

Sentiment Analysis of User Reviews on the usage of Antidepressant Drugs (Prozac).

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Social Media Mining

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Spring 2023

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1. Introduction

Antidepressant medications are frequently used to treat a variety of mental health issues, including anxiety and depression. Very little is known about how patients feel about these medications and their experiences using them. Fluoxetine, sold under the brand name Prozac, is a type of medication known as a selective serotonin reuptake inhibitor (SSRIs). A variety of mental health conditions, such as depression, anxiety, obsessive-compulsive disorder (OCD), and bulimia, are frequently treated with SSRIs.

The National Center for Health Statistics reported that in 2019, 13.2% of adults aged 12 and older said they had used an antidepressant in the previous month. Fluoxetine (Prozac) was among the most prescribed antidepressants, along with sertraline (Zoloft), escitalopram (Lexapro), and duloxetine (Cymbalta).

The benefits and negative effects of Prozac can be better understood by reading user reviews on internet forum boards, social media websites, and healthcare portals. Many people who have used Prozac for mental health disorders share their experiences. These reviews can provide information on the possible negative effects of Prozac as well as how it might impact various people. Individuals may have different experiences with Prozac due to differences in factors such as age, gender, underlying medical conditions, and other medications they are taking.

This paper presents a sentiment analysis of user reviews of Prozac to gain insights into patients' perceptions and experiences. Sentiment analysis can be a useful tool for analyzing large amounts of user reviews efficiently. It is a technique used to extract subjective information from text by automatically identifying and categorizing opinions and emotions expressed within the text.

Keywords: Antidepressant drugs, sentiment analysis, user reviews, side effects, mental health.

2. Research question

This study will address the following research questions:

- How are the sentiments around the usage of the antidepressant drug Prozac?
- How are the sentiments distributed among different age groups and gender?

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3. Method

3.1 Data

To answer the research questions the data is collected from the user reviews posted on WebMD related to the drug Prozac, and the time frame for the data collected is past one year.

WebMD's drug reviews include information such as user ratings, side effects, and comments from people who have used the medication. Users can also rate the effectiveness of the medication and provide feedback on their overall experience with it.

I have searched for the reviews to only include those that were related to the usage of Prozac. After searching and collecting, I had a dataset of around 150 reviews covering all the age groups (19-24, 25-34, 35-44, 45-54, 55-64, 65-74), gender is gathered manually and stored in an excel file.

WebMD is a trusted source that provides health information, additionally it offers a forum for users to connect and share information with each other. It provides user reviews and ratings for prescription and over-the-counter medications. These reviews are intended to provide users with additional information and perspectives from other people who have used the medication. Hence, it is a good platform to collect appropriate data for this study.

3.2 Analysis

The data that was collected is divided into 7 columns in the codebook, including name, age, gender, post_date, overall_rating, comment and sentiment.

The sentiment column is tagged based on the reviews and is categorized into three categories - positive, neutral, and negative. After reading through each user review carefully and I have assigned sentiment column into categories based on the content of the comment and overall_rating through content analysis. In this process some user reviews were removed as the rating and content of the review do not complement and some ratings were given without the usage of the drug, such reviews were not considered.

Positive reviews typically report improvements in mood, decreased anxiety, and increased energy levels with some or no side effects. Negative reviews often mention side effects such as nausea, headaches, insomnia. Neutral reviews typically provide a balanced assessment of the drug, including its benefits and drawbacks.

The ratings greater than 3 are tagged as positive, lesser than 3 as negative, and ratings which are equal to 3 are considered as neutral review.

After coding the data based on the reviews, the results were analyzed to identify patterns and the effects of the drug.

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4. Results

Based on the analysis 59.4% of the reviews were positive, indicating that most patients had a favorable experience with Prozac. The most cited benefits of the drug were improvements in depression levels, reduction in anxiety and stress. 36.2% of the reviews were neutral, and 4.3% were negative.

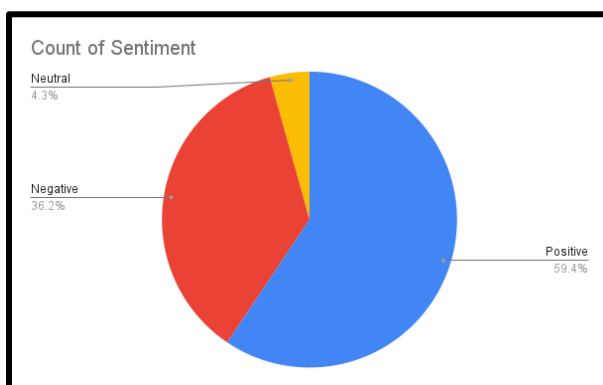


Fig 4.1 Total Count of Sentiment

Most of the reviews were given by people of age group between 19-34. The drug mostly had a positive effect on all age groups. However, the age groups 25-34 and 65-74 had equal positive and negative reviews.

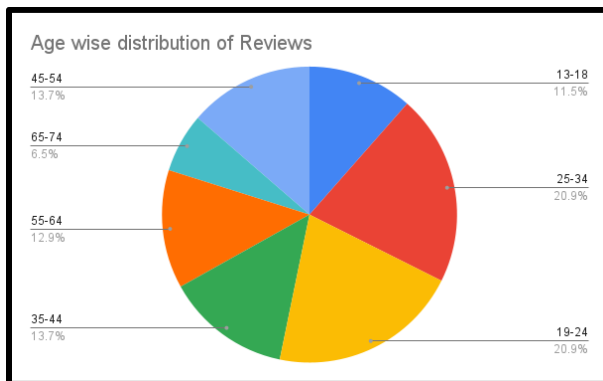


Fig 4.2 Age wise distribution of Reviews

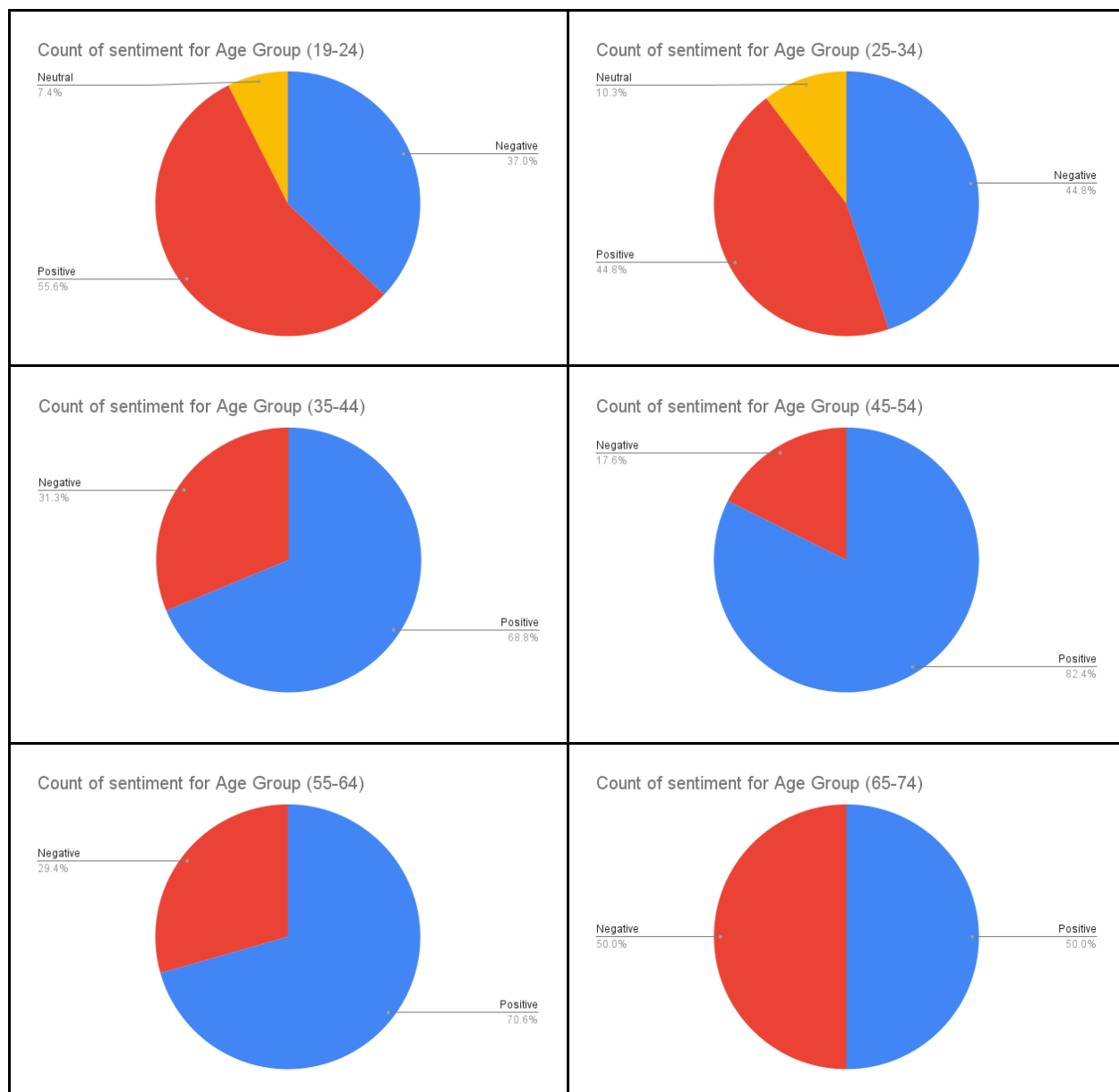


Fig 4.3 Count of sentiment for different age groups

Based on our data women had a better response to Prozac than men, with good improvement in symptoms of depression. 60.4% of women gave positive reviews for the drug, around 3% of neutral reviews were given by both men and women.

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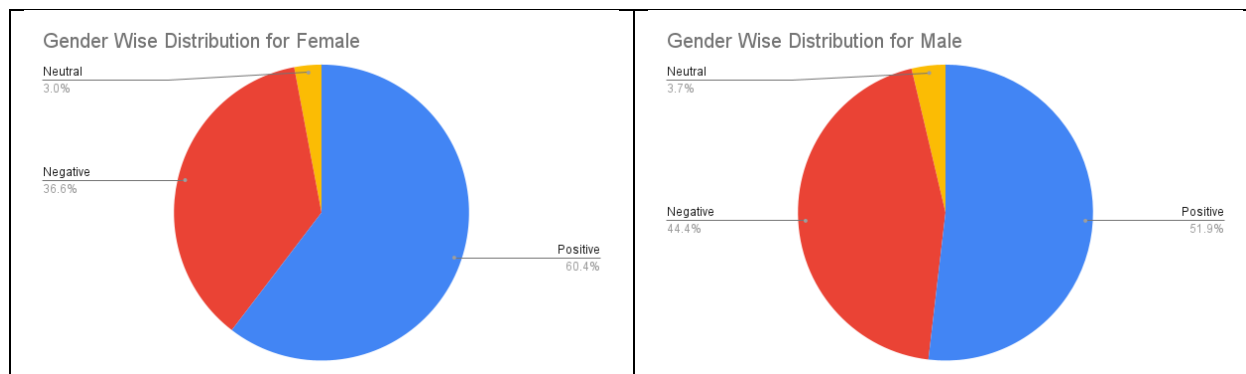


Fig 4.4 Gender wise distribution

5. Conclusion and Limitations

Our data indicates that while side effects are a serious concern, Prozac is typically well-liked by patients. These results underline how crucial it is to keep track of side effects experienced by Prozac patients, manage them, and offer assistance to those who do.

The study has a number of limitations. The data was first gathered through WebMD, an online drug review website, in which the users who write reviews may not be from a wider population. Furthermore, since the study relied on self-reported data, the accuracy of the data may be limited. In this study I have only looked at reviews of Prozac, thus its conclusions might not apply to other antidepressants.

6. References

- [1] Matthew T. Wiley a, Canghong Jin b,1, Vagelis Hristidis a, Kevin M. Esterling (2014). Pharmaceutical drugs chatter on Online Social Networks. *Journal of Biomedical Informatics* 49 (2014) 245–254.
- [2] C. Kaiser and F. Bodendorf, "Mining Patient Experiences on Web 2.0 - A Case Study in the Pharmaceutical Industry," in *SRII Global Conference (SRII)*, California, 2012, pp. 139-145.
- [3] <https://www.semanticscholar.org/paper/Mining-Patient-Experiences-on-Web-2.0-A-Case-Study-Kaiser-Bodendorf/9d51cb676410e5265de34fe5f3a192bfa15aa966>
- [4] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7437347/>
- [5] <https://arxiv.org/pdf/1510.05301.pdf>