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Analyzing Tobacco Use and Opioid Misuse Regarding Urban vs. Rural Areas

BACKGROUND: Smoking combustible cigarettes and misusing opioids causes innumerable health issues such as addiction, cancer, respiratory and cardiovascular disease, and worsened bone health. However, individuals who use cigarettes and opioids together (poly-use) have increased rates of morbidity and mortality. Current smokers are much more likely to misuse opioids than nonsmokers. In 2018, quit ratios for cigarette smoking were less than half for people who misused opioids compared to those who did not. Among individuals with substance use disorders, poly-use of cigarettes and opioids is higher, compared to co-use of other substances. Researchers have found that tobacco use, opioid prescription rates, and opioid overdose rates are higher in rural areas of the U.S.; however, a gap exists in understanding the overlap in tobacco use and opioid misuse, especially pertaining to differences between urban and rural areas. This study will analyze the relationships between geographic area and tobacco use, opioid misuse, and poly-use.

METHODS: We conducted a cross-sectional analysis of the 2023 National Survey on Drug Use and Health (NSDUH) data consisting of a nationally representative sample (N=56,705) of adults aged ≥18. The outcome measure was geographic area, classified as urban (large metropolitan regions with populations ≥1 million) or rural (small metropolitan or nonmetropolitan areas with populations <1 million). Independent variables included current smoking (i.e., smoked combustible cigarettes within the past 30 days) and opioid misusers (i.e., misused opioids, including illicitly made fentanyl (IMF), in the past year). We combined these variables to identify poly-users. Descriptive statistics and a chi-square test performed in Excel and SAS 9.4 describe the population and a multinomial logistic regression model examined the relationships between variables of interest while controlling covariates.

RESULTS: Among the sample (n=45,133), 13.4% were current cigarette smokers, 2.0% were opioid misusers, and 1.4% were poly-users. The Chi-square test showed variable significant differences among individuals based on user status, for all the demographic variables ($p<0.0001$). The multinomial logistic regression analysis indicated that, compared to urban residents, rural residents had significantly higher odds of tobacco use only *(OR = 1.166; CI: 1.094, 1.243)*. Rurality was associated with greater, but not statistically significant, odds of poly-use *(OR = 1.136, CI = 0.947, 1.363)*. There was no statistically significant difference between urban and rural residents for opioid use only *(odds ratio (OR) = 0.926; CI: 0.800, 1.071*).

CONCLUSION: This study found that rural residents have a greater risk for tobacco use and an elevated risk for poly-use. This suggests identifying integrated and tailored strategies to address tobacco and opioid use in rural communities. This is critical to addressing health inequities associated with substance use.