

SUBSTANCE USE LITERACY: IMPLICATIONS FOR HIV MEDICATION ADHERENCE AND ADDICTION SEVERITY AMONG SUBSTANCE USERS

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ABSTRACT

This cross sectional study examined the relationship between substance use literacy and HIV medication adherence and whether severity of addiction modified this relationship. 179 HIV infected substance users completed the Questionnaire Assessment of Literacy in Mental Health, Addiction Severity Test, and Morisky Medication Adherence Scale. Most respondents wrongly identified the alcohol use vignette problem as stress (50.3%). Not recognizing that there was a problem was significantly correlated with moderate adherence ($P = 0.003$). Preference was given to informal sources of help such as a close friend (83.2%, $P = 0.050$), as well as psychosocial forms of management like physical exercise (79.9%, $P = 0.007$) rather than professionals such as psychiatrists (58.1%) which was associated with moderate adherence and low addiction severity. Substance use literacy was found to be a significant variable in increasing HIV medication adherence and decreasing addiction severity.

Key words: Substance use literacy, Substance use, HIV medication adherence, Addiction severity modifier

INTRODUCTION

Low substance use literacy, defined as low ability to self-recognize, manage and prevent substance use disorders, renders people who are at risk of substance use disorders susceptible to unhealthy and counterproductive decisions (Loureiro

et al., 2013). Substance users may not be able to manage their ailments if they lack accurate information, understanding, and managing prerequisites for preventing severe consequences. In Kenya, this has been demonstrated in Rift Valley, with high rates of alcohol abuse (15.7%), and low alcohol abuse awareness rate (50.3%)

(NACADA, 2012). A similar association has also been found for other drugs such as bhang and cocaine (NACADA, 2012). This inverted relationship could explain the high rates of none-adherence to HIV medication, as studies have shown that substance use is linked to HIV risk and poor adherence (Assefa, Damen, & Alemayehu, 2005; Nicholas et al., 2014).

Substance use literacy is low among substance users (Loureiro et al., 2013) but poorly understood with regard to medication adherence. Some studies have shown no significant relationship between adherence and general health literacy (Gazmararian et al., 2006; Paasche-Orlow et al., 2006), while others have shown that low health literacy is indeed associated with decreased HIV medication adherence (EL, 2013; Waite, Paasche-Orlow, Rintamaki, Davis, & Wolf, 2008). However, these studies have not measured components of health related to substance use literacy. One study examining adherence to HIV medication among patients with a history of alcohol use found no significant relationship (Paasche-Orlow et al., 2006) and the same was found among adolescents currently consuming alcohol (Murphy et al., 2010). Moreover, these studies have used measures such as the Short Test of Functional Health Literacy in Adults (S-TOFHLA), which do not capture the substance use literacy components (Gazmararian et al. 2006, Waite et al., 2008). It is largely unknown if substance use literacy impacts HIV medication adherence.

Findings from studies incorporating addiction severity have also been mixed. In one study addiction severity and literacy had no significant association (Lincoln et al., 2006), while in another the likelihood of none-adherence increased with

severity of addiction ranging from problem drinking, harmful drinking and eventually dependent drinking (Nuwagaba-Biribonwoha et al., 2012).

Substance use literacy may be a modifiable risk factor whose intervention can improve the management of substance use disorders and medical adherence. With this in mind, we measured substance use literacy in a group of HIV positive adults in Naivasha District Hospital's Comprehensive Care Center in Kenya. We looked for relationships between severe and moderate addiction and substance use literacy. We also measured adherence to medication regimen as well as links between substance use literacy and medication adherence.

METHOD

Participants

In this cross sectional descriptive study, we purposively recruited English-literate, HIV-positive patients attending the Comprehensive Care Center in Naivasha District Hospital aged 18 years and above with a self-reported history of substance use. Purposive sampling was used so as to get only those who met the substance use criteria.

Ethics

The study was reviewed by the Kenyatta National Hospital and University of Nairobi Ethical Review Committee, and the respondents gave written informed consent.

Measures

Addiction Severity Index self report test (ASI-SF) drug and alcohol subset. This instrument, which has been used in Kenya

(Ong'any, 2004), has been found to have high inter-rater reliability ranging from .84 for alcohol to .69 for drug addiction, as well as high Cronbach's alpha, which ranged from .78 for alcohol to .68 for drug addiction (Marcus & Zgierska, 2013). In this study, we used the drug and alcohol subset which asks individuals the number of days in the past 30 days on which they have consumed alcohol, drunk to intoxication, and used a number of specified drugs, as well as the perceived severity of alcohol- and drug-related problems. The drug subset has been found to have a high correlation of 0.61 with the Short Index of Problems-Drugs (SIP-D), while the alcohol subset had a correlation of 0.68 when compared with the SIP for alcohol consequences (Cacciola, Alterman, Habing, & McLellan, 2011). These findings indicate that the ASI was capable of accurately assessing the current severity of drug and alcohol problems. In the current project, we used composite scores which ranged from 0 for no symptoms to 1.0 for high severity. Scores were categorized into no addiction (score = 0), slight addiction (score = 0.1-0.25), moderate addiction (score = 0.26-0.5), considerable addiction (score = 0.51-0.75) and severe addiction (score = 0.76-1).

Questionnaire Assessment of Literacy in Mental Health (QuALiSMental) substance use vignette. The QuALiSMental has been used by Loureiro et al. (2013) in a similar study among the Portuguese. The instrument assesses the level of mental health literacy in five domains, which are explored using a disorder vignette with DSM-IV-TR full criteria symptoms. In this study we used the substance use vignette below.

Jorge is a 25 year old who attends college. Last year he began drinking

alcohol and got drunk at all the parties / gatherings that he was at. His parents worried because Jorge had declining academic performance, was missing classes due to hangovers, and was having his parents called to college because he was appearing intoxicated in class. At the last party, friends called a nearby hospital because he was unconscious.

The five domains include disorder recognition; recognition of professional help and available treatments; recognition of the effectiveness of self-help strategies; knowledge and skills to provide support and first aid to others; and knowledge of how to prevent mental disorders. The instrument is a quantitative measure; scoring is based on how correctly and knowledgeably the participant responds to the components' questions. For example, one of the questions in the disorder recognition vignette is "In your opinion, what is going on with Jorge?" to which the respondent is given several options from which to choose. Though standardization and validation studies are yet to be done on the substance use vignette, in the depression vignette a high level of inter-rater reliability was found, with a kappa coefficient of 0.94, and construct validity being revealed as the mean score tended to increase from 11.44 (SD = 3.23) during pre-training period to 15.86 (SD = 2.63) during post training period (Kelly et al., 2011). This showed that there was a significant association between the vignette questions and the responses, which yielded theoretical support.

Morisky Medication Adherence Scale (MMAS). This 8-item instrument has already been used in Kenya (Kubo, 2013) and has shown strong reliability and

validity, with Cronbach's alpha of 0.72 to 0.83 (Gupta & Goren, 2013). It has also shown content validity in measuring adherence to various forms of medication including Antiretroviral drugs. An example of a question is "Do you sometimes forget to take your medicine?" The instrument responses were coded as either 1 for Yes responses or 0 for No responses and then summed. Higher scores reflect lower levels of medication adherence. Cut off points categorized individuals into low (above 2 score), medium (1-2 score) or high (0 score) adherence.

Procedure

Respondents who scored 3 and above on the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) questionnaire were purposively selected (Ali & Humeniuk, 2006). On signing the informed consent, 200 participants self-administered the tools starting with the researcher-designed demographic questionnaire, Addiction Severity Index self report test (ASI-SF) drug and alcohol subset, Questionnaire Assessment of Literacy in Mental Health (QuALiSMental) substance use vignette, and the 8-item Morisky Medication Adherence Scale (MMAS).

Data Analysis Plan

Descriptive statistics and bi-variate correlations were done for the demographic characteristics using SPSS version 20. Substance use literacy was analyzed with regard to questions categorized into the five components in the QuALiSMental. In addition, statistically significant associations between substance use literacy and adherence, as well as substance use literacy and severity of addiction, were analyzed using Chi-square calculations.

RESULT

Of the 200 questionnaires filled, 21 were excluded because they were incomplete. Of the 179 (97% response rate) respondents who fully participated in the study, most were aged 34 – 41 years (27.4%) and 50.3% of them were females. A majority had a history of substance use consisting of more than a year (63.1%). The substance most often used was alcohol (94.4%). The level of education of most of them was primary school (52.5%). Most respondents had moderate adherence (43%) and had no evidence of addiction (57%) as evident in the Addiction Severity Inventory cut off scores (See Table 1 at the bottom).

Substance Use Literacy

Alcohol Abuse Recognition. Fewer than half of the respondents were able to accurately recognize the alcohol use problem in the vignette; they misperceived it as stress (50.3%) and depression (43.6%). Forty point eight percent (40.8%) accurately perceived it as alcoholism and 42.5% as substance abuse (e.g. alcohol). Other options chosen that later on became significant in the study included bulimia 7(3.9%), nothing wrong 14(7.8%) and nervous breakdown 19(10.6%).

Recognition of Professional Help and Available Treatment. Of the 159 (88.8%) respondents that reported that they would seek help, some would prefer to seek help from a health care professional (36.9%), mother (32.4%), or friend (19.6%) while less than 12% of them would choose father, teacher, and girlfriend/boyfriend (10.6%). 0.6% did not respond. Having a negative opinion (57.5%) and thinking that the treatment would have negative side effects (17.9%) were reported as

Table 1. Socio-Demographic, Substance Use, Adherence and Addiction Severity Profiles

	Frequency/ Percent (N/%)
Gender	
Male	88(49.2%)
Female	90(50.3%)
No Response	1(0.6%)
Age	
18 to 25yrs	12(6.7%)
26-to 33 yrs	35(19.6%)
34 to 41yrs	49(27.4%)
42 to 49 yrs	38(21.2%)
50 to 57yrs	12(6.7%)
58 yrs & above	9(5.0%)
No Response	24(13.4%)
Education Background	
None	11(6.1%)
Primary	94(52.5%)
Secondary	64(35.8%)
University (U-Graduate)	9(5.0%)
University (Masters)	1(0.6%)
Duration of Substance Use	
Days	31(17.3%)
Months	28(15.6%)
Years	113(63.1%)
No Response	7(3.9%)
Income (Kshs.)	
0-9,999	128(71.5%)
10,000-19,999	18(10.1%)
20,000-29,999	9(5.0%)
30,000-39,999	2(1.1%)
40,000 & above	1(0.6%)
No Response	21(11.7%)
Occupation	
Unemployed	45(25.1%)
Employed	59(33.0%)
Self employed	66(36.9%)
Others	6(3.4%)
No Response	3(1.7%)
Substance Used	
Tobacco products	89(49.7%)
Alcoholic Beverages	169(94.4%)
Cannabis	12(6.7%)
Cocaine	5(2.8%)
Amphetamine Type Stimulant	35(19.6%)
Inhalants	6(3.4%)
Sedatives /Sleeping Pills	3(1.7%)
Hallucinogens	1(6.6%)
Opioids	2(1.1%)
Others	4(2.2%)
Adherence	
Low Adherence	33(18.4%)
Medium Adherence	77 (43.0%)
High Adherence	69 (38.5%)
Addiction Severity	
No Addiction	102 (57.0%)
Slight Addiction	13 (7.3%)
Moderate Addiction	27 (15.1%)
Considerable Addiction	16 (8.9%)
Severe Addiction	21 (11.7%)

some of the barriers to seeking help. The respondents felt that they would be more at ease talking to their mothers (59.2%) if they had a problem similar to the vignette. The professionals that would be preferred were a family doctor (86.6%), psychologist (73.2%), and a psychiatrist (58.1%) among others. A close friend, although not a professional, was perceived by respondents as a professional (83.2%). Preferential treatment selected included vitamins (87.7%), antipsychotics (29.1%), and antidepressants (29.6%).

Recognition of Effective Self-Help Strategies. Respondents reported as helpful joining a support group (80.4%), doing physical exercises (79.9%), reading a self help book about the problem (75.8%), consulting a site that contains information about the problem (75.7%), finding expert for mental health (73%), therapy with a specialist (66.9%) and practicing relaxation training (64.6%).

Recognition of Knowledge and Skills for Support and First Aid. Twenty two point three percent (22.3%) of the respondents recognized that not valuing the problem and ignoring it was harmful, while (78.8%) reported that being aware of and attending to the problem was helpful. Of significance is that only (39.1%) of the respondents thought asking the vignette subject about suicidal tendencies was helpful.

Knowledge on How to Prevent Mental Disorders. Most respondents recognized that they would reduce the risks of developing a condition like that of the vignette if they avoided stressful situations (87.2%) and did not drink alcoholic beverages (83.8%) among other options. In addition, they identified that if the vignette subject wanted to, he could resolve his problem on his own (65.9%). In the same

component, more than half reported that they had a family member or a close friend who had a similar condition to that of the vignette subject (59.2%) and that the person had received help (46.4%). In addition, 52% of the respondents were likely to agree with the statements that mental illnesses was cyclical; 60% would agree that mental illnesses require more time to be healed than other diseases; 42% that if one were to suffer from mental illness, it is because they did not get the care they should have had; and 46.4% that individuals that are diagnosed as mentally ill have symptoms throughout their lives (See Table 2 at the bottom).

Substance Use Literacy and Adherence to HIV Medication Disorder Recognition. There was a statistically significant association between adherence and reporting that the vignette subject did not have any problem ($r = 0.081$, $P = 0.003$) as well as reporting that the subject had Bulimia ($r = 0.055$, $P = 0.008$), with most of the respondents who reported these diagnoses having moderate adherence (85.7%, $N=12$ and 100% $N=7$ respectively).

Professional help and available treatment. Those who moderately adhered (42.8%) to medications were more likely to report that close friends would be their support ($P = 0.05$). Also noteworthy is that the willingness to seek help was significantly correlated with adherence ($P = 0.013$), with most respondents preferring a health care professional and having high adherence (50%). Vitamins were the only form of treatment that was significantly associated with adherence ($P = 0.004$) with the majority of respondents considering vitamins as useful/helpful having high adherence (43.2%).

Effectiveness of self help strategies component. Most respondents (80.4%)

considered joining a support group as useful/helpful and this was significantly associated with adherence ($P = 0.043$); also a majority of the respondents supporting this intervention had high adherence (42.4%). In addition, there was a significant association between adherence and doing physical exercises ($P = 0.007$), with most respondents recognizing the intervention as useful/helpful having high adherence (44.1%).

Knowledge and Skills that Provide Support and First Aid Component. “Not valuing his problem and ignoring it until he feels better” was significantly correlated with adherence ($r = 0.107$, $P = 0.016$). It should be noted that most respondents considered this option as harmful (53.1%) and most of them had moderate adherence (41.1%). There was a disturbingly low endorsement for the option of asking if the vignette subject had suicidal tendencies (39.1%).

Preventing mental disorders. Having had someone in the family or a friend who had gone through a situation similar to the vignette subject was significantly associated with treatment adherence ($P = 0.036$) with most respondents who had this experience having moderate adherence (44.3%). Most of the respondents who fully agreed with the statement “If Jorge wanted to, he would come out of this situation for me” had high adherence (42.3%, $P = 0.029$), while those who disagreed completely with the statement “Mental illnesses are cyclic” ($P = 0.016$) had high adherence (52.4%). Those who agreed completely with the statement “Mental illnesses required more time to treat” ($P = 0.007$) had moderate adherence (48.4%), while those who disagreed completely with the statement “If you suffer from mental illnesses it is because of

the care that you didn’t have” ($P = 0.010$) had high adherence (55.4%) (See Table 3 at the bottom).

Substance Use Literacy and Severity of Addiction

Disorder Recognition. There was a significant association between addiction severity and wrongly recognizing the disorder as nervous breakdown ($P = 0.008$), where most of the respondents supporting this response had low addiction severity ($r = -0.198$).

Professional help and available treatment. Addiction severity was significantly associated with thinking that the medication would have side effects as a hindrance to seeking help ($P = 0.028$) and seeking a psychiatrist ($P = 0.043$). Of note is that respondents with low addiction severity were more likely to endorse the former ($r = -0.164$), while those with moderate addiction severity were likely to recognize a psychiatrist as neither helpful nor harmful ($r = 0.156$).

Knowledge and Skills that Provide Support and First Aid, and Preventing Mental Disorders. As would be expected, doing physical exercises, as well as having had someone who had a situation like that of the vignette subject, were both significantly associated with low addiction severity ($r = -0.160$, $P = 0.049$; $r = -0.160$, $P = 0.049$, respectively). Individuals with moderate addiction severity were more likely to agree with the statement that individuals with mental illness have symptoms in their entire life ($r = 0.150$, $P = 0.047$) (See Table 4 at the bottom).

DISCUSSION

The current study found that among HIV positive adults in Naivasha, substance

Table 2. Percentage Response on the Substance Use Literacy Components

Substance use literacy	Frequency/ Percent (N %)
Disorder Recognition Component	
Stress	90 (50.3%)
Depression	78 (43.6%)
Substance Abuse e.g. Alcohol	76 (42.5%)
Alcoholism	73 (40.8%)
Has a problem	59 (33.0%)
Mental illness	38 (21.2%)
Psychological/ Mental / Emotional Problems	31 (17.3%)
Don't know	24 (13.4%)
Nervous Breakdown	19 (10.6%)
Cancer	17 (9.5%)
Psychosis	16 (8.9%)
There is nothing wrong	14 (7.8%)
It's a crisis of her age	13 (7.3%)
Schizophrenia	8 (4.5%)
Bulimia	7 (3.9%)
Anorexia	7 (3.9%)
Professional Help & Available Treatment Component	
<i>Seeking Help</i>	
A Health Care Professional	66 (36.9%)
My Mother	58 (32.4%)
A Friend	35 (19.6%)
My Father	9 (5.0%)
A Teacher	5 (2.8%)
My Girlfriend/Boyfriend	3 (1.7%)
Other	2 (1.1%)
No Response	1 (0.6%)
<i>Ease of Talking To Your Parents</i>	
With The Mother	106(59.2%)
With The Father	62(34.6%)
My Parents Are Not Available	22(12.3%)
My Parents Are Not Aware Of These Issues	32(17.9%)
Do Not Know	13(7.3%)
My Parents Are Not Present	9(5.0%)
Other Reasons	6(3.4%)
<i>Professional Help</i>	
A Family Doctor	155 (86.6%)
A Psychologist	131 (73.2%)
A Psychiatrist	104 (58.1%)
A Close Family Member	149 (83.2%)
A Telephone Counselor	87 (48.6%)
A Social Worker	116 (64.8%)
<i>What Could Prevent Asking For Help</i>	
Think that the person will have a negative opinion about me	103 (57.5%)
Being very shy, ashamed	53 (29.6%)
Think that the person is likely to tell other people	84 (46.9%)
Think that the person doesn't value what I say	47 (26.3%)
Think that nothing could help me	44 (24.6%)
Think that you would know that I'm getting help from a health professional	43 (24.0%)

Table 2. Percentage Response on the Substance Use Literacy Components (Continued)

Think that a person can come to think about me	36 (20.1%)
Think that the treatment has side effects	32 (17.9%)
Thinking that I may have difficulty accessing this person/ health professional	24 (13.4%)
Other reasons	7 (3.9%)
<i>Knowledge Of Helpful Drugs</i>	
Vitamins	148 (87.7%)
Teas	71 (39.7%)
Antidepressant	53 (29.6%)
Antipsychotics	52 (29.1%)
Effectiveness of Self Help Strategies	
<i>If The Respondents Will Seek Help If They Had A Similar Problem</i>	
Yes	159 (88.8%)
No	12 (6.7%)
Do not Know	7 (3.9%)
<i>Activities That Could Help</i>	
Do Physical Exercise	143 (79.9%)
Join A Support Group For People With Similar Problems	144 (80.4%)
Doing Acupuncture	60 (33.5%)
Getting Up Early In The Morning	82 (45.8%)
Therapy With A Specialist	119 (66.5%)
Knowledge & Skills that Provide Support& First Aid to Others	
<i>Options That Respondents Could Use</i>	
Not Valuing His Problem, Ignoring It Until He Feels Better	40 (22.3%)
Tell Him Firmly To Go Forward	46 (25.7%)
Listen To His Problems Comprehensively	141 (78.8%)
Ask If He Has Suicidal Tendencies	70 (39.1%)
Encourage Him Exercise	113 (63.1%)
Knowledge on How to Prevent Mental Disorders	
<i>Reducing Risks of Developing A Condition</i>	
Practice Physical Exercise	140 (78.2%)
Avoid Situations That Cause Stress	156 (87.2%)
Practicing Relaxing Activities Regularly	119 (66.5%)
<i>Personal Opinion On Situation</i>	
If Jorge Wanted To, He Could Come out of This Situation For Me	118 (65.9%)
<i>Personal Experience</i>	
If Someone In Your Family/ Close Circle Of Friends In A Similar Situation	
Yes	106 (59.2%)
No	73 (40.8%)
<i>Are They Receiving Any Help?</i>	
Yes	83 (46.4%)
No	70 (39.1%)
No Response	26 (14.5%)
<i>Respondents Opinions On Statements Regarding Mental Illness</i>	
Mental Illnesses Are Cyclical	92 (52%)
Mental Illnesses Require More Time To Be Healed Than Other Diseases	108 (60%)
Drugs Are Effective In Improving The Symptoms In Mental Illness	100 (56%)
A Person With Mental Illness Is More Likely To Become A Criminal	83 (47%)
If You Were To Suffer From Mental Illness, It Is Because You Didn't Have The Care You Should Have Had	76 (42.5%)
Individuals That Are Diagnosed As Mentally Ill, Have Symptoms Throughout Their Lives	83 (46.4%)

Table 3. Summary Showing Significant Association between Substance Use Literacy and Treatment Adherence

Disorder Recognition Elements		Adherence to Treatment (P-value)-Chi-Square	Adherence to Treatment			Frequency
Responses To What Is The Subject's Problem	Low Adherence		Moderate Adherence	High Adherence		
There's Nothing Wrong	0.003**	1 (7.1%)	12 (85.7%)	1 (7.1%)	14 (7.8%)	
Bulimia	0.008**	0 (0.0%)	7 (100.0%)	0 (0.0%)	7 (3.9%)	
Respondents Ability to Recognize Professional Help & Available Treatment						
Help & Treatment Recognition Elements	Adherence to Treatment (P-value)-Chi-Square	Majority Response	Adherence to Treatment			
			Low Adherence	Moderate Adherence	High Adherence	
Seeking Help	0.013**	My Mother A Healthcare Professional	11 (18.97%)	24 (41.4%)	23 (39.7%)	
Professional Help						
A Close Friend	0.050*	Useful/Helpful	22 (15.2%)	62 (42.8%)	61 (42.1%)	
Knowledge of Drugs Available						
Vitamins	0.004**	Useful/Helpful	25 (16.9%)	59 (39.9%)	64 (43.2%)	
Respondents Ability to Recognize Effectiveness of Self Help Strategies						
Activities That Could Help	Treatment Adherence (P Value)-Chi- Square	Majority Response	Adherence to Treatment			Frequency
			Low Adherence	Moderate Adherence	High Adherence	
Do Physical Exercise	0.007*	Useful/Helpful	25 (17.5%)	55 (38.5%)	63 (44.1%)	143 (79.9%)
Join A Support Group For People With Similar Problems	0.043*	Useful/Helpful	23 (16.0%)	60 (41.7%)	61 (42.4%)	144 (80.4%)

Table 3. Summary Showing Significant Association between Substance Use Literacy and Treatment Adherence (Continued)

		Treatment Adherence (P Value)	Majority Response	Adherence to Treatment			Frequency
				Low Adherence	Moderate Adherence	High Adherence	
Respondents Ability to Recognize Knowledge & Skills That Provide Support and First Aid to Others							
Options That Respondents Could Use							
Not Valuing His Problem, Ignoring It Until He Feels Better	0.016*	Harmful	18 (18.9%)	39 (41.1%)	38 (40.0%)	95 (53.1%)	
Respondents Ability to Know How to Prevent Mental Disorders							
		Treatment Adherence (P-Value)	Majority Response	Adherence to Treatment			
				Low Adherence	Moderate Adherence	High Adherence	
Personal Opinion On Situation							
If Jorge Wanted To, He Could Come out of This Situation For Me	0.029*	I Fully Agree	15 (19.2%)	30 (38.5%)	33 (42.3%)		
If Someone In Your Family/ Close Circle Of Friends In A Similar Situation							
	0.036*	Yes	25 (23.6%)	47 (44.3%)	34 (32.1%)		
Respondents Opinions On Statements Regarding Mental Illness							
Mental Illnesses Are Cyclical	0.016*	I Disagree Completely	12 (19.0%)	18 (28.6%)	33 (52.4%)		
Mental Illnesses Require More Time To Be Healed Than Other Diseases	0.007**	I Agree Completely	10 (16.1%)	30 (48.4%)	22 (35.5%)		
If You Were To Suffer From Mental Illness, It Is Because You Didn't Have The Care You Should Have Had	0.010*	I Disagree Completely	10 (17.9%)	15 (26.8%)	31 (55.4%)		

Table 4. Summary of Correlation between Substance Use Literacy & Severity of Addiction

1. Correlation Between Disorder Recognition Capabilities & Severity of Addiction		ASI Scores
Nervous Breakdown	P-Correlation	-.198**
	Sig. (2-tailed)	.008
	N	179
2. Correlation Between Recognition Of Professional Help & Available Treatment Element Of Substance Use Literacy & Severity of Addiction		ASI Scores
Think that the treatment has side effects	P-Correlation	-.164*
	Sig. (2-tailed)	.028
	N	179
A Psychiatrist	P-Correlation	.156*
	Sig. (2-tailed)	.043
	N	170
3. Correlation Between Recognition of Effectiveness of Self Help Strategies Elements Of The Substance Use Literacy & Addiction Severity Index		ASI Scores
Do Physical Exercise	P-Correlation	-.160*
	Sig. (2-tailed)	.049
	N	153
4. Correlation Between Knowledge & Skills To Provide Support First Aid To Others Element Of The Substance Use Literacy & Addiction Severity Index		ASI Scores
There was no significant correlation		
5. Correlation Between Knowledge of how to prevent Mental Disorders Element Of The Substance Use Literacy & Addiction Severity Index		ASI Scores
If Yes; Have They Received Any Help Or Treatment From Professionals Specializing In These Situations	P-Correlation	-.160*
	Sig. (2-tailed)	.049
	N	153
Individuals That Are Diagnosed As Mentally Ill, Have Symptoms Throughout Their Lives	P-Correlation	.150*
	Sig. (2-tailed)	.047
	N	177

use literacy was low. Despite a history of substance abuse and low substance use literacy rates, most of the respondents had no current addiction and had moderate adherence to HIV medication. The moderate adherence was especially found in cases where respondents identified psychosocial forms of substance use management such as physical exercises and support groups. Participants

had low recognition and endorsement for professionals such as psychiatrists and psychologists, as well as medication such as antidepressants and antipsychotics; seeking help from a close friend and taking vitamins as medication were high and significantly associated with adherence. Surprisingly, correctly recognizing the alcohol use disorder in the vignette was not significantly associated with ad-

herence ($r = 0.011$, $P = 0.977$), but not recognizing that there was any problem significantly associated with adherence ($r = 0.081$, $P = 0.003$). Therefore, recognition of a problem is very important in adherence despite not knowing the exact nature of the problem. Of note is that having had a friend or family member who has had an alcohol use problem and had sought professional help was significantly associated with adherence. Low addiction severity was significantly correlated with few of the substance use literacy elements such as doing physical exercises and having had someone with an alcohol use problem. Doing physical exercises as part of the recognized effective self-help strategies was both significantly correlated with moderate adherence and low addiction severity. However, this does not mean that physical exercises are the only important strategies in increasing adherence and reducing addiction. This is because when it comes to perceived professional help, seeking a close friend is significantly correlated with moderate adherence while seeking a psychiatrist is significantly correlated with low addiction severity. This shows that substance use literacy, medical adherence and addiction severity are somewhat mutually inclusive.

An association between substance use and poor adherence to HIV medication has been found in many studies as was also evident in this study (Assefa et al., 2005; Nicholas et al., 2014). Moreover, the present results support previous reports that substance use literacy is low among substance users (Loureiro et al., 2013). However, the present results do not support findings by Lincoln et al. (2006), which found no significant association between severity of addiction and literacy. There are no studies that portray

the relationship between substance use literacy, as defined in this research, and adherence to medical treatment. With this study, this relationship has been well defined.

Poor adherence is facilitated by lack of knowledge on how to identify whether or not there is a problem. Moderate adherence is evident among substance users who are unable to recognize professionals, treatment and skills that can aid management. Poor adherence is also due to lack of knowledge of self help skills that are vital in management; literacy on psychosocial forms of management is associated with moderate levels of Adherence. Illiteracy on prevention mechanisms is also associated with poor adherence.

The findings of this research imply that most substance users are well oriented to psychosocial forms of management. However, these only aid in acquiring moderate medication adherence, hence health outcomes continue to be low. Therefore, as part of HIV medication therapy, extensive psycho-education on recognition of substance use disorders; professional help and available treatment; effectiveness of self help strategies; knowledge and skills that provide support and first aid; as well as prevention of mental disorders should be incorporated. Moreover, this form of therapy should be tailored to severity of addiction.

CONCLUSION

Substance use literacy is a multidimensional construct whose components, whether in totality or individually, have a significant impact on medication adherence levels and addiction severity. This study lays a foundation for understanding

this relationship. Similar studies, including ones targeting substance use literacy as an intervention among substance users receiving HIV medication, will further illuminate the under workings of this relationship.

STUDY LIMITATIONS

The study was held in a clinical setting and hence results and implications may not be generalized to a community setting. In addition, the study reflects adherence to HIV medication and hence the findings may not be true for other forms of medication. However, the health outcomes of people with HIV are quite sensitive to any change in medication adherence. Moreover, the response options in the measure used to assess substance use literacy may not have captured all possible alternatives relevant to substance abuse treatment.

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