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**Impact of COVID-19 on Women Living with HIV who are Survivors  
of Intimate Partner Violence**

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May 2023

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## **ABSTRACT**

**Background:** As the COVID-19 pandemic continues to evolve, there is a concern about elevated intimate partner violence (IPV) risk. Women living with HIV (WLWH) faced disproportionately high rates of IPV compared to women without HIV. The intersections of the co-occurring pandemics of COVID-19 and IPV present unique challenges to WLWH in different ways. Currently, we have limited evidence on the impact of COVID-19 on the experience of IPV among WLWH.

**Methods:** This is a cross-sectional analysis of COVID-19 impact using baseline data from an ongoing, prospective, micro-longitudinal cohort study on HIV care engagement among WLWH who have experienced lifetime IPV. We evaluated COVID-19 impact along key domains (health, day-to-day life, sexual behavior, substance use, HIV care, mental health, financial status, and having conflict with partners). We compared sociodemographic characteristics, psychiatric disorders, substance use characteristics, and COVID-19 impact domains by IPV exposure recency, using independent t-tests or Fisher's exact tests, and Pearson's chi-squared tests. We then built multiple linear regression models to investigate the association between IPV exposure and each of the different COVID-19 impact domains.

**Results:** Enrolled participants (n=84) comprised a group of relatively older women (mean 53.6y; SD=9.9), who were living with HIV for many years (mean 23.3y, SD=10), and all of whom had experienced lifetime IPV. Among 49 women who were currently partnered, 79.6% (n=39) reported ongoing IPV. There were no statistically significant differences between those experiencing ongoing IPV and those who were not (or not

partnered) in terms of demographic characteristics, substance use, mental health, or COVID-19 impact. In multivariate models, ongoing IPV exposure was not associated with any COVID-19 impact domain. Anxiety and depression, however, were associated with a range of COVID-19 impacts, including on health, mental health, HIV care, and having conflict with partners. Hispanic ethnicity was also associated with differences in COVID-19 impact on health. More severe cocaine and opioid use were also associated with significant COVID-19 impact on day-to-day life.

**Conclusions:** The public health emergency period affected WLWH in varied ways, but impacts were most profound for women experiencing concurrent psychiatric and substance use disorders. Findings have important implications for future interventions to improve women's health and social outcomes.

## **ACKNOWLEDGEMENT**

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## **IINTRODUCTION**

Intimate partner violence (IPV) is a serious public health problem worldwide, wherein 30% of women in a relationship report having experienced some form of IPV in their lifetime.(1) Women living with HIV (WLWH) face disproportionately high rates of IPV compared to women without HIV, where up to 55% of WLWH report exposure to IPV.(2)

Emerging data suggests that there was an increase in IPV during the COVID-19 pandemic.(3) The COVID-19 pandemic generated many challenges in people's daily lives, including managing fear of infection, changes in lifestyle, increased time with a partner in isolation from people outside the household, exacerbations of pre-existing mental health problems, and economic crises.(4) These factors may increase stress in an already strained relationship, precipitating IPV. According to one report, reported domestic violence cases increased by 26-33% globally in 2020.(5) In China, police reports of IPV were three times greater during lockdown than before quarantine regulations during the COVID-19 pandemic.(6) Similarly, reports of IPV in France increased by 30% since March 17, 2020, and 25% in Argentina since March 20, 2020.(7) In the United States, 'stay home' regulations were associated with an 8% increase in reported domestic violence incidents during the 2020 pandemic.(5) However, these data were mainly based on official crime or hotline data, which is limited because many women who experience IPV do not report it; and fewer calls for service may reflect either a lower prevalence of violence or an inability to access services during lockdown.(8) To date, few studies have examined IPV exposure during the COVID-19

pandemic using self-reported data, or have directly examined the prevalence, severity, and correlates of IPV during the period of the COVID-19 pandemic using validated behavioral measures.(9-13)

Women living with HIV (WLWH) likely faced additional IPV- and health-related stressors during the COVID-19 pandemic.(14) Even prior to the period, WLWH experienced IPV at a rate 12-32 times higher than women nationally.(2, 15) IPV can directly and indirectly harm women's physical, sexual, psychological, and reproductive health,(16) and, for WLWH, IPV can also be associated with reduced engagement in HIV care and antiretroviral adherence, leading to lower likelihood of HIV viral suppression. (15, 17, 18). In the height of pandemic-related restrictions in many U.S. settings, HIV healthcare transitioned to virtual or telephone-based visits.(19) As a result, WLWH experiencing IPV may have been less able to connect to the community's critical social and protective networks.(14, 19)

Understanding the intersections of the co-occurring pandemics of COVID-19 and IPV are critical to the health and well-being of WLWH.(14) Both COVID-19 and IPV present unique challenges to WLWH and can potentially be associated with worse health outcomes for this population. At present, we have limited evidence of the impact of COVID-19 on the experience of IPV among WLWH. The purpose of this study was to fill an important data gap in our understanding about IPV exposure among WLWH during the COVID-19 pandemic, using self-reported data with validated behavioral measures. Our hypothesis was that COVID-19 impacted WLWH differently, based on the recency and type of IPV exposure. This analysis is needed to disentangle how the



context of the COVID-19 public health emergency influenced the health and social outcomes of WLWH.

## **METHODS**

This is a cross-sectional secondary data analysis of COVID-19 impact and experiences of IPV among WLWH using baseline data from an ongoing prospective micro-longitudinal study. The purpose of the parent study is to understand how exposure to IPV affects women's day-to-day experience of living with HIV, including engagement in HIV care, adherence to antiretroviral therapy (ART), and ultimately HIV viral suppression. Study enrollment is ongoing and reporting on primary outcomes is forthcoming once data collection is complete.

### ***Study sample***

Participants are being recruited from local HIV care clinics and other community-based organizations (CBOs) that serve WLWH (e.g., AIDS service organizations, community health centers, peer support services, and case management agencies). Promotional materials are posted inside CBO lobbies and in clinical rooms, and on social media through Meta. Multiple outreach methods are utilized: 1) research assistants are onsite at HIV clinics weekly to meet with potentially interested patients and screen for eligibility; 2) WLWH can self-refer using a QR code to a secure Qualtrics link that is printed on posted promotional material, or contact the study team directly through a dedicated study phone or email; 3) healthcare providers can directly refer WLWH who express interest in learning more about the study through a Best Practices

Advisory in the electronic health record; or 4) enrolled participants can refer their peers using an incentivized modified respondent driven sampling strategy. All referral strategies collect only basic contact information and preferred method of contact, with the priority of protecting participant safety and privacy. Trained research assistants screen referred individuals for the following criteria: adults (18 years and above) who identify as female (i.e., cis- or trans), are living with diagnosed HIV, and reported any lifetime exposure to physical, sexual, and/or psychological violence in an intimate relationship. Women are ineligible to participate if they have experienced significant psychiatric instability based on self-reported inpatient psychiatric hospitalization in the past 6 months, are not comfortable conversing in English or Spanish, or have a legal conservator of person. Individuals who meet all eligibility criteria are offered enrollment and undergo written informed consent procedures. All procedures are approved by Yale University Human Investigations Committee (IRB).

### ***Study procedures***

Following enrollment, all participants complete a baseline study interview with a trained research assistant in a private research office. The interview takes approximately 3 hours and participants are compensated \$50 for their time. All study interview data are entered by the research assistant into the electronic data collection software REDCap. Participants engage in subsequent interviews and 32 days of twice daily data reporting, but the current analysis used only baseline data from the first 84 participants enrolled. All baseline data was extracted from REDCap, deidentified, and exported into csv files for cleaning and analysis.

## ***Measures***

**COVID-19 impact:** The primary outcome for this analysis is COVID-19 impact. COVID-19 impact is assessed across different domains, including health, day-to-day life, sexual behaviors, substance use, HIV care, mental health, financial status, and having conflict with a partner, using a brief standardized survey that we developed and have used to describe COVID-19 impact in other populations.(20-22) Participants are asked, “How much has COVID-19 directly affected...” for each domain, responding on a Likert scale of 1 (not at all) to 5 (extremely).

**IPV exposure:** We assess recency of IPV exposure for all enrolled participants, regardless of whether they were partnered at the time of the baseline interview. The primary explanatory variable of interest is type and recency of IPV exposure. Type of current IPV exposure is only assessed for women who were partnered in the 30 days prior to study enrollment.

Physical IPV is measured with the Revised Conflict Tactics Scale-2 (CTS-2) Physical Aggression subscale, which assesses physical assault ( $\alpha=.86$ ), injury ( $\alpha=.96$ ), and negotiation ( $\alpha=.86$ ) in an intimate relationship across 12 items.(23) Response options referring to the past 30 days are: 0=*Never*; 1=*once*; 2=*twice*; 3=*3-5 times*; 4=*6-10 times*; 5=*11-20 times*; 6=*more than 20 times*; 7=*not in those 30 days, but it happened before in our relationship*. Variables are transformed using standardized syntax and categorized into type of physical IPV victimization, frequency and severity.(24)

Sexual IPV is measured by the Sexual Experiences Survey (SES), using the 10-items that classify and measure degrees of sexual victimization ( $\alpha=.74$  for women).(25, 26) Variables were transformed using standardized syntax to calculate any sexual violence exposure in one's lifetime.(26) Bidirectional items are not asked for the CTS and SES (i.e., only items about participant's experiences of IPV with current partner are included. We do not ask about bidirectional IPV).

Psychological IPV is measured using Psychological Maltreatment of Women Inventory - Short Version (PMWI-S), a 14-item instrument designed to assess the level of psychological abuse of women by their intimate male partners including subscales for dominance/isolation ( $\alpha=.88$ ) and emotional/verbal ( $\alpha=.92$ ) abuse.(27) Participants are asked how frequently they have experienced these things in the past 30 days; response options are: *1=Never; 2=Rarely; 3=Occasionally; 4=Frequently; 5=Very frequently*. The total PMWI score ranges 14-70 and each of the type sub-scores range 7-35, with higher scores indicating higher severity of psychological abuse.

In terms of IPV exposure recency, we use the Past Abusive Relationships (PAR) instrument that measures cumulative interpersonal trauma exposure and any IPV exposure with the current partner, which we have previously adapted from the CTS-2.(28, 29) Participants who are currently in a relationship or were in a relationship in the 30 days prior to the baseline interview are asked if they have experienced minor physical, severe physical, sexual, psychological, or monitoring violence with that partner, using the same response options as for the PMWI-S as above. Current IPV

exposure is defined as >1 on any of these 5 items; no current IPV exposure (i.e., remote lifetime IPV exposure only) is defined as 1 on all 5 items or not currently partnered.

**Sociodemographic and health characteristics:** We assess participant age, gender identity, ethnicity/race, sexual orientation, education level, housing, employment, income level, relationship status, basic sociodemographic characteristics of their current partners, health insurance, years since HIV diagnosis, and usual frequency of visiting an HIV care provider.

**Psychiatric disorders:** We assess for depression ( $\alpha=.85$ ) using the Center for Epidemiological Studies Depression Scale (CES-D).(30) Scores range 0-60, with higher scores indicating greater severity of depressive symptoms, and dichotomized at <16 vs.  $\geq 16$ , with the latter indicating clinically significant depressive symptoms or possible depression. We assess for anxiety ( $\alpha=.85$ ) using the Generalized Anxiety Disorder (GAD-7) instrument, which consists of 7 items.(31) Each of the 7 items is scored 0-3, and the total score ranges 0-21; scores are dichotomized at <10 vs.  $\geq 10$ , with the latter indicating generalized anxiety disorder. We assess PTSD symptoms ( $\alpha=.95$ ) severity using the Posttraumatic Diagnostic Scale for DSM-5 (PDS-5),(32) across 4 domains of PTSD: 1) re-experiencing; 2) avoidance; 3) negative alterations in cognition and mood; and 4) hyper-arousal. Each of the 20 items is scored from 0-4, and the PDS-5 score ranges from 0-80. Scores between 0-27 reflect no diagnosis of PTSD, and scores 28-80 reflect probable diagnosis of PTSD.

**Substance use:** We assess hazardous alcohol use ( $\alpha=.81$ ) with the Alcohol Use Disorders Identification Test (AUDIT).(33) Scores are dichotomized at  $<8$  vs.  $\geq 8$ , with the latter indicating hazardous drinking.(34) We use the NIDA-Modified ASSIST to assess use of illicit drugs or prescription drugs for “non-medical reasons”, including cannabis ( $\alpha=.85$ ), cocaine ( $\alpha=.91$ ), prescription stimulants ( $k=.74$ ), methamphetamine, inhalants, sedatives ( $\alpha=.87$ ), hallucinogens, “street opioids”, and prescription opioids ( $\alpha=.85$ ).(35) “Non-medical reasons” for substance use are defined as *taking medications for reasons or in doses other than prescribed to you*. For each substance, Substance Involvement (SI) scores are summed and used to determine an individual’s risk level of illicit or nonmedical prescription drug use. SI scores 0-3 are categorized as lower risk; 4-26 as moderate risk, and scores  $\geq 27$  suggest high risk drug use; levels are used to identify appropriate interventions. Participants are also asked about the use of medications for the treatment of opioid use disorder.

### ***Statistical analysis***

We carried out descriptive statistics to characterize the study sample. Continuous measures are presented as means with standard deviations or medians with interquartile ranges (IQR) if not normally distributed, and categorical measures as frequencies with proportions. To evaluate how the COVID-19 pandemic impacted women differently based on recency of IPV, we compared participants experiencing current/ongoing IPV to participants not experiencing current/ongoing IPV (remote IPV only) in terms of sociodemographic, psychiatric disorder, and substance use characteristics, using independent t-test or Fisher’s exact test for continuous variables, and Pearson's chi-

squared test for categorical variables. Next, we explored associations between recency of IPV exposure and different types of COVID-19 impact (health, day-to-day life, sexual behaviors, HIV care engagement, mental health, and having conflict with a partner). We did not build separate models for substance use or financial/economic impact COVID-19 impact domains because most women reported no impact of COVID-19 in terms of these factors, so there was insufficient variation to allow for generation of meaningful models. Otherwise, we conducted multiple linear regression analyses for each COVID-19 impact scale. The primary explanatory variable of interest was current IPV; other included explanatory variables were presence of psychiatric disorder factors and substance use. We also included sociodemographic variables (age, race, ethnicity, years of education, and employment status) as potential covariates. We developed full models of COVID-19 impact that included current IPV exposure, age, race, ethnicity, years of education, employment status, PTSD, anxiety, depression, and substance use (alcohol, cannabis, cocaine, opioids). Only variables with p-value <0.2 in the full model are included in the reduced model. If co-linearity was plausible and supported by cross-tabulation of the data, only the variable that was more strongly associated with COVID-19 impact was retained in multivariable models. Statistical significance was defined as a p-value <0.05. All analyses were performed using SAS (SAS 9.4, SAS Institute, Inc., Cary, NC).

## **RESULTS**

### ***Baseline characteristics by IPV exposure recency***

Eighty-four women (including 79 cis- and 5 trans-gender women) were enrolled and included in this analysis. As shown in [Table 1](#), overall, participants ranged from 23 to 75 years of age, with a mean of 53.6 (SD=9.9) years. The sample was racially/ethnically diverse with more than two-thirds (69.1%) identifying as Black/African American and 22.6% identifying as Hispanic/Latina. Most participants had a high school education (with 11.8 mean years of formal education; SD=1.9) and experienced unemployment (84.5%). Participants had been living with diagnosed HIV for a mean 23.3 years (SD=10).

Psychiatric disorders were highly prevalent: 31.0% (n=26) met the threshold for probable PTSD diagnosis, 27.4% (n=23) screened positive for generalized anxiety, and over half (52.4%; n=44) had clinically significant depression. Substance use was also common, including 14% (n=12) with hazardous drinking. Most (73.8%) participants reported cannabis use and half (50%) had moderately risky cannabis use. Among the participants who used cocaine (n=58), over half were at moderately or high risky cocaine use. Of the participants who used street opioids (n=24), nearly 80% had moderately risky opioid use. Additionally, 16 participants reported the use of prescription opioids and over half of them (56.3%) had moderately risky use of prescription opioids.

Given the study inclusion criteria, all WLWH included in the sample experienced some form of lifetime IPV, and of the 49 (58.3%) women currently in a relationship, 39 (79.5%) experienced some form of ongoing IPV. As shown in [Table 1](#), there were no significant differences between those experiencing ongoing IPV (n=39) and those



not experiencing ongoing IPV or not partnered (n=10 and n=35, respectively) in terms of any sociodemographic characteristics, psychiatric disorders, or substance use.

**Table 1:** Baseline socio-demographic characteristics of WLWH (N = 84)

| Characteristic                        | N (%)         | Ongoing IPV experience |               | P-value (DF for the test) |
|---------------------------------------|---------------|------------------------|---------------|---------------------------|
|                                       |               | Yes (N=39)             | No (N=45)     |                           |
| Age                                   |               |                        |               | 0.176                     |
| Mean ± SD                             | 53.58 ± 9.91  | 52.00 ± 9.54           | 54.95 ± 10.13 | (DF = 82)                 |
| Identify as transgender               |               |                        |               | 0.659                     |
| No                                    | 79 (94.05)    | 36 (92.31)             | 43 (95.56)    | (DF=1)                    |
| Yes                                   | 5 (5.95)      | 3 (7.69)               | 2 (4.44)      |                           |
| Ethnicity                             |               |                        |               | 0.097                     |
| Non-Hispanic or Latina                | 65 (77.38)    | 27 (69.23)             | 38 (84.44)    | (DF = 1)                  |
| Hispanic or Latina                    | 19 (22.62)    | 12 (30.77)             | 7 (15.56)     |                           |
| Racial background                     |               |                        |               | 0.847                     |
| Black/African American                | 56 (69.05)    | 28 (71.79)             | 30 (66.67)    | (DF = 2)                  |
| White/Caucasian                       | 15 (17.86)    | 6 (15.38)              | 9 (20.00)     |                           |
| Other                                 | 11 (13.10)    | 5 (12.82)              | 6 (13.33)     |                           |
| Years of education                    |               |                        |               | 0.103                     |
| Mean ± SD                             | 11.79 ± 1.88  | 11.41 ± 2.34           | 12.11 ± 1.32  | (DF = 58.04)              |
| Employment status                     |               |                        |               | 0.218                     |
| Employed                              | 13 (15.48)    | 4 (10.26)              | 9 (20.00)     | (DF = 1)                  |
| Unemployed                            | 71 (84.52)    | 35 (89.74)             | 36 (80.00)    |                           |
| In a relationship                     |               |                        |               | <0.001                    |
| Yes                                   | 49 (58.33)    | 39 (100)               | 10 (22.22)    | (DF = 1)                  |
| No                                    | 35 (41.67)    | 0                      | 35 (77.78)    |                           |
| Years of living with diagnosed HIV    |               |                        |               | 0.694                     |
| Mean ± SD                             | 23.29 ± 10.00 | 22.82 ± 10.64          | 23.69 ± 9.52  | (DF = 82)                 |
| PTSD                                  |               |                        |               | 0.127                     |
| Probable PTSD diagnosis               | 26 (30.95)    | 16 (42.11)             | 10 (25.64)    | (DF = 1)                  |
| No probable PTSD diagnosis            | 51 (60.71)    | 22 (57.89)             | 29 (74.36)    |                           |
| Missing                               | 7 (8.33)      |                        |               |                           |
| Anxiety Screen                        |               |                        |               | 0.411                     |
| Generalized anxiety                   | 23 (27.38)    | 13 (34.21)             | 10 (25.64)    | (DF = 1)                  |
| No generalized anxiety                | 54 (64.29)    | 25 (65.79)             | 29 (74.36)    |                           |
| Missing                               | 7 (8.33)      |                        |               |                           |
| Depression Screen                     |               |                        |               | 1.00                      |
| Clinically significant depression     | 44 (52.38)    | 22 (57.89)             | 22 (57.89)    | (DF = 1)                  |
| Not clinically significant depression | 32 (38.10)    | 16 (42.11)             | 16 (42.11)    |                           |
| Missing                               | 8 (9.52)      |                        |               |                           |

|                          |            |            |            |                   |
|--------------------------|------------|------------|------------|-------------------|
| Alcohol Use              |            |            |            | 0.133<br>(DF = 1) |
| Hazardous drinking       | 12 (14.29) | 10 (47.62) | 2 (16.67)  |                   |
| Non-hazardous drinking   | 21 (25.00) | 11 (52.38) | 10 (83.33) |                   |
| Missing                  | 51 (60.71) |            |            |                   |
| Cannabis                 | N = 62     | N = 32     | N = 30     | 0.611<br>(DF = 1) |
| Lower risk               | 31 (50.0)  | 15 (46.88) | 16 (53.33) |                   |
| Moderate risk            | 31 (50.0)  | 17 (53.13) | 14 (56.67) |                   |
| Cocaine                  | N = 58     | N = 31     | N = 27     | 0.709<br>(DF = 2) |
| Lower risk               | 21 (36.21) | 10 (32.26) | 11 (40.74) |                   |
| Moderate risk            | 33 (56.9)  | 18 (58.06) | 15 (55.56) |                   |
| High risk                | 4 (6.90)   | 3 (9.68)   | 1 (3.7)    |                   |
| Non-prescription opioids | N = 24     | N = 16     | N = 8      | 0.726<br>(DF = 2) |
| Lower risk               | 4 (16.67)  | 2 (12.50)  | 2 (25.0)   |                   |
| Moderate risk            | 19 (79.17) | 13 (81.25) | 6 (75.0)   |                   |
| High risk                | 1 (4.17)   | 1 (6.25)   | 0          |                   |

### *Current IPV exposure type and severity*

Among the 49 currently partnered participants, as shown in [Table 2](#), most (95.9%) used negotiation to deal with conflicts, including emotional negotiation (95.9%), and cognitive negotiation (93.9%). Almost half of (44.9%) experienced physical assault, including minor physical assault (42.9%), and severe physical assault (28.6%). Fourteen (28.6%) were injured during conflicts with partners, 26.5% (n=13) of whom experienced a minor injury, and 14.3% (n=7) experienced a severe injury.

**Table 2.** Conflict Tactics Scales

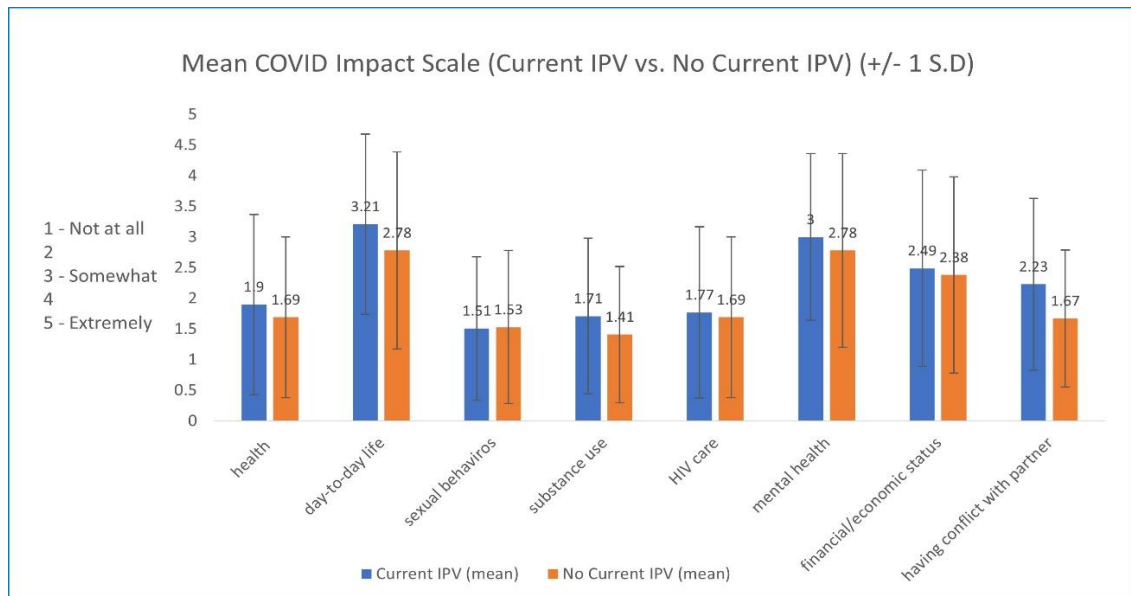
| <b>Victimization - Negotiation Scale</b> | <b>N (%)</b> |
|--|--------------|
| Total                                    |              |
| One or more times                        | 47 (95.92)   |
| Never                                    | 1 (2.04)     |
| Missing                                  | 1 (2.04)     |
| Emotional                                |              |
| One or more times                        | 47 (95.92)   |
| Never                                    | 1 (2.04)     |
| Missing                                  | 1 (2.04)     |
| Cognitive                                |              |
| One or more times                        | 46 (93.88)   |

|                               |            |
|-------------------------------|------------|
| Never                         | 2 (4.08)   |
| Missing                       | 1 (2.04)   |
| <b>Physical Assault Scale</b> |            |
| Total                         |            |
| No                            | 26 (53.06) |
| Yes                           | 22 (44.90) |
| Missing                       | 1 (2.04)   |
| Minor                         |            |
| No                            | 27 (55.10) |
| Yes                           | 21 (42.86) |
| Missing                       | 1 (2.04)   |
| Severe                        |            |
| No                            | 34 (69.39) |
| Yes                           | 14 (28.57) |
| Missing                       | 1 (2.04)   |
| <b>Injury scale</b>           |            |
| Total                         |            |
| No                            | 34 (69.39) |
| Yes                           | 14 (28.57) |
| Missing                       | 1 (2.04)   |
| Minor                         |            |
| No                            | 35 (71.43) |
| Yes                           | 13 (26.53) |
| Missing                       | 1 (2.04)   |
| Severe                        |            |
| No                            | 41 (83.67) |
| Yes                           | 7 (14.29)  |
| Missing                       | 1 (2.04)   |

***Types of COVID-19 Impact***

As shown in Figure 1, COVID-19 has the most impact on the mental health and the least impact on sexual behaviors. Overall, the COVID-19 impact scales in those experiencing ongoing IPV were higher than those who were not experiencing ongoing IPV, though the differences were not statistically significant in terms of any domain.

**Figure 1.** Mean COVID-19 Impact Scale (Current IPV vs. No Current IPV)



Next, We turned to modeling each of the COVID-19 impact domains. Contrary to the original hypothesis, after controlling for other key demographic, substance use, and psychiatric factors in multivariable models, I found that the ongoing IPV exposure was not significantly associated with any of the COVID-19 impact domains. However, there are other additional factors driving the different types of COVID-19 impact.

### COVID-19 Impact on Health

In multivariable models, ethnicity, anxiety, and depression were each significantly associated with COVID-19 impact on health domain (Table 3). Women who were Hispanic ethnicity reported a greater impact of COVID-19 on their health than women who were not Hispanic ethnicity ( $p=0.016$ ). Women who met the threshold for anxiety reported a lower impact of COVID-19 on their health than women who did not meet the threshold for anxiety ( $p=0.081$ ). Compared to women without clinically

significant depression, WLWH with clinically significant depression reported a greater impact of COVID-19 on health ( $p=0.003$ ).

**Table 3:** Factors associated with COVID-impact on health

| Characteristic | Full Model (N=84) |         | Reduced Model (N=84) |         |
|----------------|-------------------|---------|----------------------|---------|
|                | Beta (SE)         | p-value | Beta (SE)            | p-value |
| Ethnicity      |                   |         |                      |         |
| Non-Hispanic   | Reference         |         | Reference            |         |
| Hispanic       | 0.930 (0.500)     | 0.067   | 0.838(0.342)         | 0.016   |
| Anxiety        |                   |         |                      |         |
| No anxiety     | Reference         |         | Reference            |         |
| anxiety        | -0.675(0.451)     | 0.139   | -0.676 (0.382)       | 0.081   |
| Depression     |                   |         |                      |         |
| No depression  | Reference         |         | Reference            |         |
| depression     | 1.102 (0.397)     | 0.007   | 1.032 (0.333)        | 0.003   |

### COVID-19 Impact on Day-to-day Life

As shown in [Table 4](#), in the full reduced models, the use of cocaine, street opioids, and prescription opioids were significantly associated with COVID-19 impact on day-to-day life. Compared to women with lower risk cocaine use, WLWH with moderate/high risk cocaine use reported lower impact of COVID-19 on day-to-day life ( $p=0.160$ ). Women with moderately/high risky street opioids ( $p=0.111$ ) and prescription opioids ( $p=0.068$ ) experienced a greater COVID-related impact on their day-to-day life than women who were at lower risk.

**Table 4.** Factors associated with COVID-impact on day-to-day life

| Characteristic     | Full Model (N=84) |         | Reduced Model (N=84) |         |
|--------------------|-------------------|---------|----------------------|---------|
|                    | Beta (SE)         | p-value | Beta (SE)            | p-value |
| Cocaine            |                   |         |                      |         |
| Lower risk         | Reference         |         | Reference            |         |
| Moderate/high risk | -0.876 (0.452)    | 0.057   | -0.575 (0.406)       | 0.160   |

|                      |               |       |               |       |
|----------------------|---------------|-------|---------------|-------|
| Street opioids       |               |       |               |       |
| Lower risk           | Reference     |       | Reference     |       |
| Moderate/high risk   | 1.072 (0.579) | 0.068 | 0.795 (0.494) | 0.111 |
| prescription opioids |               |       |               |       |
| low risk             | Reference     |       | Reference     |       |
| moderate/high risk   | 1.475 (0.651) | 0.032 | 1.031 (0.557) | 0.068 |

### COVID-19 Impact on Sexual Behavior

As shown in [Table 5](#), COVID-19 impact on sexual behavior was associated with employment status ( $p=0.174$ ). WLWH who were employed were less impacted by COVID-19 in terms of their sexual behaviors than those who were unemployed.

**Table 5.** Factor associated with COVID-impact on sexual behavior

| Characteristic | Full Model (N=84) |         | Reduced Model (N=84) |         |
|----------------|-------------------|---------|----------------------|---------|
|                | Beta (SE)         | p-value | Beta (SE)            | p-value |
| Employment     |                   |         |                      |         |
| Unemployed     | Reference         |         | Reference            |         |
| Employed       | -0.436 (0.428)    | 0.313   | -0.496(0.362)        | 0.174   |

### COVID-19 Impact on HIV Care

Anxiety, cocaine use, and street opioid use were significantly associated with COVID-19 impact on HIV care ([Table 6](#)). Women who met the threshold for anxiety reported a greater impact of COVID-19 on their HIV care than women who did not ( $p=0.051$ ). Women with moderate/high risky cocaine use experienced lower impact of COVID-19 on HIV care, compared to women with less risky cocaine use. Among WLWH using street opioids, those with moderate/high risk use reported greater impact of COVID-19 HIV care than those with lower risk opioid use.

**Table 6.** factors associated with COVID-impact on HIV care

| Characteristic     | Full Model (N=84) |         | Reduced Model (N=84) |         |
|--------------------|-------------------|---------|----------------------|---------|
|                    | Beta (SE)         | p-value | Beta (SE)            | p-value |
| Years of Education | 0.119 (0.089)     | 0.182   | 0.096 (0.079)        | 0.226   |
| Anxiety            |                   |         |                      |         |
| No anxiety         | Reference         |         | Reference            |         |
| anxiety            | 0.900(0.472)      | 0.061   | 0.649(0.328)         | 0.051   |
| Cocaine            |                   |         |                      |         |
| Lower risk         | Reference         |         | Reference            |         |
| Moderate/high risk | -0.613(0.402)     | 0.132   | -0.467 (0.355)       | 0.192   |
| Street opioids     |                   |         |                      |         |
| Lower risk         | Reference         |         | Reference            |         |
| Moderate/high risk | 0.694 (0.515)     | 0.182   | 0.651 (0.426)        | 0.130   |

### COVID-19 Impact on Mental Health

COVID-19 impact on mental health was significantly associated with employment status, PTSD, and depression (Table 7). WLWH who were employed were more likely to report greater impact on the mental health than unemployed women in the analysis. WLWH who met the threshold for PTSD (p=0.082) and depression (p=0.032) were more likely to report that COVID-19 affected their mental health than those who were not meet the threshold.

**Table 7.** factors associated with COVID-impact on mental health

| Characteristic | Full Model (N=84) |         | Reduced Model (N=84) |         |
|----------------|-------------------|---------|----------------------|---------|
|                | Beta (SE)         | p-value | Beta (SE)            | p-value |
| Employment     |                   |         |                      |         |
| Not employed   | Reference         |         | Reference            |         |
| Employed       | 0.347 (0.484)     | 0.476   | 0.549 (0.412)        | 0.186   |
| PTSD           |                   |         |                      |         |
| No PTSD        | Reference         |         | Reference            |         |
| PTSD           | 0.456 (0.456)     | 0.321   | 0.647 (0.367)        | 0.082   |
| Depression     |                   |         |                      |         |
| No depression  | Reference         |         | Reference            |         |
| depression     | 0.480 (0.437)     | 0.277   | 0.741 (0.340)        | 0.032   |

## COVID-19 Impact on Having Conflict with Partner

Table 8 represents the predictors associated with the COVID-19 impact on having conflict with partners. Employment status, diagnosis of PTSD, the use of cocaine, and the use of street opioids were statistically significant with the COVID-19 impact on having conflict with partners. WLWH who were employed were less likely to report an impact on having conflict with their partners than unemployed women ( $p=0.052$ ). WLWH met the threshold for PTSD were more likely to report greater impact on having conflict with their partners than those who were not ( $p=0.034$ ). Among WLWH who were using cocaine, those at moderate/high risk of cocaine use were more likely to report that COVID-19 impact on having conflict with partners than women at lower risk ( $p=0.145$ ). As for the use of street opioids, women who were at moderate/high risk of using street opioids were less likely to report an impact on having conflict with their partners compared with those at lower risk of street opioids use ( $p=0.07$ ).

**Table 8.** Factors associated with COVID-impact on having conflict with partner

| Characteristic     | Full Model (N=48) |         | Reduced Model (N=48) |         |
|--------------------|-------------------|---------|----------------------|---------|
|                    | Beta (SE)         | p-value | Beta (SE)            | p-value |
| Employment         |                   |         |                      |         |
| Not employed       | Reference         |         | Reference            |         |
| Employed           | -1.505 (0.805)    | 0.071   | -1.189 (0.593)       | 0.052   |
| PTSD               |                   |         |                      |         |
| No PTSD            | Reference         |         | Reference            |         |
| PTSD               | 0.849 (0.570)     | 0.146   | 0.991 (0.453)        | 0.034   |
| Cocaine            |                   |         |                      |         |
| Lower risk         | Reference         |         | Reference            |         |
| Moderate/high risk | 0.934(0.651)      | 0.161   | 0.711 (0.479)        | 0.145   |
| Street opioids     |                   |         |                      |         |
| Lower risk         | Reference         |         | Reference            |         |
| Moderate/high risk | -1.111 (0.675)    | 0.110   | -1.002 (0.538)       | 0.070   |



## DISCUSSION

To our knowledge, this study is the first to systematically assess the impact of COVID-19 and experiences of IPV among WLWH. The study did so among a sample of relatively older WLWH (53.6 years of age) who have been living with diagnosed HIV for many years (mean 23.3 years), and all of whom had experienced IPV in their lifetime.

A higher rate of ongoing IPV than expected was found in the cohort of 84 WLWH. Among 49 women who were currently partnered, 79.6% (n=39) were experiencing ongoing IPV, including physical assault and sexual violence, which was higher than the reported IPV exposure (55%) among WLWH.<sup>(2)</sup> Data from CDC's National Intimate Partner and Sexual Violence Survey (NISVS) indicate that about 41% of women experienced contact with sexual violence, physical violence, and/or stalking by an intimate partner and reported an IPV-related event during their lifetime.<sup>(36)</sup> Findings have important implications for engagement in care, as experiences of IPV among WLWH have been associated with lower levels of treatment adherence and a reduced likelihood of achieving viral suppression.<sup>(37)</sup>

Findings in this study highlight the many ways in which the COVID-19 pandemic emergency period impacted WLWH who are IPV survivors. Although we do not have a pre-pandemic sample for comparison, the observed high rates of ongoing IPV may reflect increased IPV exposure to WLWH related to "stay at home" regulations.<sup>(14)</sup> At the same time, in the height of pandemic-related restrictions in many U.S. settings, HIV care, research participation, and workplace settings transitioned to virtual or telephone-

based methods.(19) However, telehealth may not be accessible for many WLWH. Although telehealth provides WLWH with greater opportunity for disclosing their HIV status, this form of care may reduce women's ability to reveal their experiences of IPV because of concerns about privacy and risk of their abuser overhearing, and thus increasing their risk of IPV exposure.(5) WLWH experiencing violence may be less able to connect to the community's critical social and protective networks during the pandemic.(19) Therefore, there is a concern that 'stay home' regulations may be unattainable and unsafe for many WLWH, and the necessary 'stay home' regulation may have inadvertently increased the risk of IPV exposure.

Though we expected to find that current IPV exposure was associated with COVID-19 impact, there was no statistically significant differences between those experiencing ongoing IPV and those not experiencing ongoing IPV in terms of demographic characteristics, substance use, mental health, or COVID-19 impact. However, when we were able to disarticulate the different types of COVID-19 impact domains, and this study did find additional important drivers of COVID-19 impact, beyond ongoing IPV.

In multivariate linear regression models, this study found that COVID-19 impact on health was associated with Hispanic ethnicity. Compared to women who were not Hispanic, WLWH who identified as Hispanic reported that COVID-19 had a greater direct effect on their health. This is consistent with a report from the CDC that found that people who are Hispanic or Latino are 1.5 times more likely to acquire COVID-19, 1.9 times more likely to be hospitalized from COVID-19, and 1.7 times more likely to

die from COVID-19 than their non-Hispanic white counterparts.(38) These disparate health outcomes are not because of any biological factor, but rather because of socioeconomic disparities experienced by minoritized communities.

Employment status was associated with the COVID-19 impact on sexual behaviors, mental health, and having conflict with partners. Compared to WLWH who were unemployed, WLWH who were employed reported that COVID-19 had a greater effect on their mental health, in both positive and negative ways. Women who were employed may have experienced changes in their mental health due to shifts to working from home, for those whose jobs allowed them to do so. A previous study showed that working from home was associated with decreased overall mental health due to fewer face-to-face interactions with coworkers, distraction while working, adjusted work hours, and less social support.(39) WLWH who were employed were less affected by COVID-19 in terms of conflicts with partners, as compared to unemployed WLWH. This is also consistent with a previous study, in which participants who reported increased conflicts with partners were more likely to be unemployed.(40) Conversely, reports of decreased conflict were associated with working part-time. It is unclear whether these findings are related to unemployed women's financial dependency on partners.

The COVID-19 pandemic brought unique challenges for people with substance use disorders.(41) This study found that the use of cocaine, and street opioids were significantly associated with higher COVID-19 impact on day-to-day life, HIV care, and having conflict with partners. WLWH who were at moderate/high risk of cocaine

and street opioids use had a greater impact on COVID-19 impact compared with those at lower risk of drug use. These findings are consistent with previous studies showing a rise in drug use and overdoses in the United States during the COVID-19 pandemic.(42) People with substance disorders are more likely to have increased risks for poor COVID-19 outcomes if infected.(42) From an HIV care perspective, untreated substance use disorders is associated with HIV disease progression, impaired adherence to antiretroviral therapy, and worse overall treatment outcomes of HIV.(43) Findings underline the importance of addressing and treating substance use disorders to improve substance use outcomes and, secondarily, HIV outcomes. Intervention is particularly important during the pandemic period, when substance use in isolation is associated with high rates of overdose.(44)

In this study, psychiatric disorders were associated with a range of COVID-19 impacts. In a recent study of the general U.S. population, nearly half of Americans reported recent symptoms of an anxiety or depressive disorder.(45) According to the World Health Organization (WHO), globally, the prevalence of anxiety and depression has increased 25% since the beginning of the COVID-19 pandemic.(46) Anxiety and depression may be particularly high among WLWH who are IPV survivors. In the analysis, psychiatric disorders, including generalized anxiety, PTSD, and clinically significant depression, were significantly associated with COVID-19 impact on health, mental health, HIV care, and having conflicts with partners, though directionality of this association is not clear. According to WHO, people with pre-existing psychiatric disorders are more likely to suffer hospitalization, severe illness and death when they

contract the COVID-19 than people who do not have psychiatric disorders.(46) People living with HIV (PLWH) report a higher prevalence of psychiatric disorders compared with general population.(47) Especially for WLWH who are IPV survivors, COVID-19 could exacerbate underlying mental health conditions, leading to worse mental health outcomes. From an HIV care perspective, we found that WLWH with anxiety experienced a higher impact of COVID-19 on HIV compared with those who did not have anxiety. This finding is consistent with that from a study of people living with HIV (PLWH) in China, who were subjected to prolonged lockdowns and isolation.(48) Mental health problems impact HIV care and worsen health outcomes among PLWH, such as poor medication adherence, failure to achieve viral suppression, and HIV transmission risk. Recognition of depression, anxiety, and PTSD is thus an important priority for WLWH, particularly women who have experienced or are experiencing IPV.

Though novel in its scope and approach, this study is limited by several important factors. First, the results are based on cross-sectional analysis. As such, causation cannot be inferred, and any delayed impact of the COVID-19 pandemic and IPV on WLWH was not captured. Second, all results of this study were obtained via self-report during the interview session, which can be subject to retrospective response bias. Third, the sample size was relatively small and geographically confined to a highly resourced setting in New England, and may not reflect the experiences of other WLWH in the US. Finally, the sample here had all experienced lifetime IPV, so it may have been difficult

to tease out associations between types or recency of IPV exposure and COVID-19 impact in this rather homogenous sample.

This study is the first systematic assessment of IPV exposure and COVID-19 impact among WLWH. Findings suggest that the COVID-19 pandemic affected WLWH in varied ways, which has important implications for how responses to the COVID-19 pandemic impacted experiences of IPV among WLWH in the US. This study can inform future strategies to support women living with HIV who are IPV survivors, which is particularly crucial during emergencies and public health crises.

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