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ABSTRACT

Purpose: This study provides information on COVID-19 vaccination and attitudes among young adults with recent experiences of homelessness.

Methods: Participants (n = 134) from a clinical trial of a risk reduction program for youth experiencing homelessness in Los Angeles completed survey items about COVID-19 vaccinations between March and October 2021.

Results: A total of 29% of respondents were vaccinated, and 50% were not interested in getting vaccinated. Among the unvaccinated, 58% had not been offered the vaccine; furthermore, 38%–45% had strong distrust of the vaccine and were worried about its harmfulness. Vaccination status was generally unrelated to demographics, housing instability, service use, substance use, or mental health.

Discussion: Our data suggest that vaccination rates are lower among young adults with recent experiences of homelessness than those in the general US population. The results suggest a need for greater direct outreach that includes both offering the vaccine and addressing misconceptions about its safety to increase vaccination rates in this population.

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IMPLICATIONS AND CONTRIBUTIONS
Results suggest that young adults with experiences of homelessness in Los Angeles have lower COVID-19 vaccination rates than young adults in the general US population. Greater direct outreach to this vulnerable population, which includes both offering the vaccine and addressing misconceptions about its safety, is needed to increase vaccination rates.
Participants were enrolled in an evaluation of a substance use and sexual risk reduction intervention for 18- to 25-year-olds experiencing homelessness [8] and were initially recruited from drop-in centers serving homeless youth in Los Angeles County. Items on COVID-19 vaccination were added to the 24-month follow-up survey, and the analytic sample comprises the first 134 individuals (of 276; 68% male; 87% non-White) who completed the survey (between March and October 2021). Procedures were approved by the study’s Institutional Review Board.

Measures

The background variables included age, sex, race/ethnicity, and sexual orientation at baseline and educational attainment and housing instability at 24-month follow-up. Participants were asked how frequently they used formal services (e.g., at a drop-in center, other agency/organization) in the past 3 months for education, employment, housing, financial/legal issues, substance use, mental health, and HIV/sexually transmitted disease risk; from this, we created a dichotomous indicator of any service use.

Alcohol consequences in the past 30 days were assessed with 14 items from the Brief Young Adult Alcohol Consequences Screener [10]. Depression and anxiety symptoms were assessed, respectively, with the Patient Health Questionnaire—eight items [11] and General Anxiety Disorder—seven items [12].

COVID-19 symptoms. Participants indicated whether they had contracted COVID-19 (I have not had any symptoms; I have been tested and was told that I did not have it; I have had symptoms, but have not been tested for it, and A doctor or other health care professional told me that I had it).

Vaccination status, intentions, and attitudes. Participants indicated whether they had gotten the COVID-19 vaccine (yes, no) and rated how much they agreed/disagreed with the following two statements: "If the COVID-19 vaccine were available to me now [a year from now], I would get the vaccine (1 = strongly disagree to 4 = strongly agree). Participants were classified into four mutually exclusive groups: (1) vaccinated, (2) unvaccinated, but willing to get it now, (3) unvaccinated, but willing to get it later, and (4) unvaccinated and unwilling to get it. Those who were unvaccinated were asked whether they had been offered the COVID-19 vaccine (yes, no). Finally, participants rated how much they agreed or disagreed with the following two statements: "I would not trust the COVID-19 vaccine" and "I am worried that the COVID-19 vaccines could be harmful" (1 = strongly disagree to 4 = strongly agree).

Results

Of the 134 respondents, 131 reported on COVID-19 status: 78 (59.5%) had not experienced COVID-19 symptoms; 38 (29.0%) had been tested and told that they did not have COVID-19; 10 (7.6%) had symptoms, but were not tested for COVID-19, and 5 (3.8%) had been tested and told by a health care professional that they had COVID-19. Of the full sample, 128 reported on their vaccination status, with 91 (71.1%) indicating that they were unvaccinated. Of the full sample, 125 reported on whether they intended to get vaccinated: 37 (29.6%) were already vaccinated; 23 (18.4%) were unvaccinated, but willing to get it now; 3 (2.4%) were unvaccinated, but willing to get it later, and 62 (49.6%) were not interested in getting vaccinated. Of the 91 unvaccinated, 38 (42.2%) reported being offered the vaccine, 34 (38.2%) strongly agreed that they would not trust the COVID-19 vaccine, and 40 (44.9%) strongly agreed that they were worried that the COVID-19 vaccines could be harmful (Table 1). Logistic regression analysis was used to examine associations of vaccination status with each background variable (controlling for intervention condition). As shown in Table 2, LGBTQ young adults were more likely to have been vaccinated, odds ratio (95% confidence interval) = 3.09 (1.38–6.92), \( p = .006 \); however, vaccination status was not significantly associated with any other variable.

| Item                                                                 | Strongly disagree | Disagree | Agree | Strongly agree |
|---------------------------------------------------------------------|-------------------|---------|-------|---------------|
| A. If the vaccine were available to me now, I would get it          | 56.8%             | 17.1%   | 12.5% | 13.6%         |
| B. If the vaccine were available to me a year from now, I would get it | 50.6%             | 22.5%   | 10.1% | 16.8%         |
| C. I am worried that the COVID-19 vaccines could be harmful         | 21.4%             | 20.2%   | 20.2% | 38.2%         |
| D. I would not trust the COVID-19 vaccine                           | 20.2%             | 15.7%   | 19.1% | 44.9%         |

Note: N = 88 for item A and N = 89 for items B–D because of missing data.

Table 1
COVID-19 vaccine intentions and attitudes, among those who had not been vaccinated (N = 91)

| Variable                          | OR     | 95% CI  |
|-----------------------------------|--------|---------|
| Male (vs. female)                 | 0.85   | 0.38–1.91 |
| Race/ethnicity                    |        |         |
| Black (vs. White)                 | 0.71   | 0.21–2.41 |
| Hispanic (vs. White)              | 0.57   | 0.16–2.02 |
| Multiracial/other (vs. White)     | 0.43   | 0.10–1.80 |
| LGBTQ (vs. heterosexual/straight) | 3.09   | 1.38–6.92 |
| High school graduate (vs. not)    | 1.73   | 0.64–4.68 |
| Unstably housed in the past week (vs. not) | 0.81 | 0.37–1.77 |
| Formal service use in the past 3 months (vs. not) | 1.56 | 0.71–3.41 |
| Alcohol use disorder, past year (vs. not) | 0.73 | 0.29–1.81 |
| Alcohol consequences, past 30 days (range: 0–14) | 1.00 | 0.92–1.09 |
| Depression (range: 0–24)          | 0.99   | 0.92–1.04 |
| Anxiety (range: 0–21)             | 0.98   | 0.92–1.03 |

Note: All models control for intervention status; n = 126 for sexual orientation and n = 123 for unstably housed because of missing data. Probable substance use disorder was assessed with the Global Appraisal of Individual Needs—Short Screener (GAIN-SS). Alcohol consequences were measured with items from the Brief Young Adult Alcohol Consequences Screener (B-YAACQ). Depression was measured with the Patient Health Questionnaire—eight items (PHQ-8). Anxiety was measured with the General Anxiety Disorder—seven items (GAD-7). CI = confidence interval; OR = odds ratio.

Table 2
Results from logistic regression analyses examining associations of background characteristics with having received the COVID-19 vaccine (N = 128)
Discussion

Results suggest that young adults with experiences of homelessness in Los Angeles have low COVID-19 vaccination rates, lower than those of similarly aged people in the general US population [3]. Among the unvaccinated, young adults in our sample were more than twice as likely to report having no intention of getting vaccinated compared with young adults in the general population [3]. Additional research is needed to understand the factors contributing to the low vaccination rate. Vaccination status was generally not associated with demographic characteristics, use of formal services, or behavioral health problems (the exception being sexual orientation, with vaccination being three times more likely among those who identified as LGBTQ compared with their heterosexual/straight peers). However, two thirds of unvaccinated respondents indicated that they had not been offered the vaccine, which may be due to a number of factors, including a need for the health care system to more effectively engage with these individuals. In addition, 38%—45% of those who had not been vaccinated strongly believed that the vaccine could not be trusted or could be harmful. Results should be interpreted with caution, given they are based on self-report data from a small sample of youth in Los Angeles County who participated in a clinical trial. Nonetheless, these findings emphasize the need for greater direct outreach to this vulnerable population that includes both offering the vaccine and addressing misconceptions about its safety to increase vaccination rates.

Funding Sources

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References

[1] Centers for Disease Control and Prevention. Safety of COVID-19 vaccines. 2021. Available at: https://www.cdc.gov/coronavirus/2019-ncov/vaccines/safety/safety-of-vaccines.html. Accessed July 21, 2021.
[2] Diesel J, Sterrett N, Dasgupta S, et al. Vaccination coverage among adults – United States, December 14, 2020-May 22, 2021. MMWR Morb Mortal Wkly Rep 2021;70:922–7.
[3] Baack BN, Abad N, Yankey D, et al. COVID-19 Vaccination coverage and intent among adults aged 18–39 years - United States, March-May 2021. MMWR Morb Mortal Wkly Rep 2021;70:928–33.
[4] Henry M, de Sousa T, Roddley C, et al. The 2020 Annual homelessness Assessment report (AHAR) to Congress. Part 1: Point-in-time Estimates of homelessness. The U.S. Department of Housing and Urban Development. 2021. Available at: https://www.huduser.gov/portal/sites/default/files/pdf/2020-AHAR-Part-1.pdf. Accessed July 21, 2021.
[5] Perri M, Dosani N, Hwang S. COVID-19 and people experiencing homelessness: Challenges and mitigation strategies. Can Med Assoc J 2020;192:E716–9.
[6] Culhane D, Treglia D, Steif K, et al. Estimated emergency and observational/quarantine capacity need for the U.S. homeless population related to COVID19 exposure by county: Projected hospitalizations, intensive care units, and mortality. 2020. Available at: https://endhomelessness.org/wp-content/uploads/2020/03/COVID-paper_clean636pm.pdf. Accessed July 21, 2021.
[7] Kulik DM, Gaetz S, Crowe C, et al. Homeless youth’s overwhelming health burden: A review of the literature. Paediatr Child Health 2011;16:e43–7.
[8] Tucker JS, D’Amico EJ, Pedersen ER, et al. Study protocol for a group-based motivational interviewing brief intervention to reduce substance use and sexual risk behavior among young adults experiencing homelessness. Addict Sci Clin Pract 2020;15:26.
[9] Kahler CW, Strong DR, Read JP. Toward efficient and comprehensive measurement of the alcohol problems continuum in college students: The brief young adult alcohol consequences questionnaire. Alcohol Clin Exp Res 2005;29:1180–9.
[10] Dennis ML, Chan YF, Funk RR. Development and validation of the GAIN Short Screener (GSS) for internalizing, externalizing and substance use disorders and crime/violence problems among adolescents and adults. Am J Addict 2006;15:80–91.
[11] Kroenke K, Strine TW, Spitzer RL, et al. The PHQ-8 as a measure of current depression in the general population. J Affect Disord 2009;114:163–73.
[12] Spitzer RL, Kroenke K, Williams JBW, et al. A brief measure for assessing generalized anxiety disorder. Arch Intern Med 2006;166:1092–7.