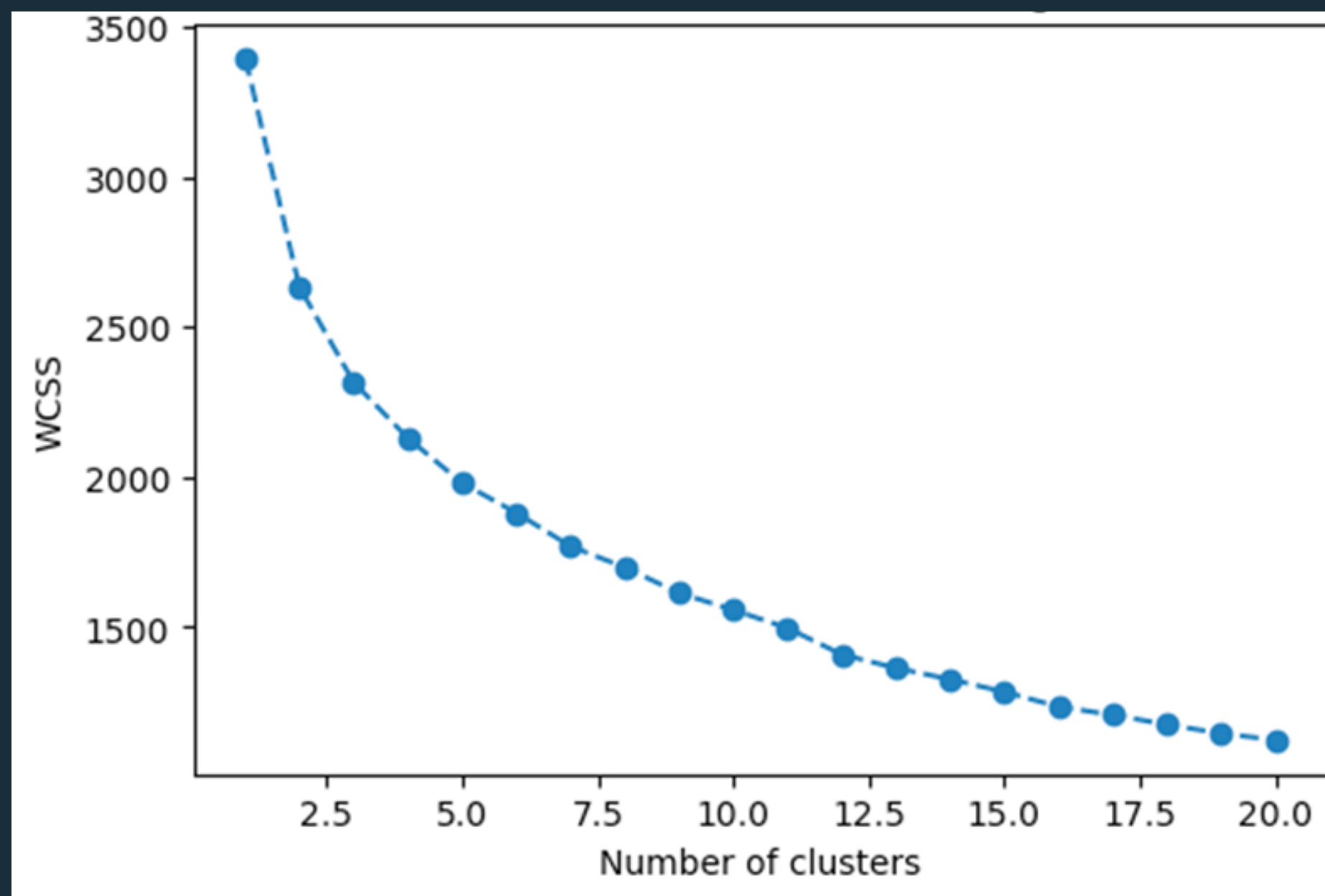


Fonte: Autores(2023)



# CLUSTERIZAÇÃO

Figura 4 - N° de Clusters x Distância Média

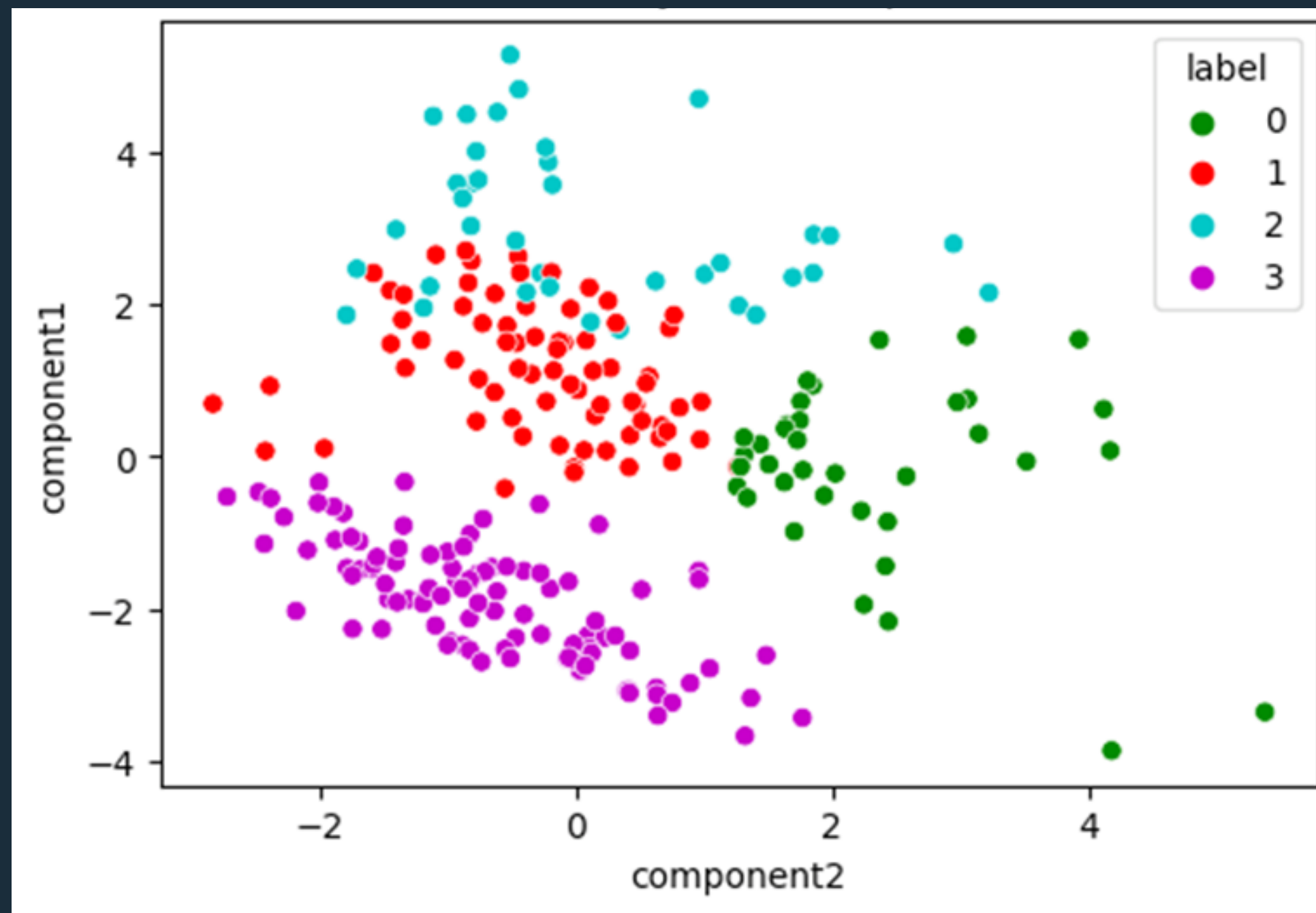


Fonte: Autores(2023)



# CLUSTERIZAÇÃO

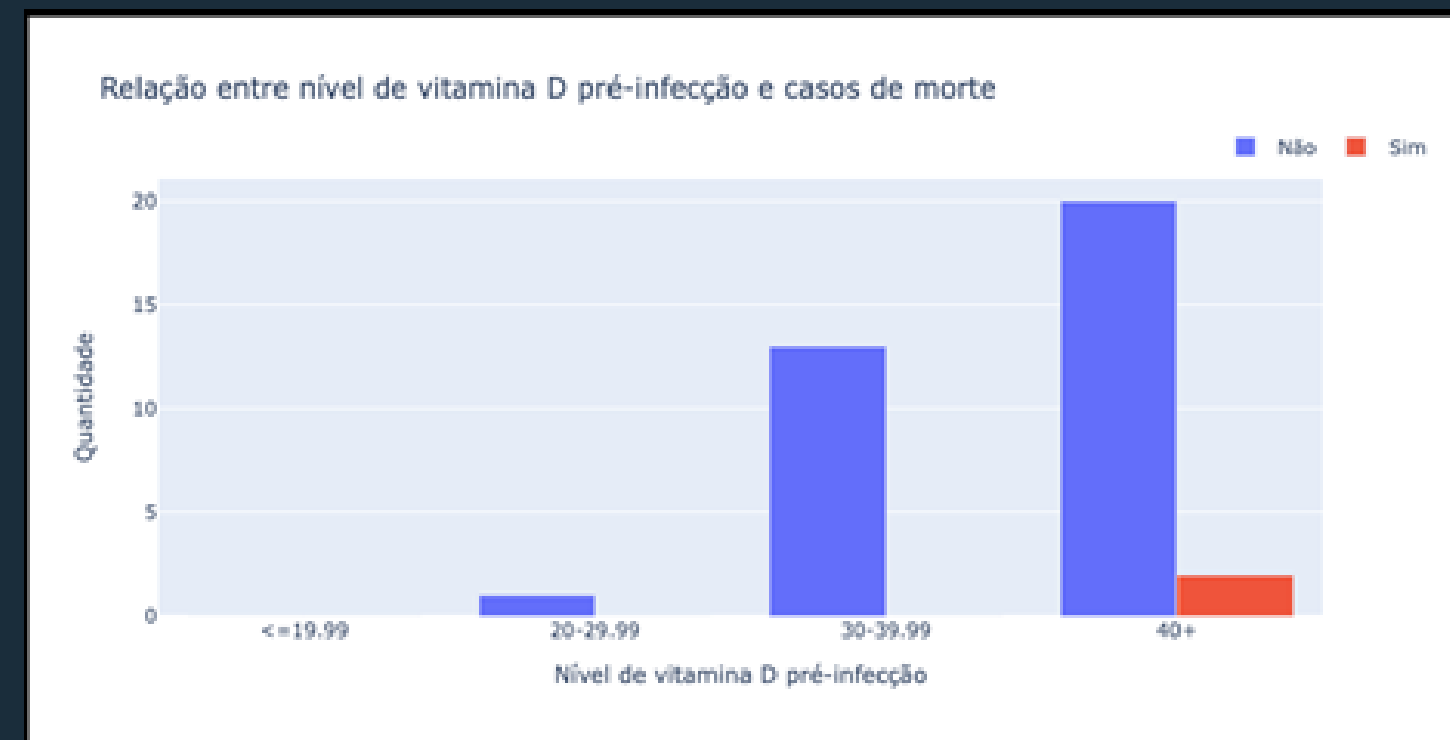
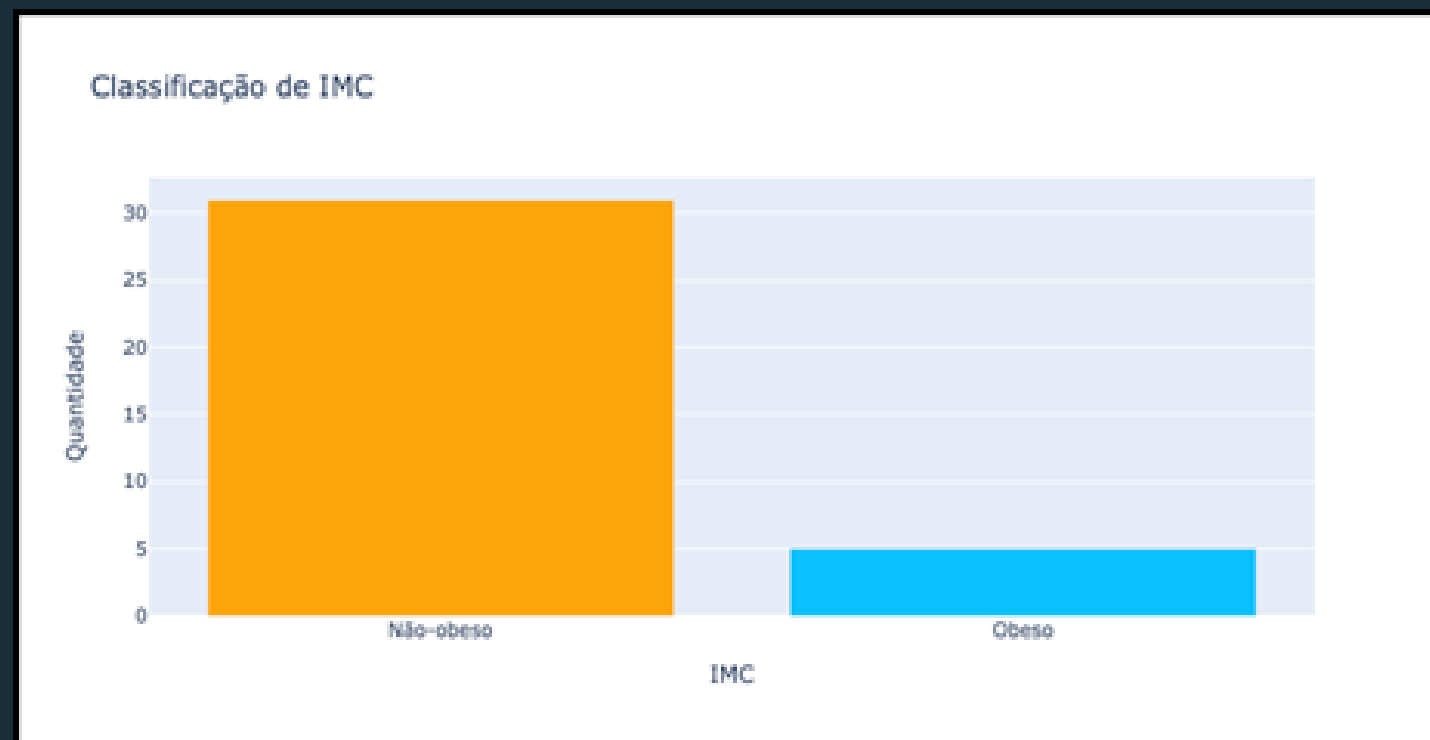
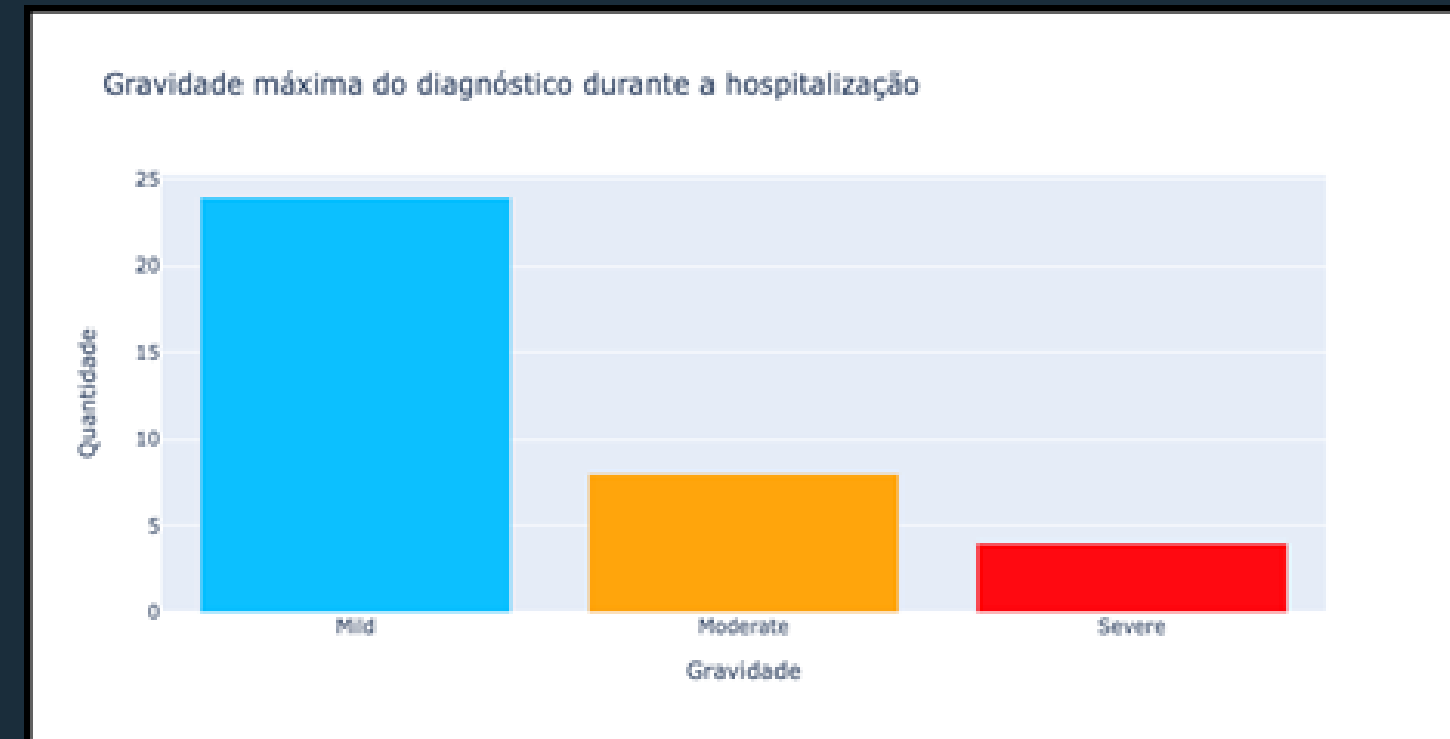
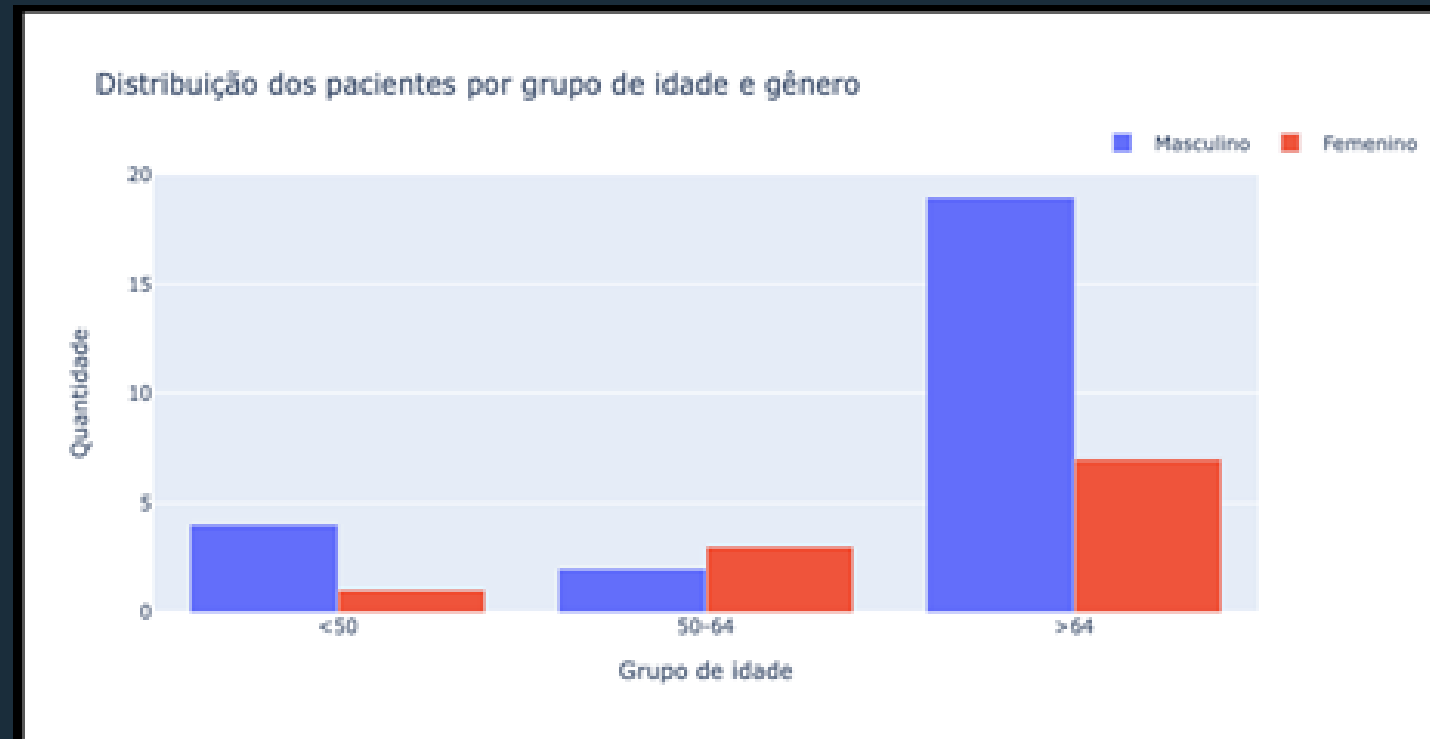
Figura 5 - Clusters - PCA Componentes



Fonte: Autores(2023)

# O QUE PODEMOS APRENDER COM CLUSTERS?

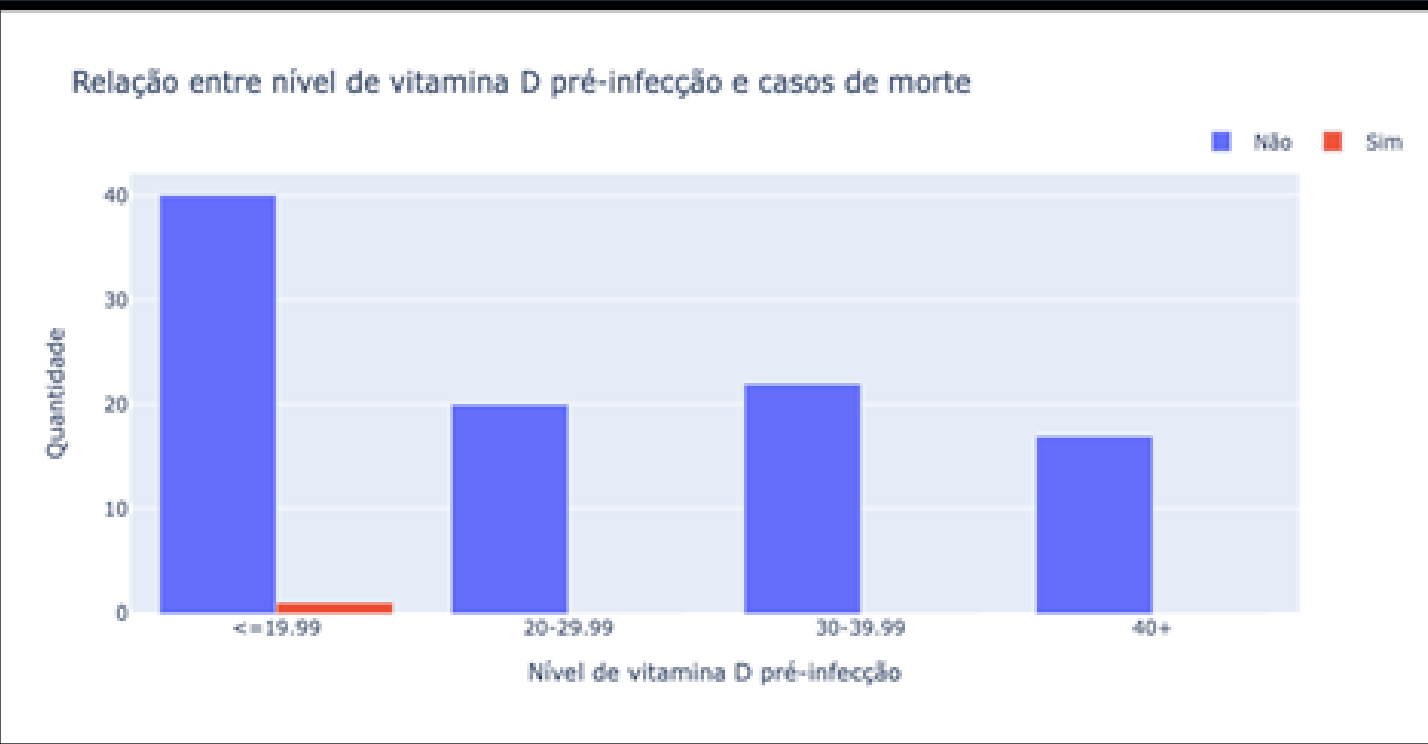
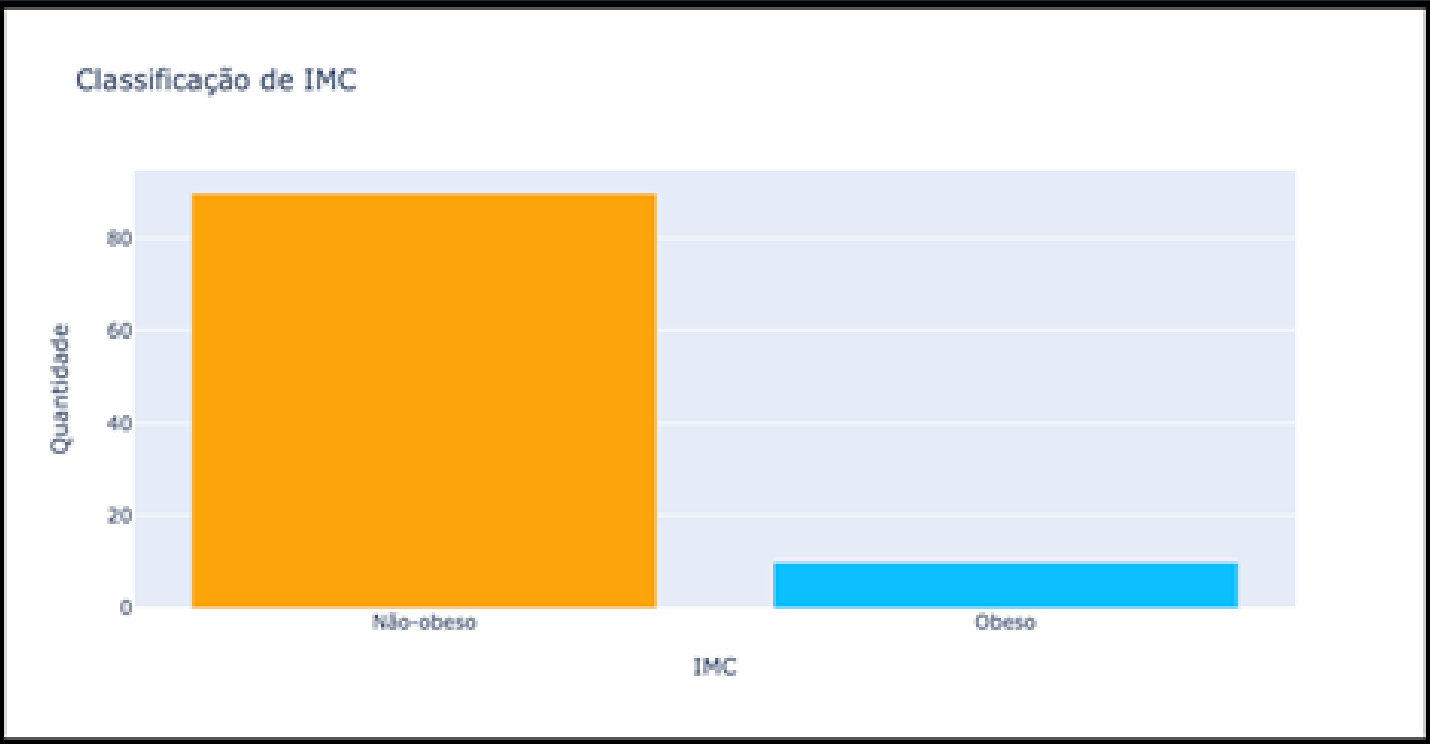
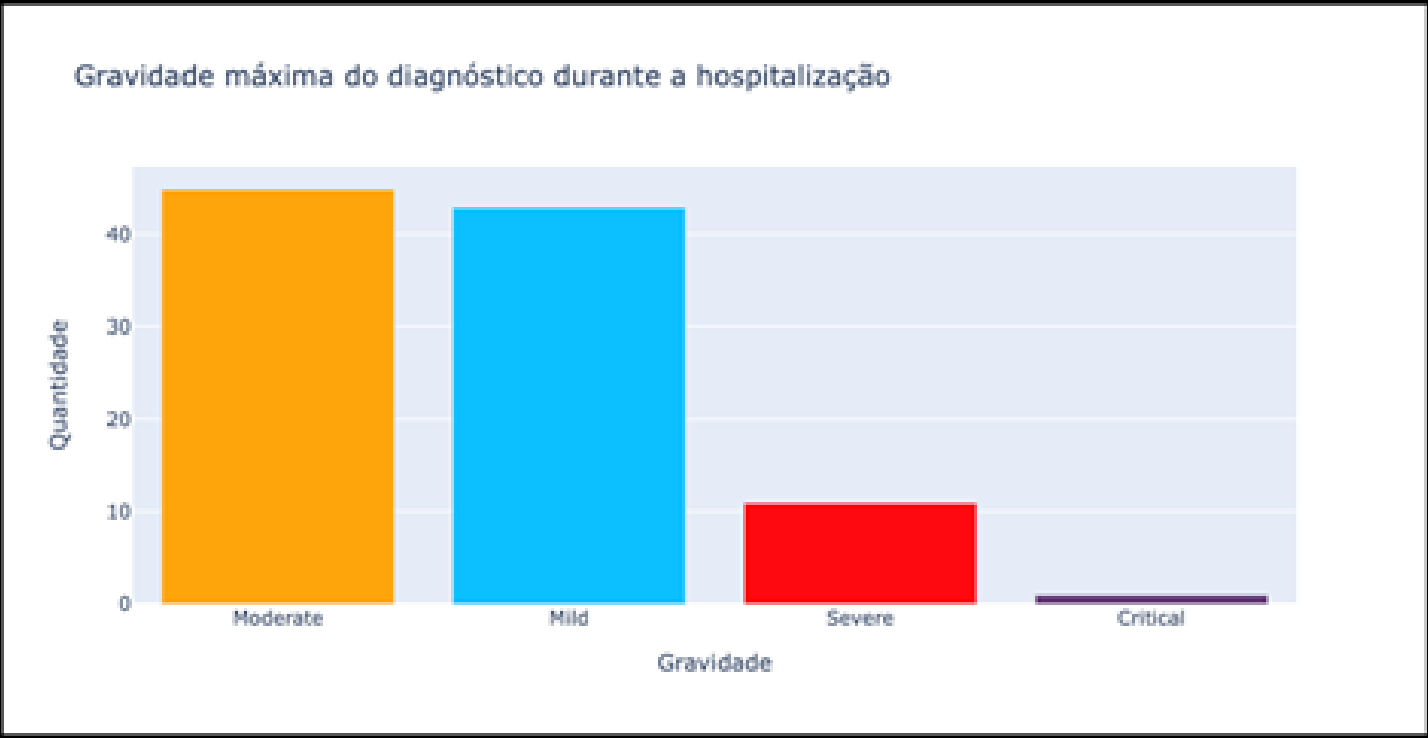
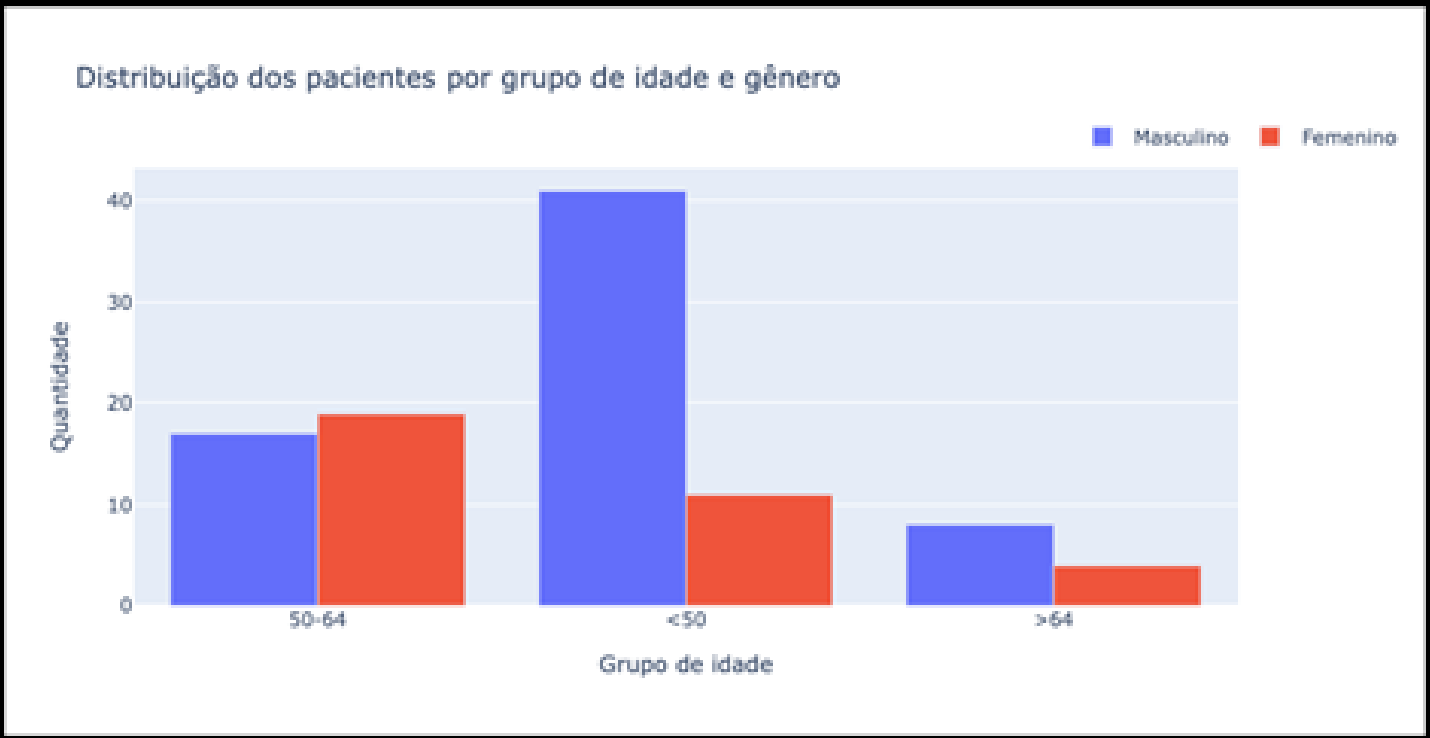
Figura 6 - Cluster 1



Fonte: Autores(2023)

# O QUE PODEMOS APRENDER COM CLUSTERS?

Figura 7 - Cluster 4



Fonte: Autores(2023)

- 
- A white icon on a dark blue background. It features a stylized virus or bacterium on the left, characterized by a central circle with three smaller circles inside, and a wavy, irregular outer boundary. To the right of the virus is a white equilateral triangle containing a large exclamation mark, serving as a warning symbol.

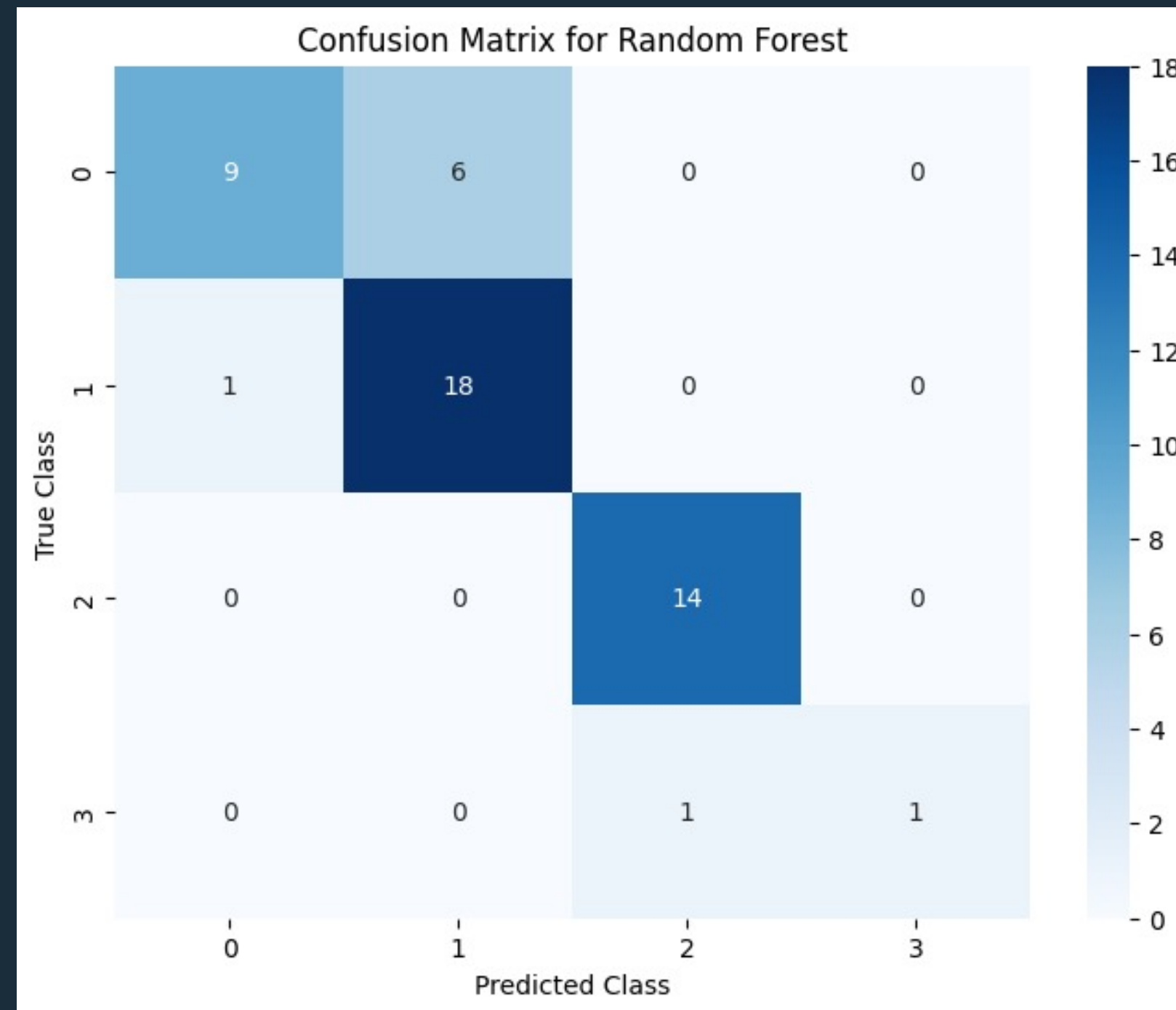
The decision tree is a complex model for COVID-19 classification. It starts with a root node splitting on 'max\_dly\_ser\_category < 0.5'. The left branch (True) leads to a node splitting on 'pre-infection < 26.55'. This branch further splits on 'Hospitallization\_length\_days < 2.5' and 'Hospitallization\_length\_days < 13.5'. The right branch (False) leads to a node splitting on 'COPD < 0.5'. This branch further splits on 'Hospitallization\_length\_days < 23.5' and 'BMI < 0.5'. The tree continues with numerous splits based on various clinical and demographic features, resulting in 100 leaf nodes representing different COVID-19 classes.

# MODELOS

# MODELOS

- Matriz de Confusão

Figura 9 - Matriz de Confusão do Modelo



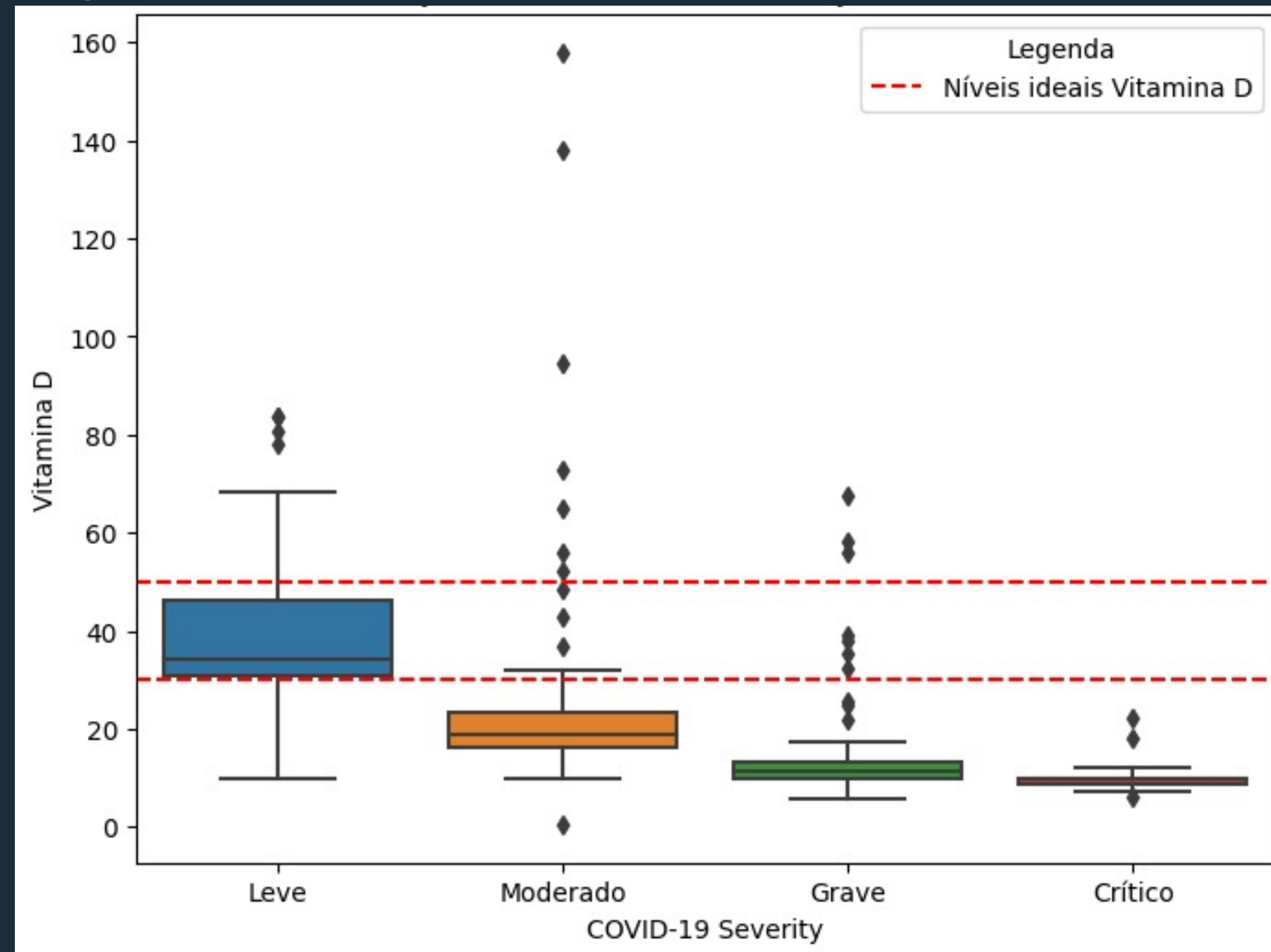
Fonte: Autores(2023)



# RESULTADOS

- Replicação dos resultados obtidos no artigo base;

**Figura 10 - Box plot dos Níveis Séricos Pré-infecção de Vitamina D**



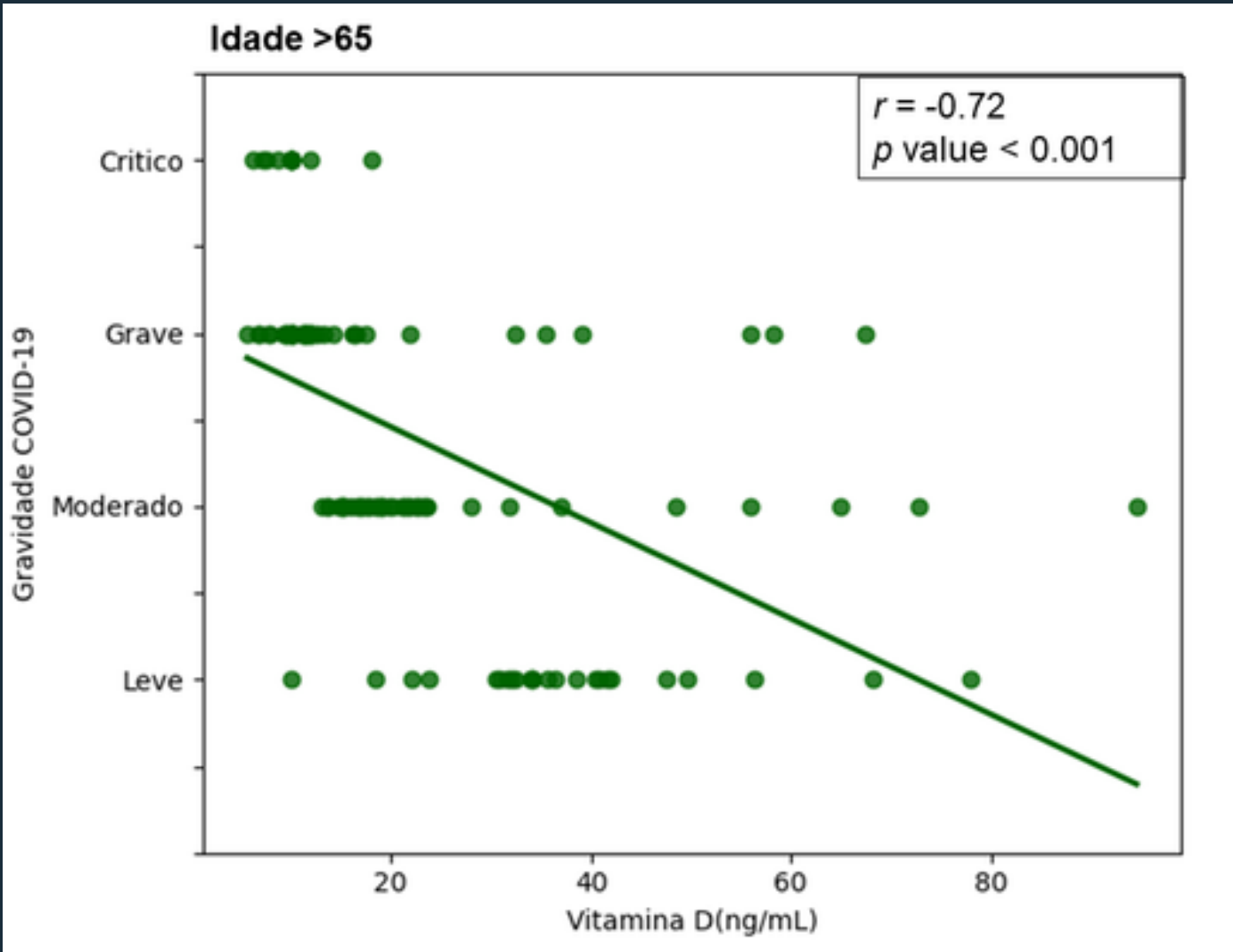
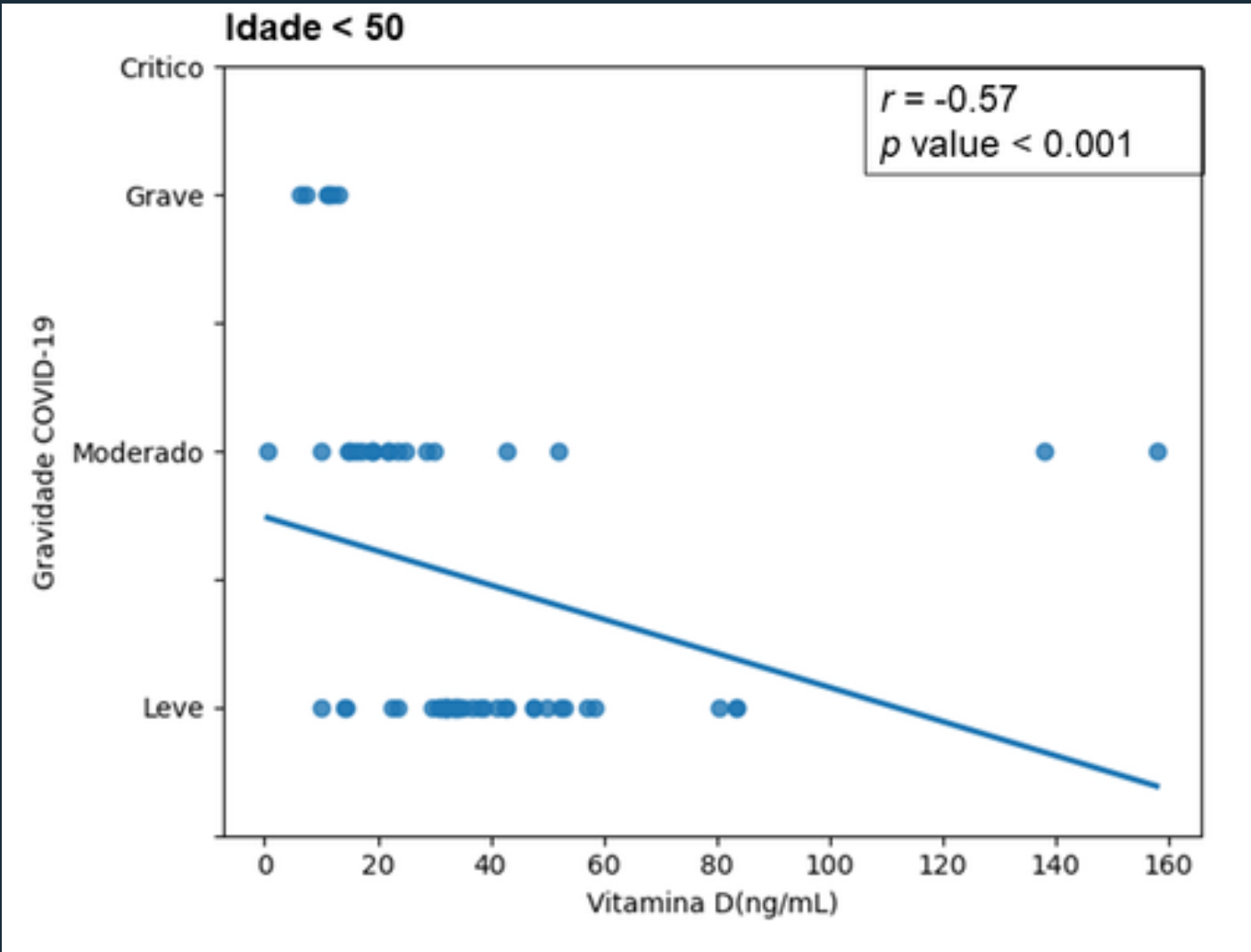
Fonte: Adaptado de Dror et. al(2022)

(Adaptado de [Dror et.al\(2022\)](#))



# RESULTADOS

Figura 11 - Correlação vitamina D pré-infecção e a gravidade da doença COVID-19 - Divididos por Faixa Etária



Fonte: Adaptado de Dror et. al(2022)



(Adaptado de [Dror et.al\(2022\)](#))

# CONCLUSÕES

- Pacientes acima de 50 anos:
  - Maior correlação entre os níveis mais baixos de 25(OH)D;
- A relação entre os níveis de vitamina D e o quadro final de um paciente (morte) indica um nível de vitamina D inferior aos níveis ideais;
- A VD é um fator importante na predição - Mas não o único:
  - Idade;
  - Comorbidades;
- Trabalhar com dados em saúde é uma tarefa complexa:
  - Dados Específicos:
    - Carência de dados;

