

Outcomes of Substance Use Disorder Monitoring Programs for Nurses

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Objective: Substance use disorder (SUD) continues to be a leading public health concern in the United States (BON, 2020). Annual costs of SUD in the United States are estimated at \$740 billion (National Institute on Drug Abuse, 2020). Evidence confirms the need for effective SUD treatment programs for nurses. This study examined the outcomes of a SUD monitoring program for nurses in a large hospital system. **Methods:** A retrospective analysis of 7,737 nurses' SUD monitoring data from 2007 to 2015 was conducted. Baseline characteristics, including age, gender, and education, were compared between nurses who were identified as having SUD and those who were not. **Results:** Significant differences were found between the two groups. The SUD group had a higher percentage of females (80.30%) and a higher percentage of nurses with a master's degree (55.6%) compared to the non-SUD group (45.5% and 50.5%, respectively). Additionally, 26% of the SUD group had a history of relapse, compared to 15% of the non-SUD group. **Conclusion:** The findings of this study suggest that SUD monitoring programs for nurses are effective in identifying and addressing SUD. Further research is needed to explore the long-term outcomes of these programs and to develop targeted interventions for nurses with SUD.

Keywords: Alternative to discipline, drug testing, recovery, relapse, substance use disorder treatment

Substance use disorder (SUD) continues to be a leading public health concern in the United States. Annually, substance abuse costs the United States an estimated \$740 billion (National Institute on Drug Abuse, 2020). Evidence confirms the

grams, data collected over the entire length of a stay in the program were adjusted by number of days in the program.

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Using SAS Enterprise 7.1, bivariate analyses were conducted on the variables to explore their relationships to successful program completion. The variables were plotted to highlight trends and correlations were calculated. Receiver operating characteristic (ROC) curves were generated using the data to see whether threshold levels could be identified, at which point an impact on program completion could be observed. ROC curves illustrate the diagnostic ability of a binary classifier system as its discrimination threshold is varied. Area under the curve (AUC) estimates were also reported as a measure of how well each program characteristic distinguishes between the two levels of the outcome (e.g., success vs failure).

To assess which program features were the most predictive of program success or failure, a forward stepwise logistic regression model was run using program success as the dependent variable and all of the program variables as the independent variables. Findings were checked to make sure that colinearity was not a factor, and program effects were examined but were found to be nonsignificant.

Results

The bivariate variable relationships are depicted in Figure 1. Figure 1A shows that the percentage of nurses successfully completing a program correlated with the number of years in the program ($r = 0.30$). It shows a steady increase and suggests that the highest percentage of nurses successfully completing a program was at around the 5-year mark. ROC analysis placed the cut point at 715 days (about 2 years), at which time the bulk of those who did not complete the program was below that number of days while the

meetings per year (one per week), there was little increase in the proportion of those who successfully completed the program.

As shown in Figure 1G, the proportion of nurses successfully completing a program correlated with the number of times a nurse checked in with the monitoring program ($r = 0.24$). There is a steady increase, and the highest proportion of nurses successfully completing a program was at around the 360-day (1-year) mark. This implies that having daily check-ins (including weekends and holidays) is highly effective.

Figure 1H shows the proportion of nurses successfully completing a program negatively correlated with the number of times a nurse missed checking in with the monitoring program ($r = -0.20$). It shows a steady decrease and reveals that after 2 missed check-ins per year, the successful completion percentage drops to near the average successful completion percentage.

The proportion of nurses successfully completing a program also correlated negatively with the num

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minimum. Raising the minimum from 2 to 3 years increases the probability of correctly identifying noncompleters from 54.5% to 70.5%. Identifying nurses likely to fail is of greater priority than those likely to complete given the possible implications for patient safety.

The adoption of ATD approaches are largely supported due to their intent of retaining, rehabilitating, and re-entering nurses into safe, professional practice (NCSBN, 2011; ENA & IntNSA, 2016). Sporadic state-level success has not ignited widespread national adoption because success rates of a large sample of programs have not been published. The findings from this study help bridge this gap and provide evidence for which distinct program factors contribute to successful completion. Most notably, our finding on the influence of drug testing, even for those who relapse, suggest that “starting the clock over” for the nurse can still lead to desired results. Evaluating impaired nurses closely for external factors (Rojas, Jeon-Slaughter, et al., 2013a) and personality characteristics (Brown et al., 2002) known to increase the risk of relapse, as well as tailoring interventions to be more gender sensitive (Angres et al., 2013) should be considered when structuring or restructuring SUD monitoring programs. As evidenced by the literature, family history of SUD and psychiatric comorbidities may contribute to a nurse’s inability to successfully complete a program (Snow & Anderson, 2000; Merlo & Gold, 2009; Rojas, Brand, et al., 2013b).

Limitations

This study was limited by the quality and quantity of some of the data being collected. By the nature of being automatically generated, the data gathered on check-in history, drug test selection history, drug test history, and noncompliance history were generally superb. However, not all of the programs tracked data on drug test resolution (e.g., positive, abnormal). The data sourced by service programs on mutual support and group support meeting history were mostly complete.

Data requiring manual entry were not as consistent. The manually generated dates that showed up on some files were not

participants 5 years after program completion. These data should then be used to facilitate further understanding of what produces effectiveness in SUD monitoring programs.

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