Topic: Cyberbullying in Selangor, Malaysia

INTRODUCTION

Hello, my name is Ashley Sofia Alfaro, and I'm a rising sophomore at Chaminade University majoring in Computer Science.

According to a 2018 study, Malaysia has a ratio of 1.27 psychiatrists per 100,000 people. Additionally, the social stigma surrounding mental health results in only 20% of Malaysians with a mental illness who choose to access professional care. Since there are a range of factors that contribute to worsening mental health, my project focuses on cyberbullying, a prominent yet understudied problem in Malaysia, with the prevalence in Malaysian adolescents at 52%. A known outcome for cyberbullying victimization is depression,

RESEARCH QUESTION

Which led me to ask: How does cyberbullying impact depression among young adults in Malaysia?

METHODS

To help me answer that question, I analyzed a dataset from Mendeley Data that had 561 Malaysian university students take a scored survey regarding cyberbullying and depression. The dataset includes 4 categories for cyberbullying victimization which are Public Humiliation, Malice, Unwanted Contact, and Deception, and the depression levels range from mild to extremely severe.

Through Frontera's supercomputer at TACC, I used RStudio to visualize the relationship between cyberbullying and depression using violin plots and the k-means clustering algorithm.

RESULTS

Figure 1 is a violin plot presenting the total cyberbullying victimization scores, where the higher the score, the more instances of cyberbullying encountered. A violin plot shows the distribution of data, with wider parts indicating more data points and narrower parts indicating fewer. The maximum scores, as shown by the upper whisker, indicate that individuals with extremely severe depression have the highest maximum scores, whereas those with moderate depression have the lowest maximum scores. However, the outliers signify that there are individuals with moderate depression who have high victimization scores, which suggests that although extremely severe depression correlates with high levels of cyberbullying, this can also apply to individuals with lower levels of depression.

Figure 2 is another violin plot examining the scores across the four categories of cyberbullying. Individuals with extremely severe depression have higher scores in the Public Humiliation category in comparison to the other depression levels, suggesting that Public Humiliation might significantly worsen depression. However, considering the outliers, individuals with moderate depression have the highest scores in the remaining categories. Despite this, the wider density curve near 0 indicates that the overall scores are generally lower. In contrast, those with severe and extremely severe depression in the Malice category, and those with extremely severe depression in the Unwanted Contact category show a more

even distribution of scores. This suggests that individuals with higher levels of depression are regularly exposed to these types of cyberbullying.

To see the distribution of scores from a different angle, **Figure 3** uses k-means clustering to group individuals with similar cyberbullying scores together. As you can see, most points fall into clusters 1, 2, and 3, which have lower scores for Public Humiliation, contradicting the finding from Figure 2 that Public Humiliation has the most significant impact on depression. The clustering for Malice shows a more even distribution of scores compared to Public Humiliation, suggesting that the impact of cyberbullying varies by type. Meanwhile, the clustering patterns for Unwanted Contact and Deception are very similar. Individuals with high Public Humiliation scores exhibit a wide range of scores in the other categories, but the combination of Malice, Unwanted Contact, and Deception may be the most impactful, as these categories show clusters with consistently high scores.

CONCLUSION

To recap, my findings showed that those with depression, regardless of how severe or mild, can experience high instances of cyberbullying, but it varies among the different victimization categories. Although, as previously mentioned, the combination of Malice, Unwanted Contact, and Deception seemed to have had the most impact.

So, while cyberbullying can contribute to worsening depression, it is not the primary cause. This research also highlights the need to understand cyberbullying victimization, which can help improve mental health initiatives in Malaysia.

However, it's important to note that this study is limited to university students in the state of Selangor, Malaysia, and these findings don't represent other age groups and Malaysia as a whole.

For future research, I'd like to see if there is a relationship between screen time and the frequency of cyberbullying. Additionally, I aim to provide a broader perspective by comparing my findings with data from other countries.

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