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Substance use among HIV-infected patients in Rio de Janeiro, Brazil: Agreement between medical records and the ASSIST questionnaire

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1Substance use among HIV-infected patients in Rio de Janeiro, Brazil: agreement between medical records and the

2ASSIST questionnaire

3

4**Background:** Substance use assessment is a challenge in busy clinical settings that may adversely affect HIV-infected
5persons. This study aimed to evaluate agreement between the medical chart and a standardized substance use screening
6questionnaire.

7**Methods:** Of adults (n=1050) in HIV care in Rio de Janeiro who completed the World Health Organization's Alcohol,
8Smoking and Substance Involvement Screening Test (ASSIST) we randomly selected 200 participants for medical chart
9review. Lifetime use of tobacco, alcohol, marijuana, and cocaine agreement between the medical record and ASSIST was
10evaluated using Kappa statistics. Sensitivity and specificity of chart information were also calculated.

11**Results:** The median age was 42.4 years, 60.3% were male and 49.5% were white. Prevalence of lifetime use reported in
12ASSIST was 55.3% (tobacco), 79.4% (alcohol), 23.1% (marijuana), and 20.7% (cocaine). Any information on lifetime use
13was found in the medical chart for tobacco (n=180, 90.5%), alcohol (n=183, 92.0%), marijuana (n=143, 71.8%) and
14cocaine (n=151, 75.9%). The Kappa statistic, sensitivity and specificity of the medical chart accurately identifying lifetime
15substance users per ASSIST were respectively 0.60, 0.71, and 0.91 for tobacco; 0.22, 0.75, and 0.51 for alcohol; 0.58,
160.51, and 0.98 for marijuana; and 0.73, 0.75, and 0.96 for cocaine.

17**Conclusion:** Considering inaccuracies in the medical chart, the implementation of brief, standardized substance use
18screening is recommended in HIV care settings.

19**Highlights:**

- 20 • Information from the medical chart did not allow the diagnosis of substance use disorders.
- 21 • The medical chart was a more specific than sensitive indicator of lifetime substance use

22**Key words:** substance use, HIV/AIDS, concordance, medical record, questionnaire

23

241. Introduction

25 Brazilian surveys estimated that 15-17% of the adult population currently use tobacco, 24-54% consume
26 alcohol weekly, while 2.5% reported marijuana use and 1.7% cocaine use in the last 12 months (IBGE, 2014; INPAD,
27 2014). Previous studies conducted at the Instituto Nacional de Infectologia Evandro Chagas (INI) of the Fundação
28 Oswaldo Cruz (Fiocruz) in Rio de Janeiro (Brazil) found that 19.5- 29.9% of individuals under care for HIV were smokers,
29 and 30.1%, 3.9% and 3.5% reported alcohol, marijuana and cocaine use, respectively, in the last 3 months (Machado et
30 al., 2017; Torres et al., 2014). The higher prevalence of substance use among HIV-infected persons compared to the
31 general population is worrisome. Considering international data, treatment for smoking should become a priority in HIV
32 care because smoking decreases life expectancy (Reddy et al., 2016), maybe even more than HIV itself (Helleberg et al.,
33 2013). In addition, problematic alcohol (Azar et al., 2010; Baum et al., 2010; Braithwaite et al., 2007; Gonzalez et al.,
34 2011; Rehm et al., 2010) and cocaine use (Baum et al., 2009; Cook et al., 2008) have been associated with poorer HIV
35 outcomes, while the findings literature on marijuana use are mixed (Bonn-Miller et al., 2014; Gonzalez et al., 2011).

36 Despite these findings, and as in other medical settings (Mitchell et al., 2012), substance use may not be
37 regularly assessed during routine HIV care (Korthuis et al., 2008; Metsch et al., 2008). The paucity of quality information
38 (Korthuis et al., 2010) in the medical chart may underestimate the prevalence of substance use disorders (Bai et al.,
39 2014), and may be a missed opportunity to treat substance use and improve HIV outcomes. Given the importance of
40 substance use assessment and the scarcity of data among Brazilian HIV-infected persons, we aimed to assess the
41 agreement between substance use information recorded in the medical chart and reported in the ASSIST questionnaire,
42 as well as sensitivity and specificity of the medical chart to detect substance use, among HIV-infected persons in HIV care
43 in Rio de Janeiro, Brazil.

442. Materials and methods

45 We conducted a cross-sectional analysis at the INI/Fiocruz. A random sample of 200 participants was selected
46 from 1050 HIV-infected adults (\geq 18 years of age) who are followed in the INI's HIV cohort (Grinsztejn et al., 2009, 2007;
47 Moreira et al., 2011) and completed the World Health Organization's (WHO) Alcohol, Smoking, and Substance
48 Involvement Screening Test vs3.1 (ASSIST) in Portuguese for the Brazilian population (Henrique et al., 2004). The sample

49size to detect a difference between a null Kappa=0.4 and hypothetical Kappa=0.6 with 80% power (alpha=0.05),
50considering the substance with lowest prevalence found in ASSIST (cocaine use, 20%) is n=187 (R Statistical Software
51version 3.2.2). One author (IKM) extracted documented references to endorsement or denial of tobacco, alcohol,
52marijuana, cocaine, and unspecified illicit drug use. Words searched for included: 'bebidas alcoólicas' (alcoholic
53beverages), 'alcóol' (alcohol), 'cachaça' (a popular type of liquor), 'destilados' (liquors), 'cerveja' (beer), 'vinho' (wine),
54'etilista' (alcoholic), 'etoh' (ethyl alcohol), 'maconha' (marijuana), 'crack', 'cocaína' (cocaine), and the non-specific phrase
55'drogas ilícitas' (illicit drugs). Because denial of illicit substance use, such as marijuana and cocaine use, may be recorded
56non-specifically as no illicit drug use, charts with no specific marijuana or cocaine use information and explicitly recorded
57no illicit drug use were categorized as no marijuana or cocaine use for statistical calculations. The entire medical chart,
58including all physician, psychologist, and nutrition notes, of each participant was reviewed from the first appointment in
59the cohort to when the medical chart review was conducted, in October 2015 after the administration of ASSIST (August
602013 to September 2015). Because only 18 participants had information about any substance use within three months
61prior to ASSIST administration, any endorsement of substance use in the medical chart was compared to lifetime use per
62ASSIST.

63 Prevalence of both lifetime and current problematic substance use as per ASSIST are described. For each
64substance, lifetime use was a positive answer to the ASSIST question, "In your life, which of these substances have you
65used" with a list containing "tobacco," "alcoholic beverages," "marijuana," and "cocaine, crack". ASSIST scores were
66calculated per standardized instructions and problematic use of each substance was defined as an ASSIST score
67corresponding to moderate or high risk of experiencing health problems from the current pattern of use, ≥ 11 for alcohol
68and ≥ 4 for tobacco, marijuana, and cocaine (WHO, 2016). Demographic information was retrieved from INI's HIV cohort
69database.

70 Agreement between medical charts and ASSIST information on lifetime use of each substance was evaluated by
71proportion agreement and Kappa statistics (κ). Considering ASSIST as the gold standard, sensitivity and specificity of
72medical chart information on lifetime use were also calculated. All statistical analyses were performed with R Statistical
73Software version 3.2.2.

743. Ethical Considerations

75 Studies were approved by the INI Institutional Review Board (CAAE 17844113.2.0000.5262 and CAAE
760032.0.009.000-10) and individuals signed an informed consent form. As this analysis used a de-identified dataset for
77 purposes within the scope of the original consent form, this work was exempt from additional review by the University of
78 California, Los Angeles Institutional Review Board.

794. Results

80 The study sample (n=199) had a median age of 42.4 years, was 60.3% male (n=120), 49.5% white (n=98), 68%
81 heterosexual (n=134), and 55.6% of low education (never entered high school, n=110). The prevalence of lifetime use of
82 tobacco, alcohol, marijuana and cocaine was 55.3% (110/199), 79.4% (158/199), 23.1% (46/199), and 20.1% (40/199)
83 respectively. The prevalence of lifetime polysubstance use (use of ≥ 2 substances) was 59.3% (118/199). Problematic use
84 of tobacco, alcohol, marijuana, and cocaine in the last 3 months was reported by 18.6% (37/199), 2.0% (4/199), 4.5%
85 (9/199), and 5.0% (10/199) as captured by ASSIST (Table 1). Ten participants (10/199) screened positively for problematic
86 substance use of more than one substance.

87 The medical chart did not provided any tobacco and alcohol use information for 9.5% (19/199) and 8.5%
88 (16/199) of participants, while 27.6% (55/199) and 24.1% (48/199) lacked information on marijuana and cocaine use.
89 The chart failed to capture 8.1% (3/37), 33.3% (3/9), and 30% (3/10) of problematic tobacco, marijuana, and cocaine
90 users respectively (Table 1). Four participants reporting lifetime tobacco use and two reporting lifetime alcohol use were
91 excluded from the calculation of problematic use because of ASSIST data incompleteness.

92 The agreements between the medical chart and ASSIST for tobacco (n=180), alcohol (n=183), marijuana (n=143)
93 and cocaine (n=150) were 79%, 70%, 86%, and 91% with respective Kappa statistics of 0.60, 0.22, 0.58, and 0.73 (Table
94). The sensitivity of the medical chart accurately identifying lifetime substance users per ASSIST was 0.71 for tobacco,
95 0.75 for alcohol, 0.51 for marijuana, and 0.75 for cocaine with respective specificities of 0.91, 0.51, 0.98, and 0.96. (Table
96).

975. Discussion

98 The prevalences of lifetime tobacco, alcohol, marijuana, and cocaine use were 55.3%, 79.4%, 23.1%, and 20.7%,
99 respectively, per ASSIST with moderate agreement with the medical chart for tobacco (0.60) and marijuana (0.58), poor
100 agreement for alcohol (0.22), and good agreement for cocaine (0.73). As the agreement of lifetime alcohol use (70%) was
101 lower than the prevalence of alcohol use per ASSIST (80%), the medical chart is a poorer predictor of alcohol use than
102 assuming all charts indicate lifetime alcohol use. This poor agreement is reflected in the 30% (55/183) of participants
103 who had conflicting information between the medical chart and ASSIST. That about two thirds (37/55) denied using
104 alcohol to their health care provider but reported it on ASSIST may reflect social desirability bias or a permissive alcohol
105 culture where alcohol use is not considered potentially problematic by patients or by health providers. As a converse
106 example, the agreement between medical chart and ASSIST for lifetime cocaine use (91%) was higher than the
107 prevalence of the majority response "no" (79%), indicating that the medical chart is a useful predictor of lifetime cocaine
108 use. Excepting alcohol, the sensitivities of the medical chart accurately identifying lifetime substance use per ASSIST were
109 lower (0.51-0.75) than the respective specificities (0.91-0.98), implicating that an additional effort is needed to identify
110 substance use in HIV care. These results underscore the value of the ASSIST instrument in systematically collecting
111 information that may be minimized or neglected during the regular medical interview (such as current substance use)
112 but is crucial for planning the needs of mental health and addiction treatment in this population.

113 Limitations of this study include the use of convenience sampling (n=1050), which may not accurately represent
114 the entire INI cohort nor other HIV-infected populations. Moreover, patients at INI may take part in research protocols
115 that include substance use screening. This information becomes part of their medical chart, and therefore can affect
116 their care, but does not necessarily reflect that patients' own providers screened for substance use at a regular HIV clinic
117 visit.

1186. Conclusions

119 Both current and lifetime substance use prevalence, particularly that of marijuana and cocaine, is underreported
120 in the medical chart and information was not complete enough to provide the diagnosis of substance use disorders. The
121 medical chart was an accurate predictor of lifetime tobacco, marijuana, and cocaine but not alcohol use as identified by

122ASSIST. Given the potential impact of substance use on HIV and non-HIV outcomes, our results support standardized

123substance use screening as a regular part of HIV/AIDS care.

124

125Table 1. Number of participants with lifetime use, no lifetime use, or no information found in medical chart by lifetime
126(1a) and problematic use (1b) per ASSIST (INI FIOCRUZ, 2015).

a.	ASSIST		Medical Chart		
	Lifetime Use (n)	No information	Lifetime use	No lifetime use	No illicit drug use**
Tobacco	Yes (110)	8	72	30	--
	No (89)	11	7	71	--
Alcohol	Yes (158)	12	109	37	--
	No (41)	4	18	19	--
Marijuana	Yes (46)	25	19	2	16
	No (153)	151	2	0	104
Cocaine	Yes (40)	15	24	1	7
	No (159)	149	5	5	108
Unspecified Illicits*	---	74	2	124	

b.	ASSIST		Medical Chart		%***
	Problematic Use (n)	No information	Lifetime use	No lifetime use	
Tobacco	Yes (37)	0	34	3	92%
	No (69)	8	34	27	
Alcohol	Yes (4)	0	4	0	100%
	No (152)	12	104	36	
Marijuana	Yes (9)	3	6	0	67%
	No (37)	22	13	2	
Cocaine	Yes (10)	3	7	0	70%
	No (30)	12	17	1	

*Explicit statement of "illicit drug use" extracted from the medical chart

**n participants with no marijuana or cocaine information *and* explicit denial of illicit drug use per the medical chart

***% of problematic users with lifetime use documented in the medical chart

128Table 2. Agreement, sensitivity, specificity, and Kappa statistic of medical chart information by substance (INI FIOCRUZ, 1292015).

N	Tobacco	Alcohol	Marijuana	Cocaine
	180	183	143	150
ASSIST Prevalence of Majority Response	0.57 (Yes)	0.80 (Yes)	0.74 (No)	0.79 (No)
Agreement	0.79	0.70	0.86	0.91
Sensitivity (95% CI)	0.71 (0.61, 0.79)	0.75 (0.67, 0.81)	0.51 (0.36, 0.67)	0.75 (0.58, 0.88)
Specificity (95% CI)	0.91 (0.83, 0.96)	0.51 (0.36, 0.67)	0.98 (0.93, 0.99)	0.96 (0.90, 0.98)
Kappa	0.60 (0.48, 0.71)	0.22 (0.05, 0.39)	0.58 (0.40, 0.75)	0.73 (0.59, 0.87)

Wilson-score confidence intervals reported

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