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Relationships between Mental Distress and Food Intake Parameters Using Exploratory Data Analysis

Kanishk Barhanpurkar
Binghamton University--SUNY

Saloumeh Sadeghzadeh
Binghamton University--SUNY

Lina Begdache
Binghamton University--SUNY

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Kanishk Barhanpurkar
Faculty: Prof. Lina Begdache & Prof. Saloumeh Sadeghzadeh

BINGHAMTON UNIVERSITY
STATE UNIVERSITY OF NEW YORK

Abstract

- Dietary intake plays an important role in the development of physical and mental health.
- Mapping of mental health parameters is still an area in need of further research.
- It is a strenuous task as it is widely dependent on a broad spectrum of attributes.
- The dataset is collected from a survey study on a group of 227 individuals.
- The mapping of the mental health and dietary intake parameters using Exploratory Data Analysis (EDA) and correlation techniques.

Introduction

- Vital nutrients support day-to-day activities and biological processes. The physical health parameters can be easily correlated with the type of dietary intake.

- Correlation is an analysis of the co-variation between two or more variables. The correlation helps to understand the relation between the large-scale and complex data-sets.

- A questionnaire that contains 26 parameters is used for collecting information related to dietary intake and mental health parameters.

- The mental distress score is calculated based on the notion of anxiety and depressive feelings; and categorized into three levels of mental distress (low, moderate and severe).

- The main aim for the research survey is to highlight the importance of correlation between the food-intake parameters and mental distress.

Acknowledgements

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Methods

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Demographics:	Male and Female; 18-60 years of age.
Number of Participants: & Attributes	22; 3347
Food Parameters	Breakfast (Yes/No), Whole-grain products, Dairy products, Caffeinated beverages, Fruits, Omega-3 rich-food, Starchy food, Meat consumption, Vegetables, Legumes, Processed Food, Fast Food Consumption, Fish-oil Supplement
Mental Health Parameters:	Kessler -6: Feeling Restless, Hopeless, Depressed, Worthless, Hard-effort
Statistical Analysis:	Pearson's Correlation Coefficient Categorical Association, Python, Numpy, Pandas, Matplotlib, Sweetviz, Seaborn

Results
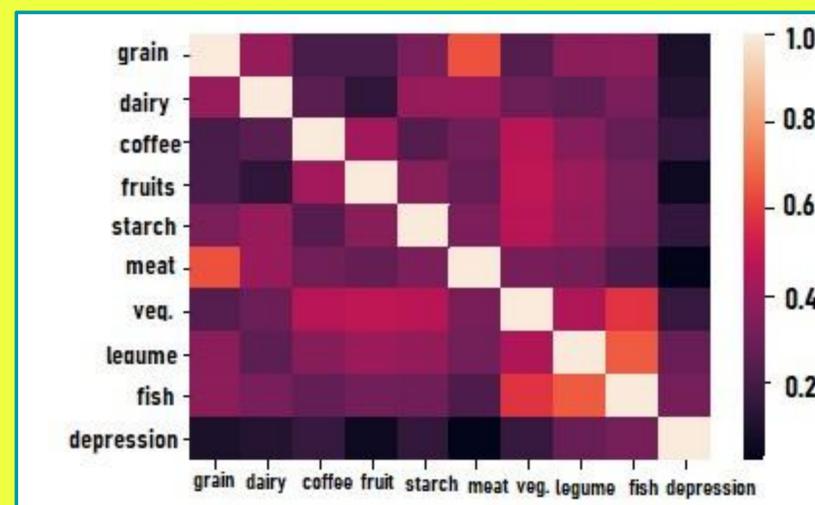
Figure 1: Heatmap for moderate mental distress and prominent food factors.
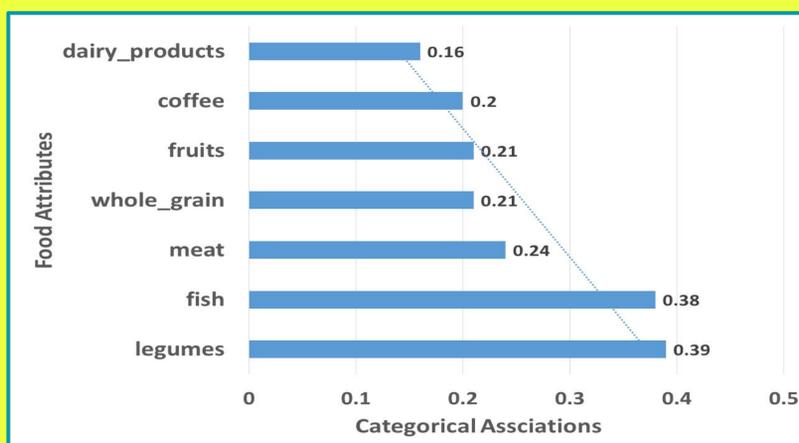

Figure 2: Categorical Association of food attributes for moderate mental distress

Discussion

- Our finding includes mapping of food parameters (consumption of different types of food products) and depression level for the group of people belongs to age group of 18-60.
- Mental distress can be categorized among three categories based on a total score: Low-scale (0-5), Medium-scale (6-10) and High-scale (11-23).
- The low positive correlation (0-0.2: black region) obtain from dairy products, meat products and fruits shows no absolute impact on mental health.
- However, the findings based on the positive correlation range between (0.3-0.5) may contains food factors including the coffee intake, starchy products, legumes and fish.
- The study result shows the consistent insights that coffee can be an prominent factor in elevating risk of mental distress (Navarro, A. M. et al., 2018).
- Additionally, the low positive correlation for the vegetables and fruits is unvarying with the (Grases, G. et al., 2019)

Conclusion

- In conclusion,
  - The food intake parameters can be mapped on mental health parameters using exploratory data analysis (EDA).
  - The correlation techniques are useful for the detection of depression based on the depression score.

- Furthermore, machine learning algorithms can be used for evaluating the accuracy of the hypothesis based on food intake attributes.

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