

Research paper

Is a patient's type of substance dependence (alcohol, drug or both) associated with the quality of primary care they receive?

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ABSTRACT

Background Primary care clinicians' attitudes may differ based on patients' substance dependence type (alcohol, other drugs or both).

Aim The aim of this study was to evaluate whether substance dependence type is associated with primary care quality (PCQ).

Methods We tested the association between substance dependence type and six PCQ scales of the Primary Care Assessment Survey (PCAS) in multivariable linear regression models. We studied alcohol- and/or drug-dependent patients followed prospectively who reported having a PCC ($n = 427$) in a primary care setting.

Results We used the Composite International Diagnostic Interview-Short Form to assess substance dependence type and we used the PCAS question-

naire to measure primary care quality. Dependence type was significantly associated with PCQ for all PCAS scales except whole-person knowledge. For the significant associations, subjects with drug dependence (alone or together with alcohol) had lower observed PCAS scores compared with those with alcohol dependence only, except for preventive counselling.

Conclusions Drug dependence was associated with worse PCQ for most domains. Understanding the reasons for these differences and addressing them may help improve the quality of primary care for patients with addictions.

Keywords: addiction, attitudes, drug dependence, primary care, quality

How this fits in with quality in primary care

What do we know?

The quality of care received by patients with alcohol and other drug-related problems can depend, in part, on clinicians' attitudes, which may vary according to the patient's substance dependence type (alcohol, other drugs, or both).

What does this paper add?

This paper shows that substance dependence type, particularly drug dependence (with or without alcohol dependence), and injection drug use, are associated with worse primary care quality in domains involving the physician–patient relationship.

Introduction

The Institute of Medicine (IOM)¹ and others^{2,3} define primary care as sustained partnerships with essential attributes of comprehensiveness, coordination and accessibility. Many have advocated addressing alcohol and other drug (AOD) problems in primary care, as they are common issues in this setting.^{4–6} Addictions are often chronic disorders,⁷ and primary care has the potential to improve addiction outcomes. The quality of primary care delivered, including quality of care as reported by the patient, is linked to important patient care outcomes such as adherence to physician advice and improved health status.⁸ In chronic disorders such as diabetes mellitus,⁹ depression¹⁰ and tobacco dependence,⁸ primary care quality (PCQ) is an important determinant of outcomes. Institutional, structural, interactional and personal factors are associated with quality of primary care. Core features of PCQ, particularly those reflecting the quality of the physician–patient relationship, are associated with positive addiction outcomes.⁵

Addressing AOD problems in primary care makes them mainstream health issues, thereby potentially decreasing stigma related to use of these substances and improving care. AOD-related stigma^{11,12} may have direct consequences for the quality of care received by patients with AOD-related problems.^{13,14} According to Fortney and colleagues,¹⁵ the greater the feeling of stigmatisation perceived by alcohol users, the lower was the adherence to alcohol treatment. Injection drug users (IDUs) with HIV infection had significantly lower rates of exposure to antiretroviral therapy (13.5%) compared with patients with HIV who did not use injection drugs, who were cared for by the same physicians (36.1%).¹⁶

The quality of care received by patients with AOD-related problems can depend, in part, on clinicians' attitudes.^{17–19} Physicians may fear being deceived and manipulated by patients, not having the right tools to address AOD problems, and avoid talking about drugs with patients, even when this is the patient's main

concern.²⁰ Ronzani and colleagues²¹ reported that health professionals seem to have less personal difficulty working with patients who have alcohol dependence than they do with patients who have other substance dependence. Given these findings, and also given that some drug use is socially acceptable and even normative (e.g. alcohol use) and other use is highly stigmatised and generally unacceptable (e.g. injection drug use), it is likely that clinicians' attitudes differ by type of substance use and disorder, and that in turn these attitudes could affect the quality of care they receive. However, the issues of clinicians' attitudes differing by the type of substance use and these attitudes affecting quality of care, have not been largely studied.

Therefore, the aim of this study was to evaluate whether a patient's substance dependence type (alcohol, other drug, or both) was associated with PCQ. We studied patient self-reported PCQ and hypothesised that patients diagnosed with (other) drug dependence would have worse PCQ compared with alcohol dependence alone.

Methods

Study design

Data were obtained from a prospective cohort study of 563 alcohol- and/or drug-dependent patients enrolled in a randomised controlled trial – the Addiction Health Evaluation and Disease management (AHEAD) study. The AHEAD study was a trial of the effectiveness of alcohol and/or drug dependence chronic disease management in primary care with 3-, 6- and 12-month in-person follow-up. The subjects were randomised to attend a chronic care management clinic (the AHEAD clinic (intervention)) or to a control group that did not have access to the clinic. Both groups received appointments with a primary care physician and access to motivational enhancement counselling. The AHEAD clinic provided assessment, and ongoing care man-

agement on-site and by referral, by staff with experience caring for patients with addictions (an internist, psychiatrist, social worker and nurse care manager). People eligible for the AHEAD study were adults (aged 18 years or older) with current alcohol dependence and heavy alcohol use and/or current drug dependence and recent opioid or stimulant use, who were able to interview and consent, speak English or Spanish, were willing to establish or continue primary care at the institution where the study took place, were willing to attend at least an initial AHEAD clinic visit and return for research interviews in follow-up. They had to provide two contact persons to assist with follow-up, have a Mini-Mental State Examination score > 20 , and not be pregnant. Readiness to change substance use or seek help was not a criterion. Subjects were recruited from an in-patient detoxification unit, advertisements in the community, and clinical settings (primary care, hospital, emergency department) at an urban safety-net (i.e. underserved community, cared for all regardless of ability to pay) medical centre.

To study the association between substance dependence type and primary care quality, we studied subjects from the AHEAD trial who had exposure to primary care, which was assessed in follow-up interviews. As such, subjects in this analysis completed at least one follow-up interview. In addition, only interviews in which subjects reported having a primary care clinician (PCC; affirmative response to 'Is there one particular doctor (or primary care provider, e.g. Nurse Practitioner or Physician Assistant) that you consider to be your regular personal primary care doctor?') were included in the current analyses. Subjects provided written informed consent and were assessed in person by trained research assistants using standardised interviews, and with assurances of confidentiality. Interviews covered demographics, substance use and severity, readiness to change drinking and drug use, mental health, and healthcare utilisation. We also assessed whether they had a PCC at each timeframe, and for how long – primary care utilisation (number of visits to the doctor in the past 3 months) and primary care duration (< 6 or ≥ 6 months). They received modest compensation for their time. The study was approved by the Institutional Review Board at the Boston University Medical Campus. A certificate of confidentiality issued by the federal government further protected subjects' privacy.

Main independent variable

The main independent variable of interest was substance dependence type as assessed and determined by the Composite International Diagnostic Interview-Short Form^{22–24} at study enrolment. Subjects were

classified into one of the following three categories: current (past-year) alcohol dependence, drug dependence, or both alcohol and drug dependence.

As a secondary analysis, because we suspected that the greater stigma associated with injection drug use (versus drug dependence in general) might have a greater effect on PCQ, we replaced substance dependence type with any injection drug use (the question asked was: 'In your lifetime, have you ever injected drugs?').²⁵

Dependent variables

The Primary Care Assessment Survey (PCAS)⁸ was administered during follow-up interviews. It is a well-validated, patient-completed survey that measures defined attributes of primary care described by the Institute of Medicine (1996).^{1–3,26} The PCAS is a measure of PCQ in the context of a specific physician–patient relationship. Nine summary scales (Table 1) cover two broad areas of PCQ: the patient–physician relationship (communication, interpersonal treatment, thoroughness of the physical exam, whole-person knowledge, preventive counselling, and trust) and structural/organisational features of care (organisational access, financial access, and visit-based continuity). Each scale has a range from 0 to 100 with higher scores indicating more of the underlying attribute. Because we anticipated most subjects would have primary care at one institution where the structural/organisational features of care would vary very little, and because we were primarily interested in how dependence type would affect the physician–patient relationship, we analysed only the six patient–physician relationship summary scales.

Covariates

Potential confounders were selected based on the literature^{5,10,27} and clinical knowledge. They included age, sex, race/ethnicity (white vs. other), the mental component summary (MCS) scale of the Short Form Health Survey (SF-12),²⁸ homelessness (one or more nights in a shelter or on the street in the past 3 months), employment (any vs. none), education (high school or more vs. less), any medical comorbidity, income (\$19 999 or less, \$20 000–\$49 999, and \$50 000 or more), health insurance (any vs. none), incarceration (ever vs. never), and randomisation group (of note, in analyses of the randomised trial results, the intervention was not associated significantly with substance use or other health outcomes).²⁹

Analysis

We generated descriptive statistics of all covariates at baseline stratified by dependence type. In addition, we described primary care utilisation across the follow-

Table 1 Summary of item content for Primary Care Assessment Survey – range from 0–100, where 100 is best (adapted from Safran *et al*, 1998 and Kim *et al*, 2007)

Defining characteristic	Description
Physician–patient interaction	
Communication	Thoroughness of primary physician's questions about symptoms, attention to what patient says, clarity of explanations and instructions, and advice and help in making decisions about care
Interpersonal treatment	Primary physician's patience, friendliness, caring, respect, and time spent with patient
Thoroughness of physical exam	Primary physician's physical examination thoroughness
Whole-person knowledge	Primary physician's knowledge of patient's medical history, responsibilities at work, home and school, and health concerns, values and beliefs
Preventive counselling	Whether physician has discussed the following with patient: smoking, alcohol use, seatbelt use, diet, exercise, stress, safe sex
Trust	Assessment of physician's integrity, competence, and role as patient's agent
Structural feature of care	
Organisational access	Ability to get through to physician's office by telephone, to get a medical appointment when sick, to obtain information by telephone, punctuality of appointments, convenience of office location, and convenience of office hours
Financial access	Assessment of amount of money patient pays for physician visits, medication and other prescribed treatments
Visit-based continuity	How often patient sees primary care physician (not an assistant or partner) for routine check-ups and for appointments when sick

up period (i.e. at 3, 6 and 12 months post baseline) using two different variables. We estimated the median number of primary care visits in the past 3 months reported across follow-up visits, and also the proportions reporting they had a PCC for more than 6 months at each visit.

The association between substance dependence type (or injection drug use) and PCQ outcomes was tested using the general linear model for correlated data.³⁰ The models incorporated outcomes from the same subject at multiple timepoints (3, 6 and 12 months) and use all available observations from each subject (i.e. can handle incomplete data due to missing responses). The models used an unstructured covariance matrix (i.e. no explicit structure was imposed on the covariance among repeated measurements), where each variance and covariance between pairs of repeated measures was estimated using all available data. Analyses adjusted for baseline values of age, sex,

race/ethnicity, randomisation group, income, comorbidity and education, and the following were treated as time-varying covariates (updated at each time point): mental component summary, homelessness, employment, health insurance and incarceration. To minimise the potential for collinearity, we assessed correlation between pairs of independent variables and covariates to verify that no pair of variables included in the same regression model was highly correlated (i.e. $r > 0.40$). Analyses were conducted using two-sided tests and a significance level of 0.05. Owing to the exploratory nature of the analyses, adjustments were not made for multiple comparisons. To aid in the interpretation of results, adjusted mean PCQ scale values by dependence type were generated for the 3-month timepoint, substituting overall sample means for continuous covariates and observed proportions for categorical covariates. All analyses were conducted using SAS Software (version 9.2; SAS Institute, Cary, NC).

Results

Of 427 subjects included in the study sample (i.e. those in the AHEAD study, who had at least one follow-up interview and reported having exposure to primary care at any time during follow-up), 299 reported having a PCC at the first follow-up (3-month) interview, 314 reported having a PCC at 6 months and 345 reported having a PCC at 12 months, contributing to a total of 958 observations in the longitudinal regression models. Sixty-one per cent, 71% and 83% of the subjects reported having a PCC for more than 6 months at the 3-, 6- and 12-month follow-ups, respectively. The median (IQR) total number of primary care visits across follow-up was 1 (0, 2) for those with one follow-up visit (data represent total visits in 3-month time period); 2 (1, 4) for those with two follow-up visits (data represent total visits in 6-month time period); 3 (2, 6) for those with three follow-up visits (data represent total visits in 9-month period).

In our sample, 14% of the respondents had alcohol dependence only, 20% had drug dependence only, and 66% had both alcohol and drug dependence. The sociodemographic and health characteristics of the study sample are displayed in Table 2. Subjects with alcohol dependence were older (mean age 46 years) than those with both alcohol and drug dependence (mean age 40 years) and those with drug dependence alone (mean age 34 years). Most of the participants were men, unemployed, and had been incarcerated before. A majority of study subjects (more than 80%) were insured and a substantial minority (less than 25%) had not graduated from high school. Those with alcohol dependence only were more likely to have medical comorbidity and less likely to have used injection drugs. However, those with drug dependence only had the highest prevalence of ever injecting drugs and were least likely to be homeless and have health insurance. Those with both alcohol and other drug dependence were the most likely to ever have been incarcerated.

Table 2 Study sample characteristics stratified by substance dependence type* at baseline ($n = 427$)

	Alcohol only	Drug only	Both	<i>P</i> values
Mean age	46 (SD: 8)	34 (SD: 10)	40 (SD: 10)	<0.0001
Mean Mental Component Summary**	33 (SD: 11)	30 (SD: 9)	30 (SD: 9)	0.1069
	%	%	%	
Male	85	55	71	0.0003
Race				
White	45	65	37	0.0001
Black	32	19	42	
Other	23	15	20	
Homelessness, any***	63	37	64	<0.0001
Unemployed	58	60	65	0.5172
High-school graduate	87	77	76	0.1765
Any medical comorbidities	63	40	49	0.0207
Ever injected drugs	12	84	51	<0.0001
Income (\$19,999 or less)	52	33	46	0.0425
Health insurance (yes)	90	69	86	0.0003
Ever incarcerated	72	67	80	0.0244

* Alcohol dependence, other drug dependence or both, as defined by the Composite International Diagnostic Interview-Short Form.

** MCS scale of the SF-12 Short Form Health Survey.

*** 1+ nights in shelter or on street in the past 3 months.

In adjusted analyses, dependence type was significantly associated (global $P < 0.05$) with patient self-reported PCQ for all patient–physician relationship PCAS scales except whole-person knowledge (Table 3). In pair-wise comparisons, subjects with alcohol dependence rated the quality of primary care that they received significantly higher than those with drug dependence only or both alcohol and drug dependence in four domains: thoroughness of physical exams, communication, interpersonal treatment and trust. Those with drug dependence only rated their preventive care significantly worse than those with both alcohol and drug dependence. Mean adjusted differences ranged in absolute value from 0.02 to 10.21 points on these 100-point summary scales. Adjusted mean scores for each of the physician–patient relationship PCAS scales for the sample at 3 months for alcohol dependence only, drug dependence only, and both (alcohol and drug dependence), respectively, were: thoroughness of exams (76, 68 and 70), communication (80, 73 and 74), interpersonal treatment (79, 71 and 71), whole-person knowledge (62, 55 and 58), trust (80, 72 and 72) and preventive counselling (60, 57 and 67).

Concerning the associations between injection drug use and primary care quality, in adjusted analyses, injection drug use was significantly associated with lower primary care quality in five of the six physician–patient-relationship domains (all but preventive counselling; see Table 4).

Discussion

In this study, having drug dependence, with or without alcohol dependence, was associated with receiving significantly worse patient-rated quality of primary care across most (four of six) domains involving the physician–patient relationship. Injection drug use specifically, a highly stigmatised behaviour, was consistently associated with lower quality of primary care. These associations were present in analyses adjusted for potential confounders such as sex, race/ethnicity and health insurance.

People with AOD-related problems can get poor quality of care in part as a result of clinicians' attitudes, including stigmatising attitudes,^{11,12,31} which may help to explain the disparities in quality of care found in this study. Stigmatisation of people with drug-related problems is a historical, political and social phenomenon³² from which health professionals are not immune. In Australia, IDUs reported being discriminated against by the police (80%), hospital staff (60%), doctors and pharmacists (57%), methadone providers (33%) and community health workers (7%).³³ In addition to stigmatisation as an explanation for differences in quality of care, other studies have demonstrated the importance of the physician–patient relationship (a part of quality primary care), for the receipt of high-quality care and for better outcomes.^{10,34} Among HIV-infected individuals, trust

Table 3 Association between substance dependence type and primary care quality across time (as measured by PCAS scale scores (adjusted mean differences))

Dependence type	Adjusted mean differences (β) in PCAS scale scores [†]					
	Thoroughness of exams	Communication	Interpersonal treatment	Whole-person knowledge	Trust	Preventive counselling
	β (95% CI)	β (95% CI)	β (95% CI)	β (95% CI)	β (95% CI)	β (95% CI)
Alcohol only vs. both	6.25 (1.33–11.18)*	5.92 (1.13–10.71)*	8.08 (3.15–13.01)*	3.70 (–1.75–9.16)	7.62 (3.20–12.03)*	–6.75 (–13.76–0.27)
Drug only vs. both	–1.90 (–6.40–2.60)	–1.30 (–5.65–3.05)	0.02 (–4.45–4.50)	–2.70 (–7.64–2.24)	–0.32 (–4.30–3.67)	–10.21 (–16.56––3.86)*
Alcohol only vs. drug only	8.15 (1.96–14.35)*	7.22 (1.21–12.23)*	8.05 (1.87–14.24)*	6.41 (–0.44–13.25)	7.93 (2.40–13.46)*	3.46 (–5.33–12.26)
Global P value	0.0228	0.0349	0.0054	0.1847	0.0029	0.0025

PCAS = Primary Care Assessment Survey. CI = confidence interval.

* p value for pairwise comparison < 0.05 .

† Models were adjusted for time point and randomisation group, baseline measures of age, sex, race, education, income, comorbidity and time-varying measures of MCS, health insurance, employment, homelessness and incarceration.

Table 4 Association between injection drug use and primary care quality across time, as measured by the PCAS scale scores (adjusted mean differences)

Any past injection drug use	Adjusted mean differences (β) in PCAS scale scores [†]					
	Thoroughness of exams	Communication	Interpersonal treatment	Whole-person knowledge	Trust	Preventive counselling
	β (95%CI)	β (95%CI)	β (95%CI)	β (95%CI)	β (95%CI)	β (95%CI)
Yes vs. no	-5.64 (-9.31– -1.96)	-4.50 (-8.06– -0.93)	-5.68 (-9.34– -2.03)	-5.00 (-9.03– -0.97)	-6.07 (-9.35– -2.80)	-0.15 (-5.40– 5.09)
<i>P</i> value	0.0027	0.0135	0.0024	0.0151	0.0003	0.9544

PCAS = Primary Care Assessment Survey. CI = confidence interval.

[†] Models were adjusted for time point and randomisation group, baseline measures of age, sex, race, education, income comorbidity and time-varying measures of MCS, health insurance, employment, homelessness and incarceration.

and whole-person knowledge have been linked to higher adherence to HIV medications³⁵ as well as better physical and mental health functioning.³⁶ Kim and colleagues⁵ reported that better quality of primary care as measured by PCAS scores was associated with better addiction severity and less substance use. In that study a 1-point-better PCAS score was associated with improved addiction severity and a 1-standard-deviation difference (range across scales was 0–1) in PCAS score was associated with a 24–35% increase in the odds of abstinence. In our current study, changes in PCAS associated with dependence type were in this range.

This study had some limitations that should be considered in interpreting the results. Causality cannot be determined among variables due to the study design – a prospective cohort study. Furthermore, it is possible that the duration of the primary care relationship (which we did not test because it could be in the causal pathway between substance dependence type and quality of care) is important to quality, and results could be different if we had studied longer-term relationships or those with more frequent visits. The generalisability of the study's findings may be limited to an urban adult population with social and economic problems, an important group of people with substance dependence. Finally, we studied patient self-reported PCQ. There are a number of ways to measure PCQ, from self-report to observation of processes of care, and even outcomes of care. We chose one method, the PCAS, because it is comprehensive, reflects the definition of primary care promulgated by the Institute of Medicine, and because for substance dependence, the physician–patient relationship is likely what is most at risk. Furthermore, scores on the PCAS have been associated with clinical outcomes^{5,8} and with changes in primary care perform-

ance in longitudinal studies (physician's knowledge of patient and trust).³

Efforts to improve healthcare for people with substance dependence need to go beyond simply providing good medical care or training health professionals who are going to deliver it.¹⁷ New strategies should hold the potential to make addictions mainstream health and social conditions. We speculate that such a change will need to be based on multipronged efforts across a range of areas in society. Eventually such a focus may lead to decreased stigma and improved services for patients with substance dependence who receive primary medical care.

In addition, we suggest additional avenues for research. Future studies should examine the relationship between quality of care and important clinical outcomes in patients with substance dependence. Such studies would be preludes to the development of interventions that improve quality of care and subsequent outcomes in these patients.

In conclusion, it appears that substance dependence type, particularly drug dependence (with or without alcohol dependence), and injection drug use, are associated with worse-quality primary care for several domains, among people with substance dependence. The clinical significance of these findings should be viewed in light of the fact that more understanding is needed about the reasons for the differences found here. Addressing them may be important for improving the quality of primary care for patients with addictions.

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ETHICAL APPROVAL

The study was approved by the Institutional Review Board at the Boston University Medical Campus. A certificate of confidentiality issued by the federal government further protected subjects' privacy. The material has not been published in whole or in part elsewhere. The paper is not currently being considered for publication elsewhere.

PEER REVIEW

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CONFLICTS OF INTEREST

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