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Understanding the association between alcohol use and neighborhood-level factors among sexual minority groups

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OBJECTIVES/GOALS: Sexual minority populations report a disproportionately high prevalence of alcohol use, often attributed to coping with bi/homonegativity and systemic inequities across various social domains. This study aims to explore alcohol use patterns and associated neighborhood and individual factors among sexual minority populations (SMPs) using data from the NIH All of US dataset. METHODS/STUDY POPULATION: Alcohol use was assessed using the AUDIT-C (Alcohol Use Disorders Identification Test—Consumption) scale across a sample of 9,454 gay, 15,284 bisexual, 5,267 lesbian, and 349,748 straight participants. The AUDIT-C measured hazardous alcohol use, and logistic regression models were employed to examine its association with neighborhood-level factors (e.g., socioeconomic status, alcohol outlet density) and individual-level factors (e.g., age, race/ethnicity, income, and education) among SMPs. Interaction terms assessed how these relationships varied by sexual orientation. Sensitivity analyses were conducted to assess the robustness of the findings, including stratified analyses by gender identity and the exclusion of extreme outliers in alcohol use reporting. RESULTS/ANTICIPATED RESULTS: Our analyses revealed that gay participants had the highest AUDIT-C scores (mean = 3.60, SD = 2.27), followed by bisexual (mean = 3.35, SD = 2.21), other SMPs (mean = 3.18, SD = 2.19), lesbian (mean = 3.04, SD = 2.08), and straight individuals (mean = 3.05, SD = 2.06). Alcohol use was positively associated with neighborhood disorder (β = 0.12, 95% CI = 0.07, 0.17), housing insecurity (β = 0.14, 95% CI = 0.03, 0.25), and male gender (β = 0.98, 95% CI = 0.96, 1.00). In contrast, neighborhood density (β = -0.11, 95% CI = -0.15, -0.07), food insecurity (β = -0.14, 95% CI = -0.20, -0.08), being Black, and identifying as bisexual were negatively associated with alcohol use. Sensitivity analyses determined no significant differences among specfic supgroups. DISCUSSION/SIGNIFICANCE OF IMPACT: This study highlights important differences in alcohol use across SMPs and emphasizes the influence of neighborhood-level stressors (e.g., disorder and housing insecurity). These findings underscore the need for addressing social and environmental determinants of alcohol use in SMPs to mitigate the negative impacts of alcohol consumption.

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Using a large language model to create lay summaries of clinical study descriptions

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OBJECTIVES/GOALS: We assessed the feasibility of using a large language model (LLM) to create lay language descriptions of study protocols for recruitment, which has the potential to improve accessibility and transparency of clinical studies and enable participants to make informed decisions. METHODS/STUDY POPULATION: All studies from a clinical research recruitment platform were included, which features human-written lay descriptions and titles for study recruitment. Corresponding protocol summaries in the IRB system were extracted and translated into lay language using a LLM (gpt-35-turbo-0613). A subset was used to develop prompt variations through an iterative process. Prompt strategies evaluated include chain-of-thought and few-shot prompting techniques. LLM-generated and human-written descriptions were compared for readability using Flesch–Kincaid and Simple Measure of Gobbledygook (SMOG) reading grade levels and information completeness using Word Movers' Distance (WMD). RESULTS/ANTICIPATED RESULTS: A total of 55 study descriptions were included – 10 were used to develop prompts and 45 were used for evaluation. The final LLM instructions included multistep prompts. The LLM was first instructed to produce a two- to three-sentence long description without using scientific jargon and included two pairs of examples. The LLM was then asked to shorten the description and finally to provide an engaging title. LLM-generated and human-written summaries were similar in length (median (IQR) 328 (278.5–360.5) vs. 342 (203–532.5) characters, respectively). LLM-generated summaries had lower Flesch-Kincaid grade level (5.15 vs. 8.28, p DISCUSSION/SIGNIFICANCE OF IMPACT: An LLM can be used to generate lay language summaries that are readable at a lower grade level while maintaining semantic similarity. This approach can be used to improve the drafting of summaries for recruitment, thereby improving accessibility to potential participants. Future work includes human evaluation and implementation into practice.

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Impact of social determinants of health on diabetes and obesity in the DMV (DC, Maryland, Virginia) area

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OBJECTIVES/GOALS: Both diabetes and obesity are major health issues in the USA. Though much focus is given on the impact of lifestyle modifications to control diabetes and obesity, more information needs to be established about the association of social determinants of health and them. This study explores these associations, focusing on the DMV area. METHODS/STUDY POPULATION: The data for this study were collected for 158 counties which cover two states Maryland and Virginia, and Washington DC from PolicyMap. PolicyMap is a geography information system (GIS) that aggregates different types of data from different sources for research purposes. County-level data on public health related to different SDoH like median age, and percentages proportions of different ethnicity (Hispanic or Latino), percentages of different race, and nativity (foreign born), gender (ratio of male to female), access to primary healthcare, social vulnerability index (SVI), and median household income was used in this study. Statistical methods like multiple regression, one way ANOVA, and Pearson's correlation coefficients were used to determine which factors are associated with these two conditions. RESULTS/ANTICIPATED RESULTS: For both diabetes prevalence and obesity, multiple linear regression model with backward elimination was used to select variables which associated with them. The backward elimination process selected the set of factors for which the adjusted R square was the highest. In both cases, median household income, median age of population, social vulnerability level, percentage of white population, and percentage of foreign-born population were found to be significant at 5% level of significant. Pearson's

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