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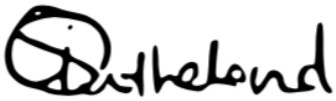
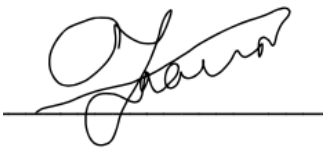
SIGNATURE: 

SIGNATURE: 

Exploring Substance Use in Relation to Intimate Partner Violence and Traumatic Brain Injuries in South African Women

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Abstract

Background: Intimate partner violence (IPV) is a reality faced by up to 30% of women worldwide. A common consequence of this abuse is traumatic brain injury (TBI), and the prevalence of these types of injuries both associated with IPV and not, is significantly high in South Africa. Further, research has found that women who have sustained a TBIs and who have experienced IPV are at a greater risk of developing a substance use disorder.

Aims and method: The aim of this research study is to explore whether IPV or TBI predict the degree of substance use amongst our sample, independently or together. We made use of a quantitative, cross-sectional design, with the predictor factors being IPV, TBI and probable IPV-related TBI and the outcome factor being degree of substance use. We made use of four questionnaires to measure our outcomes, including the Brain Injury Screening Questionnaire (BISQ), Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) and the Women Abuse Screening Tool (WAST). The study uses a multiple linear regression to test if IPV, and/or TBI successfully predict degree of substance use. We hypothesised that IPV and/or TBI will predict the degree of substance use amongst women in the sample.

Results: Our findings did not support a relationship between sustaining a TBI or experiencing IPV and substance use ($p > 0.05$). However, we found a significant relationship between probable IPV-related TBI and substance use ($p < 0.05$).

Conclusion: The finding that sustaining a probable IPV-related TBI predicts increased substance use is notable and encourages further research in this subpopulation of women in South Africa.

Keywords: Intimate partner violence; traumatic brain injury; substance use; South Africa.

South Africa is in the grips of a gender-based violence (GBV) epidemic (Gibbs et al., 2018; Muluneh et al., 2020; Shai & Sikweyiya, 2015). One of the most common forms of GBV is intimate partner violence (IPV), and approximately 30% of women globally experience it either physically or sexually ("Gender based violence in South Africa", n.d.). A serious consequence of this violence is traumatic brain injury (TBI) and studies have estimated that up to 75% of women in abusive relationships have sustained brain trauma as a result of IPV (Karakurt et al., 2021; Kwako et al., 2011). Global research has found that both women experiencing IPV and individuals who have sustained TBIs are at risk of developing a substance use disorder (Allen et al., 2016). Given the country's high IPV and TBI rate and the dearth of research on these topics, it is important to research the associations of these variables in a South African context.

Intimate Partner Violence and Traumatic Brain Injuries

IPV is the emotional, physical and sexual abuse of a victim by an intimate partner ("Gender based violence in South Africa", n.d.). Women living in poverty are disproportionately affected by IPV, highlighting the need for research in developing countries like South Africa where more than half of the population lives below the poverty line (Budlender et al., 2015; Gibbs et al., 2018; Gillum, 2019). Hence, it is not surprising that South Africa has been reported to have one of the highest rates of IPV in the world. Between 24.6% and 37.7% of adult South African women report that they have experienced either sexual or physical IPV (Shai & Sikweyiya, 2015).

TBIs are physiological disruptions in normal brain functioning as a result of external trauma to the head, face and neck, such as blunt force or sudden acceleration and deceleration (Kwako et al., 2011). Women experiencing IPV often sustain TBIs because physical forms of IPV include being struck in the face or head, slammed into hard surfaces, violently shaken (exerting acceleration and deceleration forces on the head and neck) and hit with hard objects (Valera et al., 2019).

In South Africa, TBIs resulting from interpersonal violence are far more common than in developed countries, yet professionals working with IPV survivors are not always equipped to recognise or cope with these injuries (Naidoo, 2013). These professionals are often not sufficiently trained in the overlap between IPV and TBI (Murray et al., 2015). Murray et al. (2015) and Hunnicutt et al. (2017) highlight the lack of sufficient effort in addressing the reality of IPV-related TBI. Despite the aforementioned high prevalence rates of IPV and TBI in South Africa, the intersection of these important public health issues

remains under-researched in this context. Research on IPV-related TBI will help address the gaps that exist within the literature of both issues in South Africa, separately and together.

The severity of TBIs range from mild, to moderate and severe, but even moderate TBIs can be life-altering. In the context of IPV, TBI survivors may have impaired physical, cognitive, or emotional function, which can dramatically change their quality of life, putting them at greater risk of abuse due to their reduced capacity (Hunnicutt et al., 2017). The severity of the post-TBI outcomes are related to the severity of the injury itself, meaning that there is a dose-response relationship between the two. Most TBIs reported by IPV survivors fall into the mild category (mTBI), meaning that real-life implications of these outcomes can often be disregarded. However, research suggests that the cumulative effect of repeated mild injuries over time can have serious consequences and lead to a myriad of lifelong debilitating effects, especially when left untreated (Valera et al., 2019). The effects of mTBIs are reportedly similar to those experienced by survivors of ongoing IPV, such as issues with memory, anxiety, judgement, depression and concentration (Hunnicutt et al., 2017). Due to these similarities, mTBIs often remain completely undetected amongst these abuse survivors, as their behaviours are attributed to IPV alone.

Intimate Partner Violence and Substance Use

In the current study, substance use was defined as the use of any mood-altering substances including alcohol, tobacco, and illegal drugs. Research suggests that experiencing IPV increases the chance that survivors develop a substance use disorder (Afifi et al., 2012; Cafferky et al., 2018). In fact, Gibbs et al. (2018) found that both men perpetrating IPV and women experiencing IPV scored higher for mean alcohol use compared to those who did not, as well as mean past year drug use. Additionally, Sullivan et al. (2015) concluded that women who have experienced IPV are more likely to become daily smokers than women who have not.

Researchers have found that IPV survivors use substances as a means of avoidance coping, such as escapism and numbing emotional pain (Flanagan et al., 2014). Gezinski et al. (2019) reported women survivors of IPV in Utah saw substance use as an "immediate and accessible source of relief" from the trauma they experienced (p. 114). However, substance use has also been described as a "double-edged sword" for survivors of IPV; although it can be used as a coping strategy, it may prevent them from getting the help they need (p. 116). For example, shelters for women often turn away individuals who are actively using substances.

Additionally, it is estimated that South Africa has a substance use disorder prevalence rate twice that of the global average (De Villiers & Kaswa, 2020). Previous research indicates that alcohol is the most frequently used substance in the country. Other narcotics such as marijuana and methamphetamine are also commonly used, although far less frequently (Weybright et al., 2016). In fact, about 43% of alcohol drinkers report levels consistent with binge drinking (Vellios & van Walbeek, 2018). Both alcohol and illicit drugs increase the occurrence of IPV in South Africa and it is therefore essential to consider the role of IPV when researching substance use and vice versa, as one often plays a role in the presence of the other (Boonzaier & van Niekerk, 2018).

Traumatic Brain Injury and Substance Use

Studies identifying a causal relationship between TBI and substance use are scarce for several reasons. Most notably, studies examining TBI and substance use are complex as identifying TBIs is difficult and often subjective, and individuals sustaining TBIs are more likely to have previous histories of substance use (Olsen & Corrigan, 2021). Further, substance use has been identified as a coping mechanism for TBI, as sustaining one potentially increases the risk that an individual will use substances (Allen et al., 2016). However, it is challenging to ascertain whether substance use post-injury is a direct result of TBI or an exacerbation of a premorbid behaviour.

A Canadian study found that individuals with TBIs had the highest proportion of substance use in the past 12 months compared to healthy control groups, as well as being more likely to binge when drinking (Allen et al., 2016). Additionally, pre-injury substance use has been reported to negatively impact TBI rehabilitation outcomes (Murray et al., 2015; Niemeier et al., 2016), further highlighting the need to investigate the relationship between these factors, especially in a South African context, where alcohol and substance use are rife.

Rationale, Aims and Hypotheses

Prevalence rates of substance use in South Africa are significantly higher than the global average. Additionally, IPV and TBI are pervasive in this country, and literature suggests a relationship between both these phenomena and substance use. In terms of IPV, survivors often use substances as a means of coping. However, substance use acts both for and against the survivor, allowing them to numb psychological trauma caused by the abuse, but also potentially barring them from receiving the support they need. Additionally, premorbid substance use is reportedly high amongst TBI survivors and can be used as a means of coping post-injury. Further, research suggests that women experiencing IPV often sustain TBIs, given the physical nature of this abuse. This creates a double hazard, as both

TBI and IPV are associated with increased substance use. Studies investigating all three factors are lacking and are especially important in a South African context where IPV, TBI and substance use are all major public health issues, providing impetus for our study.

The aim of the current study was to explore the relationships between IPV, TBI and substance use in a sample of women from Cape Town, South Africa. Specifically, our research question was whether IPV or TBI predict the degree of substance use amongst the women in our sample, independently or together. Thus, our analyses addressed the following three hypotheses in our sample:

1. IPV would predict the degree of substance use;
2. TBI would predict the degree of substance use; and
3. The interaction between IPV and TBI would predict the degree of substance.

Method

Our study was part of a larger study that is looking at the relationship between IPV and TBI and the lived experience thereof amongst South African women, conducted by a Master's student. The data for the current study was collected in tandem with this larger study.

Design and settings

The current study made use of a quantitative, cross-sectional design, as the data was collected from numerous individuals at the same point in time. The predictor factors were the presence of IPV and/or TBI and the outcome factor was the women's degree of substance use. The study was conducted in Cape Town, Western Cape. The vast majority of the participants resided in the area of Philippi and Gugulethu and other similarly socially disadvantaged communities. Most of the interviews were conducted at a community centre called Philippi Village, with a few exceptions. A few of our participants were interviewed in surrounding areas, such as Gugulethu and Rondebosch East. Data was collected through various questionnaires and self-report measures.

Participants

Participants were recruited via convenience and snowball sampling whereby participants identified and referred other potential participants (Goodman, 1961). We recruited participants 18 years of age and older. Further, in order to qualify as a participant, individuals had to identify as women, as women are disproportionately affected by IPV in South Africa. Additionally, they had to be proficient in English or Afrikaans so that the

researchers could effectively administer the tests and measures, as they were fluent in these languages. Participants who did not meet the target sample demographics (i.e., those who did not identify as a woman and are younger than 18 years of age) were excluded.

Measures

All study measures were administered in English and Afrikaans. These measures were translated by the Stellenbosch language laboratory through a forward and backward translation and authentication process.

Screening Measures

Demographic Questionnaire. The demographics questionnaire and Asset Index was used to assess the socio-economic status of the participant. This was done by asking the participant questions about two broad categories. Firstly, they were asked to describe their household income, education and employment. Participants were also asked about the presence of material and financial resources in their home, and this was used as a measure of household wealth (Harling et al., 2008).

Intimate Partner Violence. The Women Abuse Screening Tool (WAST) was used to assess whether a woman had been in an abusive relationship. This was achieved through eight items asking questions about various forms of abuse. The last three questions were of particular interest, as these indicated whether a woman had experienced physical, emotional or sexual abuse by a partner. The participants responded to the items on a three-point Likert scale and a total score was calculated out of 16. The WAST is a highly reliable measure (Cronbach's alpha = 0.95), as well as demonstrating strong construct and discriminant validity in differentiating between abused and non-abused women globally (Brown et al., 1996).

Traumatic Brain Injury. One main measure was used to assess TBI, namely the Brain Injury Screening Questionnaire (BISQ). However, we used an adapted version of the BISQ that was recently developed, as it includes a section specifically designed to assess the possible presence of TBI as a consequence of IPV. The BISQ was used to record the participant's life-long history of self-reported TBI (Dams-O'Connor et al., 2014). The tool assesses for the presence of brain injuries in the following three 'head injury exposure' sections: 1) screening for participation in organised sport and recording blows to the head from said organised sport; 2) blows to the head from IPV; 3) other brain injuries to the head. The fourth section screens for any head injury-related hospitalisations, and the fifth and final section screens for any previous neuroimaging, skull fractures or brain surgeries the participant may have undergone.

In each of the first four sections, participants are asked to recall all previous injuries within the above categories (Dams-O'Connor et al., 2014). Questions such as, "have you ever experienced a blow to the head in a motor vehicle accident?" or "have you ever been seen in an emergency room, by a doctor, or hospitalised for a concussion?" are asked. Responses to these items are 'yes' or 'no'. The numerous and specific recall cues are useful, serving as a memory jog and enhancing recall of the specific situations in which the injury occurred (Dams-O'Connor et al., 2014).

In the IPV section of the BISQ (IPV-BISQ), participants' responses are accumulated to form a score out of seven, which indicates whether they have experienced a probable IPV-related TBI, as well as to what extent. Higher scores in this section mean a participant is likely to have experienced more IPV-related TBIs.

There is a paucity of research using the BISQ in South Africa, but the measure indicates good test-retest reliability for lifelong history of head trauma, and good criterion validity for repetition of head injury (Diamond et al., 2007).

Substance use. The Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) consists of 8 items assessing the level of substance use over the previous three months. It is a self-report questionnaire and screens for 10 groups of substances: alcohol, tobacco, cannabis, cocaine, amphetamines, inhalants, sedatives, hallucinogens, opioids and an 'other' category. A substance involvement score is attained for each substance, and these scores are divided into 'low risk', 'moderate risk', or 'high risk'. Designed by the World Health Organisation in 2010, the ASSIST was created in order to provide a measure of substance use applicable to the whole world. It has performed successfully on measures of reliability (Cronbach's alpha = 0.83) and has been noted as a valid screening tool in identifying substances in individuals using more than one substance, and with varying degrees (Humeniuk et al., 2008). The ASSIST is a culturally neutral measure and has been successfully used in multiple South African studies to assess levels of substance use (Sorsdahl et al., 2015; Williams et al., 2014).

Procedure

All study procedures were approved by the University of Cape Town's (UCT) Department of Psychology's Research Ethics Committee on July 7th, 2022 (Appendix A). The majority of participants were recruited from a self-development programme being run in Philippi Village, a community centre in Philippi, Cape Town. After meeting with the main facilitator of the programme, she assisted us by sharing the study advertisements on various social media sites, including Facebook and WhatsApp (see Appendix B). Physical copies of

the study adverts were also put up around the community centre. These adverts informed the participants of the study's details, what would be expected of them and informed them that they would receive a R100 food voucher for their time. The rest of our participants joined the study through snowball sampling, as many of them were informed of the opportunity by previous participants.

Potential participants contacted us on WhatsApp and an interview schedule was drawn up over a three-week period. Before the start of the interview, participants were provided with a letter of information, explaining what the study entailed, as well as emphasising that it was voluntary and that all information was confidential (Appendix C). Interviews were conducted in a private room with three separate areas by two honours and two Masters students. We participated in the majority of the interviews conducted. Some interviews were also conducted at a private residence in Rondebosch East, with women from a range of nearby areas. Once the women agreed to participate, they were guided through all four measures. The assessments generally lasted between 40 minutes to an hour. Once completed, the women were provided with a R100 food voucher, as well as a referral form with a list of organisations that provide free counselling and support to vulnerable women and children (Appendix D).

Statistical Analysis

Once data was collected, it was captured in Excel and analysed using RStudio version 4.2.0. Data was cleaned before statistics were run. Significance levels were set at $p < .05$ for all analyses. Overall, the statistical analysis consisted of three main stages:

Stage 1: We calculated descriptive statistics for the categorical and continuous variables of interest in our sample. Additionally, substance use scores excluding alcohol were calculated by extracting the alcohol scores of participants from their total substance use score, in order to ascertain the influence of alcohol on substance use scores in our sample.

Stage 2: Pearson correlation coefficients and their significance were calculated to gain an idea of the strength and direction of the relationships present in our variables of interest.

Stage 3: Six multiple linear regression models controlling for age and asset index score were run to determine whether our variables of interest (IPV, TBI, an interaction effect between IPV and TBI and probable IPV-related TBI) were significant predictors of substance use in our sample. The first three models contained the same predictors, but each model utilised a different measure of substance use scores as the outcome variable (total substance use, substance use of alcohol only and substance use excluding alcohol). The following three

models were run with the same substance use scores as outcome variables. However, in these models the IPV-BISQ was replaced by the scores obtained from the WAST in order to investigate whether the extent of IPV was a significant predictor of the various substance use scores.

Results

Sample size and demographics

Our final sample size was *N*=52 for the current study, all of whom completed the necessary questionnaires. Table 1 details the socio-demographic variables of the sample. There was a wide age range in the sample (19 – 57), with the mean age being 29. The vast majority of the sample resided in Philippi with a few exceptions residing in surrounding areas, e.g., Gugulethu and Khayelitsha. Further, in terms of grade completion at school, most (42.31%; 2/52) participants completed school between grade 8 and 11, and only 32.69% (17/52) reported being currently employed. The majority were students, not able to work or had no occupation in terms of their reported category of employment. Further, the most commonly reported yearly household income bracket was between R25 000 and R100 000 annually. Additionally, for material and financial resources, 88.77%% of the women in our sample fell into the medium asset index category, scoring between 6 and 11out of a total score of 17 on the Asset Index measure. This indicates that the majority of these women have limited access to sufficient material and financial resources. Although the home language of 92.31% (48/52) participants was isiXhosa, all participants were able to communicate fluently in English in order to complete the questionnaires.

Table 1

Descriptives: Socio-demographic Variables (N = 52)

Variable	*N (%)*
Age (years)	
19 - 25	**24** (46.15%)
26 – 35	17 (32.69%)
36 – 45	8 (15.38%)
46 +	3 (5.77%)
Home Language	
isiXhosa	**48** (92.31%)
Afrikaans	2 (3.85%)
English	2 (3.85%)
Relationship Status	
In a relationship	**35** (67.31%)
Single	16 (30.77%)
Unknown	1 (1.92%)
Education Level	
No education	0
Grades 1 - 6	0
Grade 7	0
Grades 8 - 11	**22** (42.31%)
Grade 12	20 (38.46%)
Tertiary education	10 (19.23%)
Household Income (p/a)[a]	
R0	0
R1 – R5000	1 (1.92%)
R5001 – R25 000	13 (25%)
R25 001 – R100 000	**32** (61.54%)
R100 001 +	4 (7.69%)
Unknown	2 (3.85%)
Currently Employed	
Yes	17 (32.69%)
No	**35** (67.31%)
Asset ownership	
Low	4 (7.76%)
Medium	**42** (80.77%)
High	6 (11.54%)

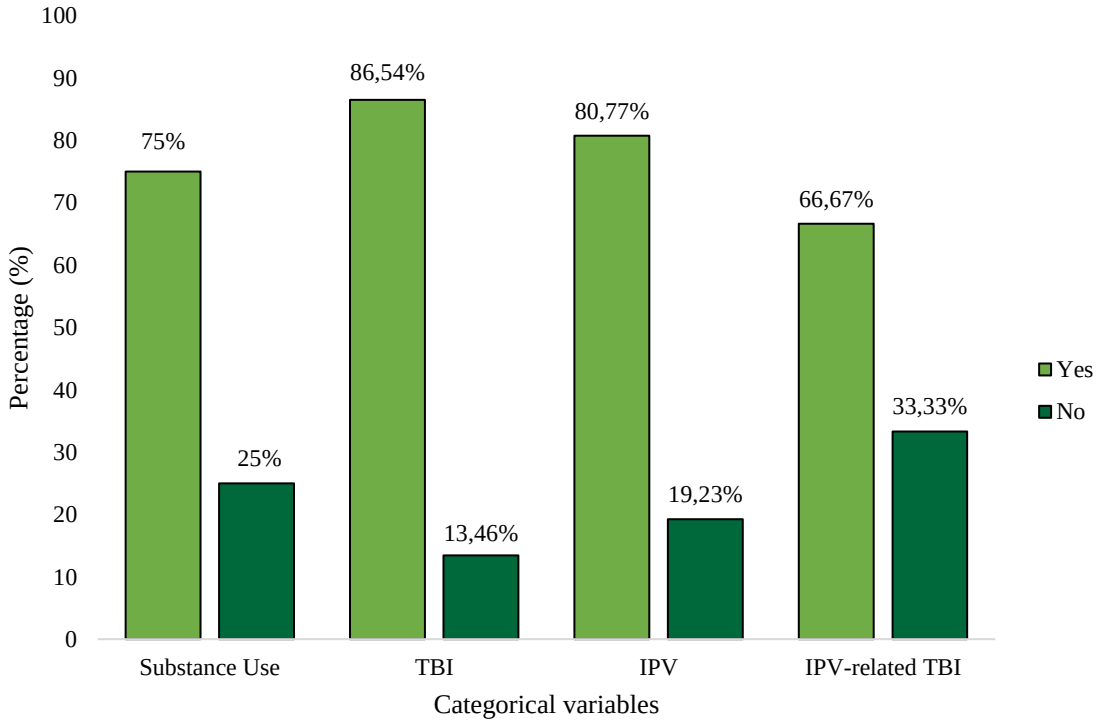
Note. Asset Index Scores are a measure of the material and financial resources of a participant

[a] p/a = per annum

Figure 1 presents the results of the categorical variables in the sample. These variables, coded as yes or no, include the presence of substance use (ASSIST), TBI (BISQ), IPV (WAST), and probable IPV-related TBI (IPV-BISQ). A large proportion of women in the sample reported using substances (39/52), having sustained a TBI (45/52), and having experienced IPV (42/52). Further, among the subsample of participants who experienced IPV (*n* = 42; add 80.77%), more than half (28/42) reported sustaining a probable TBI associated with IPV. Thus, the majority of our sample indicated that they had experienced IPV, sustained a TBI, and used substances, and among those who reported having experienced IPV, also sustained a probable associated TBI.

Figure 1

Descriptive Statistics: Categorical Variables in Sample (N = 52)



Note. N=52 for Substance Use, TBI and IPV; *N=42* for IPV-related TBI, as this is a sub-sample of women who sustained a TBI as a result of IPV. TBI = Traumatic Brain Injury; IPV = Intimate Partner Violence; IPV-related TBI = Intimate Partner Violence-related Traumatic Brain Injury (i.e. IPV-BISQ).

Table 2 shows the descriptive statistics of the continuous variables that we used in the analyses. This includes the aggregate substance use score and the substance use scores of

alcohol only (both from the ASSIST), the WAST score measuring degree of IPV, and scores obtained from the IPV section of the BISQ (IPV-BISQ), reflecting probable associated TBI-related IPV). It also includes the descriptive statistics of the actual asset index scores for the women in the sample.

Table 2

Descriptive Statistics: Continuous Variables in Sample (*N = 52*)

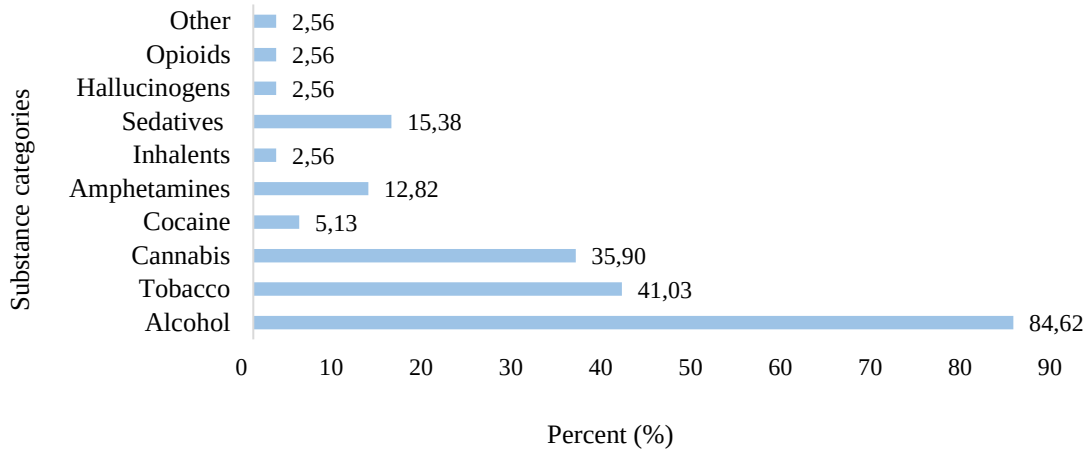
Variable	Range	Mean	SD	Median
Substance Use Score (all)	0-124	22.83	27.69	17
Substance Use Score (Alcohol)	0 - 35	10.32	11.20	7
WAST score	0 - 16	6.73	4.33	7
IPV-BISQ	0 - 7	2.02	2.21	18.50
Asset Index	0 – 17	9.44	2.69	9

Note. Substance use scores in the table are based on the substance involvement scores obtained from the ASSIST. These scores are accumulated from the substance involvement scores for each substance a participant reported using. Substance use score (alcohol) is the participant's score for alcohol use only. WAST = Woman Abuse Screening Tool; IPV-BISQ = Intimate Partner section of the Brain Injury Screening Questionnaire; Asset Index Scores are a measure of the material and financial resources of a participant; ASSIST = Alcohol, Smoking and Substance Involvement Screening Test.

The percentages of participants who reported using specific substances on the ASSIST are presented in Figure 2. The figure shows that most participants who reported using substances (*n* = 39) reported using alcohol (33/39), tobacco products (16/39) and cannabis (14/39).

Figure 2

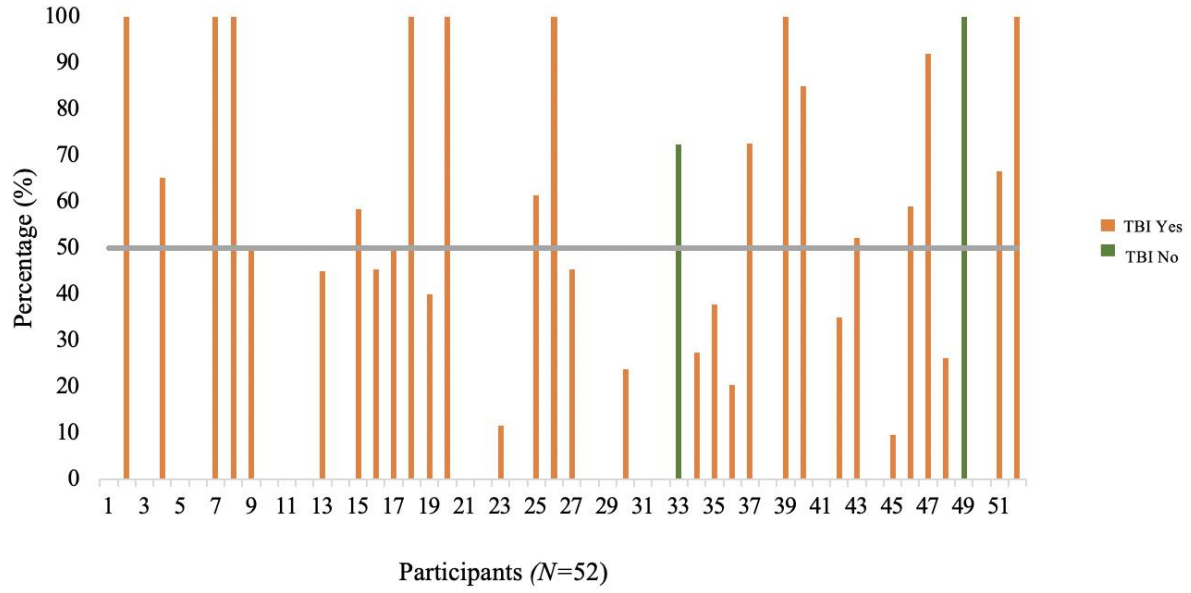
Percentage of Substance Use in Each Substance Category of the ASSIST (N=39)



Figures 3 and 4 show the number of participants who reported using alcohol, and what percent alcohol contributed to their total substance use score. The number of individuals reporting an alcohol use score making up 50% or more of their total substance use score is reflected by the scores that meet or are higher than the target line. Further, the figures are colour coded to indicate which of these individuals reported also sustaining a TBI (orange; Figure 3) and experiencing IPV (orange; Figure 4).

Figure 3

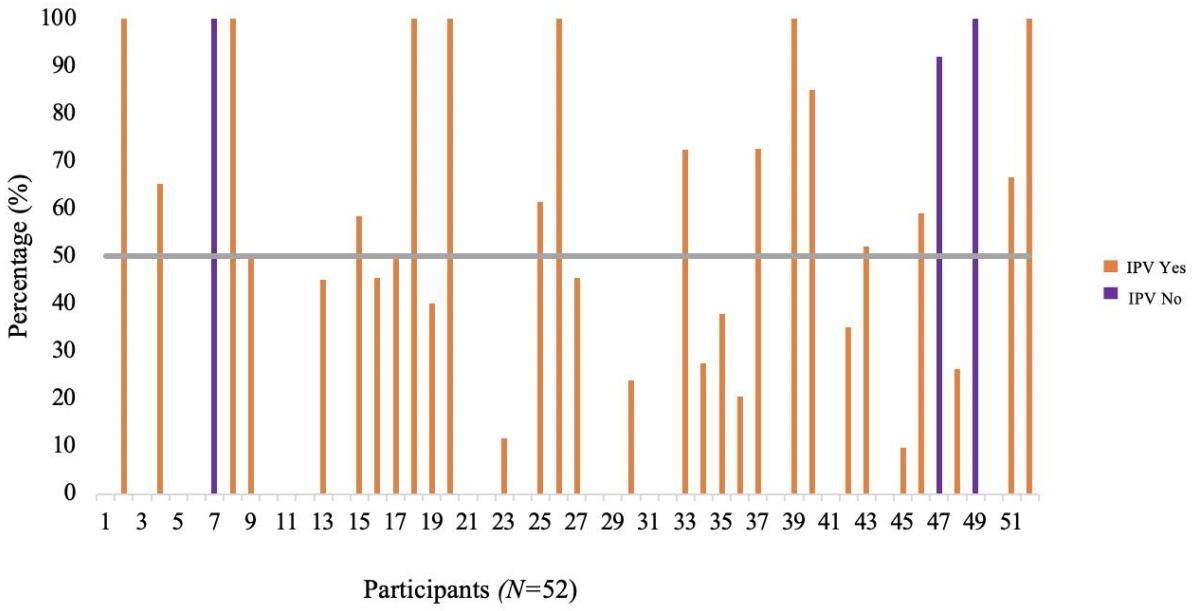
Percentage of Total Substance Use Scores Where Alcohol Contributes 50% or More (*N*=52)



Note. TBI = Traumatic Brain Injury

Figure 4

Percentage of Total Substance Use Scores Where Alcohol Contributes 50% or More (*N*=52)



Note. IPV = Intimate Partner Violence

Table 3 shows the correlations between the relevant continuous variables in our sample. A reminder that the WAST and the IPV-BISQ are different measures, both relating to IPV. The BISQ measures IPV in the context of TBI specifically, whereas the WAST measures IPV more generally.

The most notable, and perhaps expected (given the overlap) correlation was between the WAST scores and probable IPV-related TBI (r = .71, p < .001) which demonstrated that there was a strong, positive relationship between the severity of IPV generally (WAST) and physical injuries from IPV resulting in TBIs (IPV-BISQ). Further, significant moderate correlations were observed between IPV-BISQ and all substance use measures respectively (r = .29-50, p < .05). WAST scores (IPV) had a moderately positive correlation with total substance use scores (r = .35, p < .01), and substance use scores for alcohol only (r = .44, p < .05). The highest positive (and again expected) correlation was observed between substance use scores excluding alcohol and total substance use scores (r = .94, p < .001). Additionally, high positive correlations were evident in the relationships between substance use scores excluding alcohol and total substance use scores, as well as with substance use scores of alcohol only (r =. 94, p < .001 and r = .51, p < 0.01, respectively). These

correlations are to be expected as all reflect different aspects of substance use from the same ASSIST measure.

Table 3
Correlation Matrix of Continuous Variables (*N* = 52)

Variable	Age	Asset Index Score	Total substance use score	Substance use score (alcohol)	Substance use score (excluding alcohol)	WAST score	IPV-BISQ
Age	-						
Asset Index Score	.05	-					
Total substance use score	-.17	-.01	-				
Substance use score (alcohol)	-.11	-.07	.78***	-			
Substance use score (excluding alcohol)	-.16	.03	.94***	.51**	-		
WAST score	.06	-.033*	.35**	.44*	.23	-	
IPV-BISQ	.20	-.16	.42**	.50**	.29*	.71***	-

Note. *$p < .05$. **$p < .01$. ***$p < .001$. Substance use scores in the table are based on the substance involvement scores obtained from the ASSIST. These scores are accumulated from the substance involvement scores for each substance a participant reported using. Substance use score (alcohol) is the participant's score for alcohol use only. WAST = Woman Abuse Screening Tool; IPV-BISQ = Intimate Partner section of the Brain Injury Screening Questionnaire; ASSIST = Alcohol, Smoking and Substance Involvement Screening Test

Before analysing our regression models, preliminary checks of the assumptions of linearity, homoscedasticity and normality were run to confirm that they were upheld by all models. Taking into consideration the small sample size in the current study, none of these assumptions were significantly violated. As all six of our models included an interaction effect between IPV and TBI, GVIF values were examined in order to ensure that there was no multicollinearity between the predictor variables. From this check, we were able to conclude that that this was not an issue for models I – III, as no values were substantially above 1

($GVIF_{max}$= 1.44). Models IV – V resulted in slightly higher GVIF values, but again they were not substantially above 1 and were thus not considered problematic ($GVIF_{max}$= 1.53).

Table 4 and 5 show the outcome of the six multiple linear regression models controlling for age and asset index score that were run to predict aggregate substance use scores, substance use scores of alcohol alone, and substance use scores excluding alcohol, respectively. Models I – III included IPV-BISQ (probable IPV-related TBI), whereas models IV – V replaced this variable with WAST scores measuring the extent of IPV a participant experienced.

Model I shows that IPV scores from the relevant section of the BISQ (IPV-BISQ), IPV (yes or no), TBI (yes or no) and the interaction between TBI and IPV significantly explain 17% of the variance in the aggregate substance use scores of our sample (F = 2.70, p = 0.26). The only significant predictor of aggregate substance use scores was IPV-BISQ (p < .001). A one unit increase in IPV-BISQ scores was associated with a 5.42 unit increase in the aggregate substance use scores of our sample, showing that sustaining a probable IPV-related TBI led to an increase in substance use in our sample.

Model II shows that the same predictor variables used in Model I explain 21.97% of the variation observed in the substance use scores participants reported for alcohol only (F = 3.39, p < .026). IPV-BISQ remained a significant predictor (p < 0.001). Despite the dichotomous variable for IPV not being a significant predictor in this model, the β coefficient is positive as expected and suggests that individuals in our sample who had experienced IPV, on average, have a higher substance use score for alcohol than individuals who had not experienced IPV. Similarly, the β coefficient for TBI as a predictor was also positive, suggesting that individuals who had sustained a TBI reported slightly higher scores for alcohol use only than those who had not. Additionally, this model suggests that the interaction effect between IPV and TBI is not significant at the 5% level.

Notably, Model III was not significant, and only explained 5.69% of the substance use scores calculated by excluding alcohol (p = 1.96, F = 1.51). The interaction between TBI and IPV was not a significant predictor of aggregate substance use scores excluding alcohol.

When IPV-BISQ was replaced by WAST scores in models IV – V, all three models were not significant at the 5% level in predicting substance use scores regardless of presence or absence of alcohol (p = .126, F = 1.7; p = .058, F = 2.22; p = .385, F = 1.09).

Table 4

Regression analysis showing predictors of total substance use for models I to III score (N = 52)

		Model Statistics			Coefficients			
		Adjusted R^2	*F* (df)	*p*	*β*	SE	*t*	*p*
I. Total substance use		16.50%	2.70 (6, 45)	**.026***				
	Age				15.80	.45	-1.67	.102
	Asset Index Score				-.74	1.36	.73	.467
	IPV-BISQ				5.42	1.83	2.97	**.005**
	IPV(yes)				9.44	21.91	.43	.669
	TBI(yes)				.57	16.25	.04	.972
	TPV(yes):TBI(yes)				.51	24.63	.02	.983
II. Substance use (alcohol)		21.97%	3.39 (6, 45)	**.008****				
	Age				-.249	.17	-1.43	.159
	Asset Index Score				.180	.53	.34	.736
	IPV-BISQ				2.650	.71	3.71	**< .001*****
	IPV(yes)				7.528	8.57	.88	.384
	TBI(yes)				2.304	6.36	.36	.719
	TPV(yes):TBI(yes)				- 6.092	9.63	.63	.530
III. Substance use (no alcohol)		5.69%	1.51 (6, 45)	**.196**				
	Age				-.493	.346	-1.428	.160
	Asset Index Score				.816	1.054	.774	.443
	IPV-BISQ				2.771	1.420	1.951	**.057**
	IPV(yes)				1.915	17.024	.113	.910
	TBI(yes)				-1.733	12.627	-.137	.891
	TPV(yes):TBI(yes)				6.607	19.140	.345	.732

Note. $*p < .05$. $**p < .01$. $***p < .001$. Substance use scores in the table are based on the substance involvement scores obtained from the ASSIST. These scores are accumulated from the substance involvement scores for each substance a participant reported using. Substance use score (alcohol) is the participant's score for alcohol use only. WAST = Woman Abuse Screening Tool; IPV-BISQ = Intimate Partner Violence section of the Brain Injury Screening Questionnaire. IPV = Intimate Partner Violence; TBI = Traumatic Brain Injury.

Table 5

Regression analysis showing predictors of total substance use for models IV to VI score (N = 52)

		Model Statistics			Coefficients			
		Adjusted R^2 (%)	*F* (df)	*p*		SE	*t*	*p*
IV. Total substance use		8.36%	1.78 (6, 45)	**.126**				
	Age				-.56	.46	-1.23	.227
	Asset Index Score				1.33	1.48	.90	.376
	WAST				2.12	1.06	2.01	**.051**
	IPV(yes)				1.59	23.51	.07	.946
	TBI(yes)				1.13	17.20	.07	.948
	IPV(yes):TBI(yes)				7.87	25.84	.31	.762
V. Substance use (alcohol)		12.55%	2.22 (6, 45)	**.058**				
	Age				-.17	.18	-.93	0.357
	Asset Index Score				.39	.58	.66	0.511
	WAST				1.14	.42	2.72	**.009****
	IPV(yes)				3.19	9.29	.34	0.733
	TBI(yes)				2.21	6.80	.33	0.746
	IPV(yes):TBI(yes)				-2.32	10.21	-.23	0.821
VI. Substance use (no alcohol)		1.00%	1.09 (6, 45)	**.385**				
	Age				-.39	.35	-1.13	
	Asset Index Score				.94	1.13	.83	**.409**
	WAST				.98	.80	1.22	.228
	IPV(yes)				-1.60	17.87	-.09	.929
	TBI(yes)				-1.08	13.07	-.08	.935
	IPV(yes):TBI(yes)				10.19	19.64	.52	.606

Note. *$p < .05$. **$p < .01$. ***$p < .001$. Substance use scores in the table are based on the substance involvement scores obtained from the ASSIST. These scores are accumulated from the substance involvement scores for each substance a participant reported using. Substance use score (alcohol) is the participant's score for alcohol use only. WAST = Woman Abuse Screening Tool; IPV = Intimate Partner Violence; TBI = Traumatic Brain Injury.

Discussion

South Africa has high prevalence rates of TBI, IPV and substance use. Rates of TBI are estimated to be significantly higher than those reported in most other countries (Jerome et al., 2017), and rates of IPV are amongst the highest in the world (Shai & Sikweyiya, 2015). Further, substance use in this country has a prevalence rate twice that of the global average (De Villiers & Kaswa, 2020). Research has shown that people from socially disadvantaged backgrounds are at greater risk of experiencing all three of these phenomena (Gibbs et al., 2018; Williams et al., 2018). Specifically, research into IPV and substance use suggests that women who experience IPV are more likely to develop a substance use disorder, as these substances are often used as coping strategies like numbing emotional pain. Despite there being limited research on the relationship between substance use and TBIs, there is emerging evidence that substance use is high amongst TBI survivors and can also be used as a means of coping post-injury (Allen et al., 2016). Growing evidence also shows that women who experience IPV often sustain a TBI as a result of their abuse (Naidoo, 2013). Given the close relationship between these three factors and a paucity of research on all three, we set out to address this gap. Therefore, the study aimed to investigate, in our sample, whether:

1) IPV predicts the degree of substance use,
2) TBI predicts the degree of substance use,
3) the interaction between IPV and TBI predicts the degree of substance.

Given the evidence from the literature, we hypothesized that IPV and/or TBI predicts the degree of substance use amongst women in the sample. We discuss our findings below in relation to the literature, as well as their relevance to the South African context.

Sample demographics

Our final sample was relatively small and consisted of 52 participants. Notably, the individuals in our sample could be characterised by a low to medium socioeconomic status (SES) background as evident in their sociodemographic information and asset index scores. However, taking other socioeconomic indicators into account, only 32.69% (17/52) of the participants were employed at the time of the current study suggesting a slant towards greater social disadvantage. Further, all participants resided in Philippi, Gugulethu and other similarly socially disadvantaged areas in Cape Town (Bayat & Madyibi, 2022).

As previously stated, research has suggested that individuals from poorer SES backgrounds are more likely to abuse substances, experience IPV, and sustain TBIs. Thus,

our sample provides a useful perspective into the experiences of these issues in this context as they stem from a population group deemed most vulnerable to these phenomena.

IPV and TBI

In this study, two of our three main categorical variables were the presence of IPV, and TBI. Additionally, we used the IPV section of the BISQ to assess the severity of probable IPV-related TBIs in our sample as we were interested in whether either IPV or TBI, or the co-occurrence of these variables (IPV and TBI) predicted substance use. This combined measure of probable IPV-related TBI excluded emotional IPV that was reported in the WAST, as it was specific to IPV injuries that created vulnerability to sustaining TBIs, like physical and/or sexual assaults. This is useful, as it allowed for us to assess substance use in relation to physical and sexual abuse only, as emotional abuse alone does not result in TBIs.

A majority of women in this study reported experiencing IPV (based on the WAST which covers emotional, sexual or physical IPV), as well as sustaining at least one TBI throughout their lives. As noted above, both of these variables are rife in the South African context, and especially in socially disadvantaged settings, and it is therefore not surprising that such high prevalence rates of both these variables were observed. Jerome et al. (2017) report that South Africa has a mortality rate five times that of the global average for motor vehicle accidents and four times the global average for interpersonal violence. Furthermore, incidence rates of TBI in South Africa are high, with admissions data from Groote Schuur Hospital (GSH) and Tygerberg Hospital reporting that a total of 2851 patients with TBI were admitted in 2013 alone (Matzopoulos et al., 2010). Additionally, a 2009 internal audit conducted in GSH revealed that, amongst trauma admissions, 24% (n = 10 046) were TBIs. Of these patients, 27% (n = 654) were diagnosed as moderate to severe - resulting in inpatient admission (Naidoo, 2013). Increased mortality and incidence rates of TBI in South Africa are associated with a low SES, as are the rates of interpersonal violence (Budlender et al., 2015; Sehat et al., 2012).

Notably, the 57.69% of our sample who reported IPV, also reported sustaining a probable IPV-related TBI. Again, as reported above, the association between IPV and TBI is emerging in the literature as a public health concern, although no local data on this association is available yet. The BISQ-IPV section was specifically created for this population as individuals may not readily report a TBI from IPV if not asked directly about it (Galovski et al., 2021). Physical violence present in IPV such as being shaken, strangled, or pushed into a wall often result in injuries to the head, neck and face. Due to the nature of

these injuries, victims of this type of physical violence are susceptible to sustaining TBIs, ranging from mild to severe.

Substance use

Due to our study's outcome variable being substance use, we were interested in the relationship between specific substances and our predictor variables. The majority (75%) of our sample reported using substances. Of the 39 participants who did, nearly 85% used alcohol. Further, 23.08% of these participants used alcohol exclusively. The next most common substance was tobacco, with a prevalence rate half that of alcohol (41.03%). As a result, it seemed likely that the substance use observed in our sample was a strong indication of alcohol use as opposed to other substances. We found that amongst 54.85% (21/39) of the women who reported using alcohol and other substances, alcohol contributed to half or more of their total substance use scores. This provided further evidence that alcohol was the most prominent substance used in our sample, which is consistent with real-world reports of substance use in the country. The Department of Social Development's National Drug Master Plan (2019) reports that between 7.5% and 31.5% of South Africans have an alcohol problem or are at danger of acquiring one, and alcohol continues to be the most abused substance. South Africa also has the highest alcohol consumption in Africa, at 11 litres per capita. Further, those from a low SES background in South Africa are reported to engage in more severe binge drinking behaviours compared to those with a high SES in the country (Fontel Marx et al., 2021). Thus, it is expected that our sample would have high reports of all three of these variables.

IPV and substance use

The results of our correlational analyses were in line with the literature, in terms of observing a relationship between IPV and substance use. IPV was measured as a categorical variable (yes/no) by the response to three items in the WAST (has your partner ever physically abused you?; has your partner ever sexually abused you?; has your partner ever emotionally abused you?). This indicated whether they had experienced sexual, emotional or physical IPV. Although we observed high rates of IPV and substance use in our sample, our regression analyses indicated that IPV (used in this categorial manner) was not a significant predictor of substance use scores ($p > .05$). This was also the case when predicting for alcohol use only and substance use excluding alcohol. Additionally, when using WAST scores (a continuous measure of IPV severity) as a predictor, all models were also not significant. Thus, our findings do not support a significant relationship between IPV and substance use. All findings relating to IPV and substance use did not support our hypothesis and contrast

with the findings of similar previous research such as Cafferky et al. (2018) who found a significant relationship between substance use and IPV victimisation. Further, Afifi et al. (2012) found that experiencing IPV led to increased reports of all substance use disorders.

TBI and substance use

Similarly, we hypothesised that sustaining a TBI would predict higher substance use scores amongst our sample. Given the literature, we expected to find a relationship between these two variables. Although TBI and substance use were both highly prevalent in the sample, our hypothesis was not supported ($p > .05$). Notably, TBI was also reported as a categorical variable (yes/no) obtained from a participant's responses on the BISQ. Studies investigating this relationship are limited, but some research has made a tentative link between substance use as a coping mechanism and sustaining a TBI. Our findings do not support our hypothesis, or this potential link. The dichotomous TBI variable includes TBIs of all severities, from those who were dazed and confused, to those who lost consciousness. Literature shows the mild TBIs are overrepresented in populations with TBI and that there is a dose-response relationship between TBIs and outcome. The fact that our dichotomous variable does not account for severity of TBI might account for the lack of significance here.

The interaction between IPV, TBI and substance use

We hypothesised that individuals who had sustained a TBI as well as experienced IPV would report markedly higher substance use scores than individuals who reported the presence of only one of these variables, given the relationship of each of these variables to substance use. This hypothesis was not supported, as the interaction effect between these variables was not significant ($p > .05$). This may the result of the sensitivities of dichotomous variables as outlined above. Although there is an intuitive relationship between IPV, TBI and substance use, we did not find any prior research investigating this interaction to the best of our knowledge. It is possible that the next few years will yield studies dedicated to exploring this, however our results did not support the presence of a relationship between these variables.

Perhaps the most interesting result of our study was the significance of the relationship between substance use and probable IPV-related TBIs. As noted, this measure of probable TBI resulting from IPV did not include emotional IPV as it focussed specifically on violent interactions that created risk for TBI. As mentioned previously, we included this variable as it provided an opportunity to consider the relationship between physical and/or sexual IPV, TBI and substance use. This was a significant predictor of substance use in general, as well as for alcohol use only. However, when predicting for substance use scores

excluding alcohol, the result was no longer significant (p >.05). This suggests that in this sub-sample of women, experiencing a probable PV-related TBI could predict substance use scores, specifically those involving alcohol. Although this measure does not account for women who may experience unrelated IPVs and TBIs, with the growing evidence of a possible causal link between these variables, such findings are noteworthy.

Limitations and recommendations for future studies

Our study was limited in the following ways. It was slightly underpowered, as we were aiming for a minimum sample size of 65 but recruited 52 women. Our sample size was thus relatively small, which might have affected our ability to find the true strength of statistically significant relationships between our relevant variables. A small sample size recruited from limited sites in Cape Town also undermines the generalisability of our findings, as we cannot assume that what we have observed applies to the general population of women that have experienced IPV and/or TBI and who use substances in the country and at large.

We also used self-report measures, which require participants to think about experiences that may have occurred over their entire lifespan. This meant results relied heavily on participants' ability to accurately remember these experiences. Additionally, self-report measures are vulnerable to social desirability bias especially when asked about illegal substance use, or sensitive and personal topics (van de Mortel, 2008). Further, in the case of the BISQ, the probable TBIs reported were not necessarily a true indication of whether participants had a medically diagnosed brain injury (hence probable). Although the BISQ does assess for hospitalisation, most participants were not sufficiently educated enough about TBIs to understand the need for medical assessment after sustaining even a mild brain injury. Lastly, we did not account for severity of TBI in our analyses. It may be that presence of TBI alone is not a strong predictor of substance use, but the severity of the injury is. A dichotomous variable for TBIs likely leads to the inclusion of high rates of mTBIs, as these are most common in these kinds of injuries (Valera et al., 2019).

Future studies of this nature can improve on these limitations in the following ways. It would be beneficial to conduct similar studies with larger sample sizes that have been recruited from a range of communities. This would ensure that findings would reflect the true strength of any statistically significant relationships. Additionally, larger samples would allow for findings to be applicable to the larger relevant population, i.e. increase generalisability. The issue of using self-report measures is a problem commonly faced in this field. Researchers using this type of measure should consider the impact of these limitations

on the validity of their research (Mortel, 2008). Lastly, including severity of TBI in the analysis is necessary. Confirming such levels of severity could involve a multidisciplinary approach, such as collaborating with medical professionals to ensure diagnostic accuracy.

Conclusion

In this study, we investigated the relationships between IPV, TBI and substance use in a sample of South African women. We hypothesised that these factors would predict higher reported substance use, both independently and together. Despite our hypotheses being partially supported, our findings indicated a relationship between IPV-related probable TBIs and substance use. We can tentatively conclude that individuals who have sustained an IPV-related probable TBI are more likely to exhibit increased substance use behaviours and that this substance use is largely in the form of alcohol abuse. The possibility that women who have sustained an IPV-related probable TBI could be more susceptible to developing a dependence on alcohol warrants further research. A greater understanding of this relationship could be valuable to organisations aimed at helping survivors of domestic violence and could encourage the inclusion of intervention strategies that target substance use disorders within these spaces.

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Appendix A

Ethics Approval Letter

UNIVERSITY OF CAPE TOWN

Department of Psychology

University of Cape Town Rondebosch 7701 South Africa
Telephone (021) 650 3417
Fax No. (021) 650 4104

05 July 2022

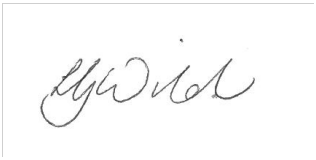
Oona Fraser and Gemma Sutherland
Department of Psychology
University of Cape Town
Rondebosch 7701

Dear Oona and Gemma

I am pleased to inform you that ethical clearance has been given by an Ethics Review Committee of the Faculty of Humanities for your study, *Exploring Substance Use in Relation to Intimate Partner Violence and Traumatic Brain Injuries in South African Women.* The reference number is PSY2022-023.

I wish you all the best for your study.

Yours sincerely



Lauren Wild (PhD)
Associate Professor
Chair: Ethics Review Committee

Appendix B

Study Advertisements

RESEARCH PARTICIPANT RECRUITMENT

The study wants to investigate substance use head injuries in women who have also been exposed to physical violence by a partner.

****Your safety, privacy and wellbeing will be respected during the study****

DETAILS

We are looking for adult women 18 years and older, that are or have been in a relationship, married, or divorced and who have been physically abused.
For this study, participants will complete a range of questionnaires .

If you agree to participate in this study and we have completed the data collection process, we will offer you a R100 voucher as a token of appreciation for your time.

Finally, this study seeks to understand and increase awareness of how partner physical violence and possible injury to the head can forever change the life of a woman.

Please contact if interested to participate or if you have any questions regarding participation.
Gemma Sutherland, email: STHGEM002@myuct.ac.za (Researcher);
contact number: 0605834250

RESEARCH PARTICIPANT RECRUITMENT

The study wants to investigate head injuries and substance use in women.

****Your safety, privacy and wellbeing will be respected during the study****

DETAILS

We are looking for adult women 18 years and older, that are or have been in a relationship, married or divorced and who have not been physically abused and who may or may not have experienced a head injury.

During the study, participants will complete a range of questionnaires.

If you agree to participate in this study and we have completed the data collection process, we will offer you a R100 voucher as a token of appreciation for your time.

Finally, this study seeks to understand and increase awareness of how an injury to the head can forever change the life of a woman.

Please contact if interested to participate or if you have any questions regarding participation.
Oona Fraser, email: FRSOON001@myuct.ac.za (Researcher); contact number: 084 900 4561

Appendix C

Participant Consent Form

UCT Department of Psychology

Participant Consent Form

Informed Consent to Participate in Research and Authorization for Collection, Use, and Disclosure of Questionnaire and Other Personal Data

You are being asked to take part in a research study. This form provides you with information about the study and asks for your permission to part take in the research study. Consent is also asked for the collection of data from your participation within the study. The Principal Investigator (the person in charge of this research) or a representative of the Principal Investigator will describe this study to you and answer all your questions before you sign this consent form. Your participation is entirely voluntary, and you may leave any time during the research. Before you decide whether to take part, please read the information below and ask questions about anything you do not understand. You will not be punished in any way by not participating in this study.

1.Title of Research Study

Exploring Substance Use in Relation to Intimate Partner Violence and Traumatic Brian Injuries in South African women

2. Principal Investigators and Telephone Numbers

Oona Fraser

Honours in Psychology (student)

Department of Psychology

University of Cape Town

Email: frsoon001@myuct.ac.za

Gemma Sutherland

Honours in Psychology (student)

Department of Psychology

University of Cape Town

Email: sthgem002@myuct.ac.za

Associate Professor: Dr Leigh Schrieff-Brown

Supervisor

Department of Psychology

University of Cape Town

Email: leigh.schrieff-elson@uct.ac.za

Professor: Dr Floretta Boonzaier

Co-Supervisor

Department of Psychology

University of Cape Town

Email: floretta.boonzaier@uct.ac.za

3. What is the purpose of this research study?

The purpose of this study is to explore the relationships between intimate partner violence (IPV), traumatic brain injuries (TBI) and substance use in a sample of women from Cape Town, South Africa.

4. What will be done if you take part in this research study?

You will be asked to complete various questionnaires, including a basic screening questionnaire and one on IPV, TBI, substance use, trauma and post-traumatic stress disorder (PTSD).

5. If you choose to participate in this study, how long will you be expected to participate in the research?

Completing the questionnaires will take place during a single session. This should not last longer than 2 and a half hours. If at any time during the session you wish to stop your participation, you are free to do so without penalty.

6. How many people are expected to participate in the research?

Total sample of 70 participants.

7. What are the possible discomforts and risks?

There are moderate risks associated with participation in this study, as completing the questionnaires can be difficult and bring about some emotional discomfort. If you feel tired during the study, you will be allowed to rest. If you wish to discuss anything relating to the study or any concerns/discomforts, you may ask questions now or contact the Principal Investigators listed in number 2 of this form.

8a. What are the possible benefits to you?

You will not benefit from participating in this study, but the findings of the study may help in our understanding of how IPV and/or TBI affect substance use behaviours. If you experience any psychological discomfort/distress during the process of the research sessions, you will be referred to the appropriate parties for assistance and support.

8b. What are the possible benefits to others?

The information gained from this research study will help researchers to improve their understanding of how IPV and/or TBI affect substance use behaviours. This improved understanding may enable more effective support systems to be implemented.

9. If you choose to take part in this research study, will it cost you anything?

Participating in this study will not cost you anything.

10. Will you receive compensation for taking part in this research study?

You will receive a R100 food voucher for your time and participation

11a. Can you withdraw from this research study?

You are free to withdraw your consent and to stop participating in this research study at any time. If you do withdraw your consent, there will be no penalty.

If you have any questions regarding your rights in this research, you may phone the Psychology Department office and get in touch with Rosalind Adams.

Her email address is rosalind.adams@uct.ac.za or you may contact her via telephone – 021 650 3417.

11b. If you withdraw, can information about you still be used and/or collected?

Information already collected during the research process may be used within the proposed study.

12. Once personal and performance information is collected, how will it be kept secret (confidential) in order to protect your privacy?

Only certain individuals have the right to review the research records. These people include the researchers for this study and certain University of Cape Town officials. Your research records will not be released without your permission unless required by law or a court order. Your identity will not be revealed and all the information you give will be strictly confidential. The information collected will be attached to your name, but the report write up will only provide the average data under specific categories and each participant will not be identifiable within the study.

13. What information about you may be collected, used and shared with others?

The information gathered from you will be the data from the screening measures/questionnaires you complete. If you agree to be in this research study, it is possible that some of the information collected might be copied into a “limited data set” to be used for other research purposes. If so, the limited data set may only include information that does not directly identify you. For example, the limited data set will not include your name, address, telephone number, ID number, or any other numbers or codes that link the information in the limited data set to you.

14. Signatures

As a representative of this study, I have explained to the participant the purpose, the procedures, the possible benefits, and the risks of this research study; and how the participant’s performance and other data will be collected, used, and shared with others:

_____ _____

Signature of Person Obtaining Consent and Authorization **Date**

You have been informed about this study’s purpose, procedures, possible benefits, and risks; and how your performance and other data will be collected, used and shared with others. You have received a copy of this form. You have been given the opportunity to ask questions before you sign, and you have been told that you can ask other questions at any time.

You voluntarily agree to participate in this study. You hereby authorize the collection, use and sharing of your data. By signing this form, you are not giving away any of your legal rights.

_____ _____

Signature of Person Consenting and Authorizing **Date**

Please indicate below if you would like to be notified of future research projects conducted by our research group:

_____ (initial) Yes, I would like to be added to your research participation pool and be notified of research projects in which I might participate in the future.

Method of contact:

Phone number: _____

E-mail address: _____

Mailing address: _____

_____

Appendix D

Resource List

ORGANISATIONS DEALING WITH GENDERED AND SEXUAL VIOLENCE

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1. The National Institute for Crime Prevention and Reintegration of Offenders (NICRO):

Mitchell's Plain: 021-397 3782

Cape Town: 021-422 1690

Bellville: 021-944 3980 or visit their website on: www.nicro.org.za

2. Family and Marriage Society of South Africa (FAMSA):

Observatory: 021 447 7951 or visit their website on: www.famsa.org.za

3. Mosaic Training, Service and Healing Centre for Women:

Wynberg: 021 761 7585 or visit their website on: www.mosaic.org.za

4. Saartjie Baartman Centre for Women and Children:

Manenberg: 27 21 633 5287

or visit their website on: http://www.saartjiebaartmancentre.org.za/

5. Rape Crisis

Observatory (Head office)

23 Trill Road, Observatory, 7925, Cape Town

P O Box 46 Observatory 7935

Email: communications@rapecrisis.org.za

Complaints: complaints@rapecrisis.org.za

Telephone: 021 447 1467

Athlone

335a Klipfontein Road, Athlone

Telephone: 021 684 1180

Khayelitsha

89 Msobomvu Drive, Khayelitsha

Telephone: 021 361 9228