Predictors of Substance Use Recidivism Among Arkansas Nurses

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This retrospective study was designed to explore whether a relationship exists between lengths of probation for nurses with substance use violations and recidivism. Data collected from computer files at the Arkansas State Board of Nursing were allocated to two groups (n = 76/group): registered nurses (RNs) with one substance use disciplinary probation and RNs with more than one substance use disciplinary probation. Variables were length of probation for substance use, age, race, gender, educational level, felony substance conviction, and nature of the violation (habit-forming drugs, alcohol, or both). Results indicated no statistically significant difference in rates of recidivism based on length of probation (p = .05). Odds of recidivism for nurses with a felony substance conviction were 4.6 times higher than for nurses without a felony substance conviction. Odds of recidivism were 5.9 times higher for nurses addicted to both alcohol and habit-forming drugs. Because substance use poses a threat to patient safety and impacts employers and coworkers, further research is needed to identify solutions to this growing problem.

Substance use recidivism endangers the health of nurses and the safety of patients. The Arkansas nurse practice act (NPA) states that one function of the Arkansas State Board of Nursing is to decide on disciplinary actions for inappropriate use or misuse of alcohol or habit-forming drugs (Arkansas State Board of Nursing [ASBN], 2011a). Because the Board of Nursing (BON) is under the regulation of the Arkansas state legislature, the public requires evidence regarding the BON's effectiveness in regulating practice and promoting patient safety, including evidence of the ability to make appropriate decisions regarding disciplinary actions of the state's nurses. The goal of this study was to provide data to be used as a basis for making decisions regarding the length of probation for substance use violations.

Scope and Costs of the Substance Abuse

The American Nurses Association reports that approximately 10% of nurses are dependent on habit-forming drugs, making the incidence of drug abuse and addiction among nurses consistent with that of the U.S. population (Dunn, 2005). Several studies indicate that between 14% and 20% of practicing nurses suffer from addiction (Bell, McDonough, Ellison, & Fitzugh, 1999; National Council of State Boards of Nursing, 1994; New Mexico Board of Nursing, 2005). Between January 1996 and December 2006, the number of nurses disciplined increased by almost 90% (Kenward, 2008, p. 81). A study by Zhong, Kenward, Sheets, Doherty, and Gross (2009), which involved six states (Arizona, Massachusetts, Minnesota, Maryland, North Carolina, and Nebraska), found that of nurses who were on probation in 2007, 39% recidivated within 5 years (p. 50). However, these studies did not analyze specific probation lengths of those who recidivated.

Substance use is costly to the individual nurse, employers, state BONs, and patients. In Arkansas, a nurse may have to pay the BON for administrative hearings, consent orders, settlement orders, and monitoring fines for probated licenses. According to Sue Tedford, Executive Director of the Arkansas State Board of Nursing (personal communication, March 15, 2014), for the Arkansas fiscal year July 1, 2012, to June 30, 2013, 1,681 disciplinary cases were opened, and more than half of those involved substance use violations. Drug and alcohol treatment programs are also expensive, although many now have loan programs (Recovery.org, 2014). Some insurance companies contribute to the final cost of treatment; however, most fees must be paid out of pocket. These costs and the loss of income can severely impact a nurse's financial status. Employers suffer a loss in productivity, must pay overtime or hire temporary staff until the addicted nurse can return to work, and must incur the cost of hiring and orienting a replacement if the addicted nurse does not return. In nursing, the primary concern is the patient, and the cost of patient-care errors caused by nurses who use or abuse drugs or alcohol is incalculable.

Approaches to Substance Abuse and Recidivism

"There are many theories as to the cause of substance use by nurses, many suggestions for how to treat or rehabilitate these nurses, many recommendations as to when the appropriate time is for the nurse to return to duty and under what conditions" (West, 2003, p. 43). The disciplinary process is not standardized among BONs, so the effects of a disciplinary process, specifically probation length and requirements, have not been studied extensively (Hester, Green, Thomas, & Benton, 2011, p. 51).

The California BON recommends a minimum of 3 years' probation with no mention of what the probation should include (State of California Board of Registered Nursing, 2003, p. 16). In Texas, a nurse must complete an approved treatment program plus a year of verifiable, documented sobriety and undergo subsequent probationary monitoring by the BON for a minimum of 3 years (Texas BON, 2008, p. 3). The Arkansas BON website states "Probation periods vary and may include an impaired nurse contract with an employer and/or drug monitoring and treatment programs" (ASBN, 2014).

Hughes, Smith, and Howard (1998) point out that "Because chemical dependency is a chronic, progressive, and sometimes recurring health problem, relapse must be recognized as a potential hazard" (p. 69). In the last 5 years, research has begun to show that recidivism of all disciplinary violations, but particularly substance use violations, is becoming an additional disciplinary issue. In a study for the Kentucky BON, Chappell et al. (1999) found that recidivism occurred more frequently among nurses who had substance use violations and that nurses who acquired misdemeanor or felony convictions after licensure were more likely to repeat a violation than were those who had convictions before licensure. A Louisiana BON study by Booth and Carruth (1998) reported chemical dependency as the most frequent violation, and the South Dakota and Nebraska BONs recognized controlled substance violations as the most common disciplinary violation (Clevette, Erbin-Roesemann, & Kelly, 2007; Powers, Maurer, & Wey, 2002).

Florida was the first state to provide a diversion program for nurses. This program is an alternative to the usual disciplinary process for nurses who may be substance-use impaired (Hughes, Smith, & Howard, 1998). However, the Florida NPA stipulates that the BON shall not reinstate the license of a nurse found guilty on three separate occasions of violations relating to the use of drugs or narcotics, if the offenses involve the diversion of drugs or narcotics from patients to personal use or sale (Florida BON, 2014).

Sullivan, Bissell, and Leffler (1990) conducted a study of 300 nurses to describe the effect of drug use on job performance and related disciplinary actions. Many visible effects on job performance were reported, but only 23% of respondents reported disciplinary action against their nursing licenses. Females and older nurses were more often dependent on alcohol; younger nurses and males reported narcotic dependency with greater frequency. Narcotic use was significantly related to disciplinary action. (p. 375)

A study conducted by Waneka, Spetz, and Keane (2011) for the California BON looked at factors contributing to recidivism. Chi-square analysis showed a statistically significant relationship ($p < .01$) between recidivism and nurses who either had a prior criminal history or changed employers during probation. The analysis also showed a significant relationship between recidivism and whether the nurse was previously disciplined, participated in the BON's diversion program, received prelicensure nursing education in the United States, or had chemical dependency evaluation and treatment requirements as part of probation (p. 21).

In a 2009 National Council of State Boards of Nursing (NCSBN) study based on 531 probationary cases from seven state BONs (Arizona, Maryland, Massachusetts, Minnesota, Nebraska, North Carolina, and Texas), 26.6% of the disciplined nurses recidivated: 21.5% committed a new violation while on probation, and 5.1% committed a new violation after completing probation. This rate was much higher than the estimated maximum discipline rate (1.6%) among the whole nursing workforce in the seven states in the same 5-year period (Zhong, Kenward, & NCSBN, 2009, p. 10). The length of the probation term is mainly determined by the type of violation and its consequences.

Purpose

Previous studies provided information on gender, age, education, ethnicity or race, most frequent violations, recidivism, and BON disciplinary actions (Hudson & Droppers, 2011). However, none of these studies have been able to determine whether or not these factors affect recidivism. The purpose of this study was to examine the relationship between the length of probation for substance use and the rate of recidivism among registered nurses (RNs) in Arkansas.

Defining Terminology Related to Study

The *Diagnostic and Statistical Manual of Mental Disorders,* Fifth Edition *(DSM-5)* combined the *DSM-IV-TR* categories of substance abuse and substance dependence into *substance use disorder* (American Psychiatric Association, 2013). NCSBN uses the same terminology in its publication, *Substance Use Disorder in Nursing* (NCSBN, 2011, p. 3). Section IV of the Arkansas BON's Disciplinary Proceedings states, "The term 'habitually intemperate or addicted' shall include but not be limited to the use of hallucinogenics, stimulants, depressants, or intoxicants which could result in behavior that interferes with the practice of nursing" (ASBN, 2008, p. 2). *Addiction* is defined by the American Society of Addiction Medicine (ASAM, 2011) as "a primary, chronic disease of brain reward, motivation, memory, and related circuitry." ASAM's Policy Statement (ASAM, 2011,

para. 1) further states that because "addiction is a chronic disease, periods of relapse, which may interrupt spans of remission, are a common feature of addiction."

The Arkansas BON's definition of a *felony* is violation of the Uniform Controlled Substances Act (ASBN, 2011b). *Probation* is defined as a "limitation or restriction of one or more aspects of practice, such as limits on role, setting, activities, or hours worked (Russell, 2012, p. 36). *Recidivism* is defined as having new violations during or after probation (Zhong, Kenward, & NCSBN, 2009, p. 3).

IRB Approval

Institutional Review Board (IRB) approval was obtained for this project from Union University in Jackson, Tennessee, and the Arkansas BON and its Executive Director.

Study Design and Data Analyses

This retrospective study used a secondary data analysis of demographic information and data related to RN substance use violation and recidivism from the Arkansas BON database. Data were collected from computer files at the office of the Arkansas BON, using GLSuite. Descriptive statistics were generated to determine the nature of the violation (habit-forming drugs, alcohol, or both); the length of probation assigned by the BON; prior substance use convictions; and the number of recurrences of substance use violations. Additional data included age, race, gender, employment setting, and educational level. There was no risk to participants. RNs who retired, failed to complete probation or moved out of state, were excluded.

Data collected from computer files at the Arkansas BON were allocated to one of two groups (n = 76/group). Group 1, the control group, consisted of 76 RNs with only one substance use disciplinary probation between January 1, 1970, and June 30, 2013. Group 2, the recidivism group, consisted of 76 RNs with two or more substance use disciplinary probations between January 1, 1970, and June 30, 2013.

This retrospective study used a secondary data analysis of demographic information and data related to RN substance use violation and recidivism from the Arkansas BON database. A logistic regression prediction model, which included months of probation, assessed predictors of recidivism among nurses during their probation period. The binary dependent variable in the model was whether or not nurses recidivated during their probation period. Independent variables (predictors) in the model were entered based on results of associations among the variables and recidivism: age at first violation, felony conviction, addiction to both habit-forming drugs and alcohol, and length of probation in months.

A Hosmer and Lemeshow test demonstrated a good fit of the data for the model, $p > .05$. Regression coefficients, odds ratios, 95% confidence intervals, and p values for all predictors in the model are presented in Table 1.

TABLE 1

Odds Ratio, *p* Value, and 95% Confidence Interval for All Predictors

Variables	Odds Ratio	*p* Value	95% Confidence Intervals	
			Lower	Upper
Age at first violation	.956	.060	.912	1.002
Felony	4.572	.013	1.382	15.122
Length (months) of probation at first violation	1.008	.623	.977	1.039
Drug and alcohol	5.932	.010	1.524	23.088
Constant	3.218	.271		

For the two-tailed logistic regression model with a binary response variable indicating recidivism or nonrecidivism, an assumed small to moderate (Cohen, 1988) odds ratio effect size of 1.8, an alpha level of 0.05, and a sample size of 152 yielded an actual power level of 0.80. No adjustment for attrition was necessary because the information was gathered from existing data. The sample size was estimated using the G*Power 3.1 analysis program (Faul, Erdfelder, Lang, & Buchner, 2007).

Chi-square statistics, Pearson correlations, and an independent sample t-test were performed to assess associations among categorical variables (gender, ethnicity, felony substance conviction, addiction to habit-forming drugs, addiction to alcohol, and addiction to both drugs and alcohol) and continuous variables (age and number of violations; length of probation and number of violations), and differences between the two groups. Logistic regression was used to assess the factors associated with recidivism (age at first violation, substance felony conviction, length of probation in months at first violation, and addiction to both habit-forming drugs and alcohol) versus nonrecidivism as a binary outcome variable. All analyses were conducted using IBM SPSS-21 software.

Results

The results of the study are presented by age, race or ethnicity, gender, employment setting, educational level, length of probation, nature of the violation (habit-forming drugs, alcohol, or both), substance felony, and odds of recidivism.

Age

The age range for Group 1 was 20 to 56, and the mean age was 38.8. For Group 2, the age range was 25 to 55, and the mean age was 36.9. There was an indication noticed that the older a nurse was at the time of disciplinary action, the less likely the nurse was to have another violation.

TABLE 2

Significant Association Between Recidivism and Addiction to Both Habit-Forming Drugs and Alcohol

	Recidivism		
Addiction to Both Habit-forming Drugs and Alcohol	**No (Group 1)**	**Yes (Group 2)**	**Total**
No	73	63	136
Yes	3	13	16
Total	76	76	152

Note. $\chi^2(1) = 6.98$, $p = .008$.

Race or Ethnicity

In Group 1, 63 (81.6%) of the RNs were White; two (2.6%) were African American; 10 (13.2%) were undeclared; and one (1.3%) was Hispanic. In Group 2, 69 (90.8%) were White; two (2.6%) were African American; and five (6.6%) were undeclared.

Gender

Among the 76 RNs in Group 1, 65 (85.5%) were female, and 11 (14.5%) were male. In Group 2, 58 (76.3%) were female, and 18 (23.7%) were male. Arkansas has a disproportionately high percentage of male RNs (14.5% versus 9.6% nationally [U.S. Census Bureau, 2013]). The study revealed that among nurses in Arkansas, male RNs had a higher rate of recidivism (23.7%) than female RNs.

Employment Setting

The most common employment setting was hospitals, where 62 RNs (81.6%) in Group 1 and 54 RNs (71.1%) in Group 2 worked. The second most common employment setting was long-term care facilities, with seven RNs (9.2%) in Group 1 and 11 RNs (14.5%) in Group 2. Four RNs (5.3%) in Group 1 and five RNs (6.6%) in Group 2 worked in clinics. In Group 1, three (3.9%) RNs were self-employed. In Group 2, four RNs (5.2%) were self-employed; one (1.3%) worked for an agency; and one (1.3%) worked in home health.

Educational Level

At the time of the first disciplinary action for substance use, the highest degree earned by RNs in Group 1 was as follows:

- Associate Degree (AD): 44 RNs (57.9%)
- Diploma: 19 (25%)
- Bachelor of Science in Nursing (BSN): 8 (10.5%)
- Master of Science in Nursing with Advanced Practice Nurse certification: 2 (2.6%)
- BSN with Advanced Practice Nurse certification: 1 (1.3%)
- BSN with Certified Registered Nurse Anesthetist (CRNA) certification: 1 (1.3%)
- Diploma with CRNA certification: 1 (1.3%).

At the time of the first disciplinary action for substance use, the highest degree earned by RNs in Group 2 was as follows:

- AD: 47 (61.8%)
- Diploma: 14 (18.4%)
- BSN: 10 (13.2%)
- BSN with Advanced Practice Nurse certification: 2 (2.6%)
- AD with Registered Nurse Practitioner (RNP) certification: 1 (1.3%)
- BSN with RNP certification: 1 (1.3%)
- BSN with CRNA certification: 1 (1.3%).

Length of Probation

Length of probation for both groups ranged from 12 months to 60 months. Results indicated no statistically significant difference in rates of recidivism based on the length of probation. Levene's test of equality of variances was nonsignificant, $p > .05$. An independent samples t-test did not show statistically significant differences between Group 1 and Group 2 in the length of probation, $p > .05$.

Habit-Forming Drugs, Alcohol, or Both

In Group 1, violations involved habit-forming drugs among 66 of the 76 RNs (86.8%). In Group 2, 58 of 76 RNs (76.3%) were disciplined for habit-forming drug use. Group 1 had seven RNs (9.2%) disciplined for alcohol use violations; Group 2 had four RNs (5.3%) disciplined for such violations. No statistically significant associations were found between gender, ethnicity, addiction to habit-forming drugs only, or alcohol only and recidivism.

Group 1 had three RNs (3.9%) with violations for using both habit-forming drugs and alcohol compared with 13 RNs (17.1%) in Group 2. (See Table 2.) There was a statistically significant association between addiction to both habit-forming drugs and alcohol and recidivism, $\chi(1) = 6.98$, $p = 008$. Of 16 RNs who were addicted to both drugs and alcohol, 13 recidivated during probation, and three did not.

Substance Felony

In Group 1, only four of 76 RNs had previous substance use felony convictions compared with 14 of 76 RNs in Group 2. Demographic comparisons show that Group 2, the recidivism group, had more men 18 (23.7%) versus 11 (14.5%), more felonies 14 (18.4%) versus four (5.3%), and more RNs with both habit-forming drug and alcohol addictions 13 (17.1%) versus three (3.9%). The rate of recidivism was higher among RNs with prior substance felony convictions. (See Table 3.)

Odds of Recidivism

The odds of recidivism for RNs who had felony substance convictions were 4.6 times higher than the odds for RNs without felony convictions (OR, 4.6; 95% CI, 1.38–15.12; $p < .05$). The

odds of recidivism for RNs who were addicted to both alcohol and habit-forming drugs were 5.9 times higher than the odds for RNs who were not addicted to both alcohol and habit-forming drugs (OR, 5.93; 95% CI, 1.54–23.09; $p < .05$; see Table 1). These findings indicate the need to tailor treatment activities for the probationary period.

Discussion

The results indicate no statistically significant ($p < 0.05$) relationship between the length of probation and recidivism rates. These findings are based on a prediction model including length of probation for substance abuse, age, race, gender, educational level, prior substance conviction, substance involved in the violation (drugs, alcohol, or both) as covariates among RNs with multiple incidents of recidivism in Arkansas.

Zhong, Kenward, Sheets, and colleagues' (2009) study reported an association between criminal conviction and behaviors requiring disciplinary actions. That study also revealed a statistically significant association between a history of criminal conviction and the rate of recidivism. Chi-square analysis determined there was a statistically significant association between substance use felony convictions and recidivism. The current study revealed similar results and supports the findings of Zhong et al. (2009).

The problem of impaired nursing practice and the risk to patient safety is the same in every state. There have been many studies on disciplinary violations and the disciplinary action determined by BONs (Hester et al., 2011; Hudson & Droppers, 2011; Zhong, Kenward, Sheets, Doherty, & Gross, 2009). A number of studies focused on different variables related to the types of violations as well as the type of discipline ordered, such as probation, license restriction, and completion of a drug treatment program (Bettinardi-Angres, Pickett, & Patrick, 2012; Waneka, Spetz, & Keane, 2011; West, 2003; Zhong, Kenward, & NCSBN, 2009).

Recovery from substance use addiction is clearly not easy. Valliant (1998, p. 205) described it as a "difficult, full time job." For some RNs, recovery takes longer than for others and "may be marked by a relapse into old patterns of thinking and behavior which often lead eventually to relapse into substance use and abuse" (Darbro, 2005, p. 178).

A consideration for BONs might be whether to allow those with previous convictions, especially felony convictions for substance use, to sit for the NCLEX®. Some might support standardized psychological assessment and evaluation by a trained clinical professional as part of the licensure process instead of limiting the admission of candidates with substance use felony convictions (Surowiec, 2010).

TABLE 3

Significant Association Between Recidivism and Felony Substance Conviction

Felony Substance Conviction	Recidivism		
	No (Group 1)	Yes (Group 2)	Total
No	72	62	134
Yes	4	14	18
Total	76	76	152

Note. $\chi^2(1) = 6.3$, $p = .01$.

Limitations

Limitations involved RNs lost to follow-up because they moved out of state or retired. Also, some RNs did not complete their initial probation because of violations.

Conclusion

Substance use is a growing problem in nursing and BONs are seeing an increase in substance use recidivism. Though this study did not yield data to support decision making regarding the length of probation, substance use felony convictions and addiction to both habit-forming drugs and alcohol were identified as possible predictors of recidivism among RNs in Arkansas.

Further research is needed to replicate this study or to focus on other variables, such as the nature of the probationary period and treatment tailored for the substance use trajectory of the individual nurse. Such studies may help reduce the rate of recidivism and identify solutions to this growing problem.

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