Nurse turnover in substance abuse treatment programs affiliated with the National Drug Abuse Treatment Clinical Trials Network (CTN)

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Abstract

Voluntary nurse turnover, which is costly and disrupts patient care, has not been studied as an organizational phenomenon within substance abuse treatment organizations. In this exploratory study, we examined the frequency and correlates of nurse turnover within treatment programs affiliated with the National Drug Abuse Treatment Clinical Trials Network (CTN). During face-to-face interviews conducted in 2005–2006, 215 program administrators reported the number of nurses currently employed. Leaders of programs with nursing staff then described the number of nurses who had voluntarily quit in the past year, the degree to which filling vacant nursing positions was difficult, and the average number of days to fill a vacant position. About two-thirds of these programs had at least one nurse on staff. In programs with nurses, the average rate of voluntary turnover was 15.0%. Turnover was significantly lower in hospital-based programs and programs offering adolescent treatment, but higher in facilities offering residential treatment. The majority of administrators indicated that filling vacant nurse positions was difficult and took more than two months to complete. These findings suggest that nurse turnover is a significant issue facing many substance abuse treatment facilities. Efforts to improve retention of the addiction treatment workforce should be expanded to include nursing professionals.

Keywords

Nursing; turnover; workforce retention; substance abuse treatment

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1. Introduction

Voluntary turnover, which occurs when employees decide to quit their jobs, is costly to health care organizations (Alexander, Bloom, & Nuchols, 1994; Waldman, Kelly, Arora, & Smith, 2010) and disruptive to patient care (Barak, Nissly, & Levin, 2001). Nurse turnover is particularly detrimental to quality of care (Duffield, Roche, O'Brien-Pallas, & Catling-Paull, 2009; Tai, Bame, & Robinson, 1998) and can be "contagious" in that the departure of one nurse may trigger the departure of others (Coomer & Barriball, 2007). A study of registered nurse turnover in a large acute care hospital found that the total cost of a nurse quitting ranged between $82,000 and $87,000, once the costs of recruitment, training, and productivity losses were combined (Jones, 2008). Efforts to hire nurses in any setting are complicated by the current nurse shortage in the US (Clark, 2010; Spetz & Given, 2003).

For substance abuse treatment organizations, nurse turnover may pose additional challenges. First, most treatment organizations operate in a turbulent economic environment with shifting and unpredictable financial resources (Cartwright & Solano, 2003; Knudsen, Roman, & Ducharme, 2005; Wells, Lemak, & D'Aunno, 2005), making the costs associated with hiring new nurses even more difficult to manage. Second, treatment programs are under increasing pressure to implement pharmacotherapies and comprehensive wraparound services, such as physical and mental health care, in order to improve patient outcomes (Friedmann, Lemon, Durkin, & D'Aunno, 2003; Friedmann, Zhang, Hendrickson, Stein, & Gerstein, 2003). Since nurses play key roles in delivering these services (Knudsen, Roman, & Oser, 2010), turnover may disrupt the implementation of these evidence-based treatment practices (Woltmann, et al., 2008).

Despite the importance of nurses in the delivery of substance abuse treatment services, little has been published about nurse turnover in the treatment workforce. The literature on nurse turnover in other specialties and settings is vast (Hayes, et al., 2006; Irvine & Evans, 1995), yet research on nurses working in substance abuse treatment programs is essentially non-existent. Nearly all research about turnover in the treatment workforce has focused on counselors (Baranik, Roling, & Eby, 2010; Ducharme, Knudsen, & Roman, 2008; Eby, Burk, & Maher, 2010; Gallon, Gabriel, & Knudsen, 2003; Knudsen, Ducharme, & Roman, 2006, 2007, 2008; Knudsen, Johnson, & Roman, 2003) or managers (Knudsen, Ducharme, & Roman, 2009), with most of the emphasis on individuals as the unit of analysis.

In contrast to studies of turnover at the individual-level, this research considers nurse turnover as an organizational phenomenon. Examinations of turnover at the organizational-level are relatively rare when compared to studies of individuals (Shaw, Delery, & Jenkins, 1998; Shaw, Dineen, Fang, & Vellella, 2009). In one of the few studies that examined counselor turnover at the level of treatment organizations, McNulty and colleagues (2007) found some evidence that rates of turnover were associated with organizational characteristics. Organizational correlates of nurse turnover have yet to be studied.

While measuring turnover among nurses allows for comparison with other occupations such as counseling, it does not fully capture the extent to which turnover is viewed as a management problem. In particular, the emerging literature on turnover in the treatment workforce has largely been silent about the extent to which filling vacant positions is seen as difficult and time-intensive by program managers. Certainly the amount of voluntary turnover is significant, but the magnitude of the problem of turnover may be even greater once the availability of replacement nurses is considered.

This exploratory study draws upon data collected as part of a larger research project on the adoption of evidence-based practices in treatment programs affiliated with the National Drug Abuse Treatment Clinical Trials Network (CTN; Roman, Abraham, Rothrauff, &

Knudsen, 2010). The available data allow for the consideration of four research questions. First, to what extent are nurses employed within CTN-affiliated treatment programs, and what is the average number of nurses who have voluntarily quit in the past year? Second, how difficult is it to fill vacant nursing positions? Third, is turnover and the difficulty in filling vacant positions greater for nursing relative to counseling? Finally, is nurse turnover associated with organizational characteristics?

2. Methods

2.1. Sample

The National Drug Abuse Treatment Clinical Trials Network (CTN) is a large inter-organizational network consisting of university-based research nodes and community-based substance abuse treatment programs (CTPs) that jointly develop and implement multi-site clinical trials (Hanson, Leshner, & Tai, 2002; Roman, et al., 2010). For the purpose of our study, a CTP was defined as an organizational unit with an autonomous administrator who has discretionary control over the unit s budget (Roman, et al., 2010). Some treatment organizations in the CTN consisted of a single CTP, while other organizations included multiple CTPs (Ducharme, Knudsen, Roman, & Johnson, 2007). To be eligible, CTPs were required to provide a minimum level of care at least equivalent to the American Society of Addiction Medicine s definition of Level 1 outpatient services (Mee-Lee, Gartner, Miller, Shulman, & Wilford, 1996) or methadone maintenance treatment. This eligibility criterion excluded units that only delivered prevention, outreach, and assessment services since such units were unlikely to be involved in implementing the CTN s treatment-based protocols.

In 2005–2006, the CTN consisted of 17 regional nodes. Telephone screening was used to identify the cohort of eligible CTPs. Face-to-face interviews were conducted with the administrators and/or clinical directors of 215 CTPs, representing a 93.9% response rate. Interviews lasted an average of 2.5 hours and covered a wide variety of organizational and clinical topics. Participating CTPs received a US$100 honorarium. All research procedures were approved by the Institutional Review Board (IRB) of the University of Georgia.

2.2. Measures

In the section of the interview devoted to staffing, administrators were asked how many nurses, including registered nurses (RNs), licensed practical nurses (LPNs), and/or nurse practitioners (NPs), were currently employed by the CTP. If the CTP employed at least one nurse, respondents were asked about the number of nurses who had voluntarily quit, been laid off, or terminated in the past year. The number of voluntary quits served as the dependent variable in our model of nurse turnover. The past-year voluntary turnover rate was calculated by dividing the number of voluntary quits by the sum of the current number of nurses, past-year voluntary quits, past-year layoffs, and past-year terminations. In addition, administrators were asked to rate how it difficult it was to fill a vacant nursing position using a six-point Likert response scale (0 = not at all difficult, 5 = extremely difficult) and the typical number of days that a nursing position was vacant before a replacement was hired. Similar data on turnover, difficulty in filling vacant positions, and typical number of days to fill a vacant position were collected about counselors working in the CTP.

Ten organizational characteristics were included in our model of nurse turnover. First, we controlled for the current number of nurses, since larger CTPs had more nurses "at risk" of quitting than smaller CTPs. Programs were coded according to their location in a hospital setting (1 = hospital, 0 = non-hospital) and profit status (1 = for-profit, 0 = non-profit). Program accreditation differentiated CTPs accredited by either the Joint Commission on

Accreditation of Healthcare Organizations (JCAHO) or Commission on the Accreditation of Rehabilitation Facilities (CARF) from those that were not accredited. Three types of service delivery were measured. CTPs were coded based on whether they were an opioid treatment program (1 = OTP; 0 = non-OTP), offered a residential treatment program with a length of stay greater than 30 days (1 = offers residential treatment, 0 = does not offer residential treatment), and delivered any levels of care exclusively for adolescents (1 = offers adolescent-only level(s) of care, 0 = does not offer adolescent-only treatment). Finally, three measures of organizational stability were examined. The past-year rate of voluntary counselor turnover was calculated to test whether nurse turnover was associated with this other type of workforce instability. Program administrators were asked whether the CTP had experienced any expansion in operations in the past two years (1 = yes, 0 = no) and any reduction in operations during that same time period (1 = yes, 0 = no). Growth in operations may reflect greater financial stability, while reductions in operations may result in nurses seeking more stable employment opportunities elsewhere.

2.3. Analysis

Our multivariate model of nurse turnover relied on the number of nurses who voluntarily quit in the past year as the dependent variable. Similar to Donoghue and Castle (2007), we chose to model the count of voluntary quits rather than the rate of turnover. Treating turnover as a rate would have produced a skewed variable that would have been inappropriate for an ordinary least squares (OLS) regression model. Furthermore, estimates of the cost of nurse turnover in the literature have been calculated based on a per-nurse basis, which supports the value of modeling the number of voluntary quits in the past year. Given that the dependent variable was a count, negative binomial regression (NBR) was used to estimate the multivariate model. NBR is superior to OLS regression when modeling count data (Beck & Tolnay, 1995; Long, 1997). Complete data were available for 122 of the 136 CTPs that employed at least one nurse. Comparison of CTPs with complete data to those excluded due to missing data revealed no significant differences on the organizational characteristics or number of nurses quitting in the past-year ($p<.05$, two-tailed tests). Because some CTPs were nested within a larger treatment organization, we used the "cluster" command in Stata 11.0, which yields robust standard errors and corrects for the effects of data clustering (Long & Freese, 2006).

3. Results

Data indicated that 64.5% (n = 136) of the community-based substance abuse treatment programs (CTPs) affiliated with the Clinical Trials Network (CTN) employed at least one nurse. For the entire sample, the average CTP employed 4.7 nurses although there was a substantial range in numbers of nurses (SD = 8.9). The average number of nurses increased to 7.3 (SD = 10.2) in the subset of 136 CTPs with nursing staff, and 77.2% of these CTPs employed more than one nurse.

Table 1 presents the organizational characteristics of 122 CTPs that employed nurses and provided complete data. The majority of these CTPs (54.9%) had at least one instance of nurse turnover in the past year. The average past-year nurse turnover rate in CTPs with nursing staff was 15.0% (SD = 18.5). The annual rate of voluntary turnover for nurses was not significantly different from the rate of counselor turnover (mean = 13.4, SD = 11.6; $t(121) = 0.83$, $p = .41$).

Administrators of these 122 CTPs found vacant nursing positions difficult to fill. On average, a vacant nursing position took more than two months to fill (mean = 74.4 days, SD = 61.6), which was significantly greater than the number of days to fill a vacant counselor position (mean = 50.2, SD = 47.6; $t(121) = 4.51$, $p<.001$). When rating the difficulty of

hiring nurses, responses were skewed towards greater difficulty, averaging 3.9 (SD = 1.3) on a scale where 5 represented extreme difficulty. Expressed otherwise, 87.7% of respondents scored the difficulty of filling vacant nursing positions at or above the midpoint of the scale. Administrators rated the difficulty of hiring nurses as significantly greater than hiring counselors (mean = 3.1, SD = 1.4; $t(121) = 4.98$, $p<.001$).

Table 2 presents a multivariate negative binomial regression model of nurse turnover as measured by the number of nurses voluntarily quitting in the past year. As would be expected, CTPs employing a larger number of nurses had a significantly greater number of nurses who quit in the past year. Hospital-based programs reported significantly fewer nurses voluntarily quitting than non-hospital programs. Nurse turnover was positively associated with offering residential treatment and negatively associated with the availability of adolescent-only services. Finally, CTPs that had reduced their operations in the prior two years had significantly greater nurse turnover than those CTPs that had not experienced any reduction in operations.

4. Discussion

Despite the substantial interest in turnover within the substance abuse treatment workforce (Abt Associates, 2006; Murphy & Hubbard, 2009; The Annapolis Coalition on the Behavioral Health Workforce, 2007), nurses employed in treatment organizations have been relatively neglected. This study of community-based treatment programs (CTPs) affiliated with NIDA s Clinical Trials Network (CTN) is one of the first to measure nurse turnover. The annual nurse turnover rate of 15% is similar to the rate of counselor turnover (16%) found in a study of privately funded substance abuse treatment organizations (McNulty, et al., 2007). In the present study, the rate of nurse turnover was not significantly different from counselor turnover within these same programs. While these rates of turnover were similar, program administrators did report that hiring nurses to fill vacant positions was a more difficult and time-consuming task than hiring new counselors. Taken together, these findings suggest that current efforts to promote workforce retention need to expand beyond the occupation of counseling to also include nursing professionals.

These exploratory results about nurse turnover suggest many directions for future research. First, because the CTN is not representative of the US treatment system, future research is needed to determine whether these findings can be replicated. Compared to our prior research on the publicly funded treatment sector (Knudsen, et al., 2010), a greater percentage of CTPs have nursing staff, and the average CTP employs a greater number of nurses. There is a need to expand research on nurse turnover to a nationally representative sample of treatment programs.

Another key issue for future research is to consider whether differences in rates of turnover between different types of organizations reflect variation in salary, employee benefits, and working conditions. Our study was unable to consider whether nurse salaries and benefits were associated with turnover because these measures were not included in the interviews. Such measures might help to explain why there were differences in nurse turnover between hospital-based and freestanding treatment organizations. Further data collection would be necessary to specify whether the working conditions in residential programs account for the greater nurse turnover found in these settings. Shift work that includes working nights and weekends is one possibility, but there may be other features of working in residential programs that contribute to turnover.

Future research should continue to investigate the correlates of nurse turnover in treatment organizations, particularly whether nurses self-reported experiences of job stress are

associated with turnover intention and subsequently, actual turnover. Surveys of nurses in other types of health care organizations suggest this would be a fruitful direction for research (Coomer & Barriball, 2007; Hemingway & Smith, 1999; Janssen, de Jonge, & Bakker, 1999; Tai, et al., 1998; Tourangeau, Cummings, Cranley, Ferron, & Harvey, 2009). One of the only surveys of addiction nurses, consisting of 44 nurses in Australia, did find that self-reported stress from working with injection drug users was positively associated with intentions to quit in the next year (von Hippel, Brener, & von Hippel, 2008). Collection of survey data from nurses working in treatment programs could also address whether models of counselor turnover, such as those emphasizing the importance of organizational justice and participative management (Knudsen, et al., 2006; Knudsen, et al., 2003), generalize to the nursing profession. Furthermore, surveys could yield important information about the role of alternative employment opportunities in triggering voluntary turnover.

Several additional limitations intrinsic to the research design should be noted. First, CTPs participating in the CTN are selected by node leadership, which means that they do not constitute a random sample of treatment programs in the US (Ducharme, et al., 2007; Ducharme & Roman, 2009). While CTPs in the CTN include the full range of treatment modalities, spanning outpatient "drug free" programs, residential programs and therapeutic communities, opioid treatment programs, and hospital-based programs (McCarty, et al., 2008), our results may not generalize to programs outside the CTN. Second, the cross-sectional nature of the data limits the ability to draw causal inferences. Third, data were self-reported by administrators, so there are risks of recall and social desirability bias. An additional limitation is our measures did not differentiate the sub-groups of nurses, so it was not possible to compare differential turnover of registered nurses, licensed practical nurses, and nurse practitioners within these agencies. Future research on nurse turnover in substance abuse treatment organizations would be strengthened by the integration of organizational data and individual-level data collected from nurses who leave the organization.

To date, nurses have been an understudied population within the substance abuse treatment workforce. This initial effort suggests that nurse retention is an important issue facing the field. Our results indicate that the magnitude of nurse turnover is similar to the occupation of substance abuse counseling. Given the difficulties reported by program administrators in hiring nurses, additional research is warranted about strategies to reduce nurse turnover. More research is needed, particularly to understand the reasons why nurses choose to quit working in substance abuse treatment facilities. Longitudinal research on nurse mobility would help to elucidate the extent to which turnover represents movement between treatment organizations or the exiting of nursing professionals from the occupation of addictions nursing.

Acknowledgments

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Table 1

Characteristics of Community-Based Treatment Programs Employing Nurses

Variable	% (N) or Mean (SD)
Number of nurses currently employed	7.4 (10.6)
Number of nurses who voluntarily quit in the past year	1.4 (2.6)
Located in a hospital setting	12.3% (15)
Operates as a for-profit	13.9% (17)
Is accredited by Joint Commission or CARF	82.0% (100)
Is an opioid treatment program (OTP)	40.2% (49)
Offers residential treatment	28.7% (35)
Offers adolescent-only treatment services	13.9% (17)
Past-year voluntary counselor turnover	13.3 (11.6)
Has expanded any of its operations in past two years	45.9% (56)
Has reduced any of its operations in the past two years	20.5% (25)

Table 2

Multivariate Negative Binomial Regression Model of Number of Nurses who Quit in the Past Year

Variable	Unstandardized Coefficient (Robust Standard Error)
Number of nurses currently employed	.073 (.016)***
Located in a hospital setting	−1.212 (.455)**
Operates as a for-profit	−.289 (.292)
Is accredited by Joint Commission or CARF	.177 (.298)
Is an opioid treatment program (OTP)	−.228 (.247)
Offers residential treatment	.508 (.251)*
Offers adolescent-only treatment services	−.616 (.284)*
Past-year voluntary counselor turnover	.013 (.011)
Has expanded operations in past two years	.042 (.211)
Has reduced operations in the past two years	.412 (.209)*
Constant	−.766 (.379)*

Note: Model adjusts for CTPs being nested within 72 larger organizations.

*p<.05,

**p<.01,

***p<.001 (two-tailed test).