Physicians and nurses with substance use disorders

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Background. The literature addressing substance use patterns among medical professionals suggests that specialty, gender, age, familial substance abuse, and access/familiarity with prescription drugs are associated with particular chemical dependencies. These studies have rarely compared nurses and physicians directly, thereby making if difficult to tailor interventions to the potentially unique needs of each group.

Aim. This paper reports a study to compare the initial clinical presentations, service utilization patterns, and post-treatment functioning of nurses and physicians who received services in an addiction treatment programme.

Method. This exploratory study combined data collected through retrospective record reviews and prospective questionnaires. There were three types of dependent variables: initial clinical characteristics, treatment utilization patterns, and post-treatment functioning. The independent variable was membership of either professional group. Time both in treatment and between discharge and follow-up were covariates.

Results. Nurses and physicians showed comparable results in most domains. Among the statistically significant differences between groups, a subset was particularly noteworthy. Prior to participating in the programme nurses showed significantly less personality disturbance than physicians, although they tended to work and live in environments with more triggers to relapse, such as other substance users. After the index hospitalization, nurses received less primary treatment, worked longer hours, and were more symptomatic than physicians. Furthermore, nurses reported more frequent and severe work-related sanctions as a consequence of their behavioural disorders.

Conclusion. In most areas of study, nurses and physicians demonstrated comparable results; however, a series of statistically significant differences suggest that these

groups may have unique clinical needs. The policy implications of these findings are discussed.

Keywords: substance abuse, healthcare professionals, specialty, nurse/nursing, service utilization, sanctions

Introduction

During the late 1970s and early 1980s, numerous clinicians and researchers called for the empirical study of substance use patterns among health care professionals (Herrington 1979, Morse *et al.* 1983, Brewster 1986). In a comprehensive critique of the literature, Brewster (1986) concluded that the rate of substance use in this population could not be determined, given the methodological limitations of past studies. Since her review, increasingly sound methods have produced more reliable data and a more sophisticated understanding of these patterns.

Most prevalence studies suggest that neither physicians nor nurses are at greater risk than the broader population for substance use disorders (Trinkoff *et al.* 1991, Hughes *et al.* 1992, Blazer & Mansfield 1995, Trinkoff & Storr 1998, Collins 1999, Storr *et al.* 2000, Bennet & O'Donovan 2001, Lloyd 2002). Their patterns of use are unique, however. They tend to use certain prescription substances more often than the general public, and are more likely to have access to their drug of choice within the workplace (Myers & Weiss 1987, Domenighetti *et al.* 1991, Hughes *et al.* 1992, Trinkoff & Storr 1994, Rosvold *et al.* 1998, Trinkoff & Storr 1998, Hughes *et al.* 1999, Lloyd 2002). The potential impact of substance dependence and abuse among health care professionals involves a particularly large private and public liability, affecting themselves, their families and perhaps placing patients at risk (Carpenter *et al.* 1997, Peipens *et al.* 1997, Bennet & O'Donovan 2001).

A variety of environmental factors have been associated with substance use among health care professionals: increased role strain due to high expectations and sometimes dire consequences (Blazer & Mansfield 1995, Mansky 1999, Reimer *et al.* 2001); disrupted life-style due to inconsistent work schedules (Windle & Wintersgill 1994, Collins *et al.* 1999); and ready access to prescription medications (Bissell & Jones 1981, Crosby 1988, Gaskin 1989, Trinkoff *et al.* 1999a, 1999b, Bennet & O'Donovan 2001). In addition, health care professionals often have had to cultivate certain personality attributes in their education and training that may leave them vulnerable to substance misuse. They tend to be achievement-oriented, self-controlled, and more comfortable providing rather than receiving help (Mensch & Kanel 1988, Storr *et al.* 2000).

Numerous studies suggest that the majority of physicians self-prescribe medications (McAuliffe *et al.* 1986, Wachtel *et al.* 1995, Christie *et al.* 1998, Storr *et al.* 2000, Bennet & O'Donovan 2001). Although most nurses lack prescription privileges, their work often involves medication administration; therefore, they have relatively easy access to substances. Furthermore, nurses and physicians tend to monitor their personal medication use as opposed to relying on the objective judgment of other professionals.

When health care professionals are perceived to be in distress, their families and co-workers may collude with avoidant responses even more dramatically than with non-medical professionals, thereby encouraging silence and withdrawal (Hughes *et al.* 1991, Trinkoff *et al.* 1999a). Public image and even idealization may make it difficult for physicians and nurses to ask for help or admit problematic behaviour (Hughes *et al.* 1992, Bennet & O'Donovan 2001). Furthermore, professional regulations and sanctions may be excessively aversive, given the potential impact of public disclosure.

The research on physicians and nurses with substance use disorders has grown considerably over the past 20 years. This literature suggests that physician and nurse specialty (Trinkoff & Storr 1998, Storr *et al.* 2000), gender (McGovern *et al.* 1998a, 1998b), age (Hughes *et al.* 1991, Trinkoff *et al.* 1999b), familial substance abuse patterns (Windle & Wintersgill 1994), and access/familiarity with prescription drugs (Trinkoff & Storr 1999) are associated with specific substance use patterns.

Researchers who have examined the substance use patterns of physicians and nurses have tended to use the general public as a comparison group. Such studies provide useful information but do not explain variation within the health care professions. By studying the differences and commonalties between nurses and physicians, we can better identify the distinctive risks for the development and perpetuation of these disorders, and the obstacles to successful recovery.

The study

Aim

The aim of the present study was to compare the initial clinical presentations, service utilization patterns, and post-treatment functioning of a sample of nurses and physicians who received

services in an addiction treatment programme. In designing the study, we generated the following three hypotheses:

- Given that physicians often have greater financial and legal resources, often work alone instead of in teams, and can self-prescribe, their addictions will be more severe than nurses by the time they enter the treatment programme;
- Given that nurses often work in caregiving roles and more collaborative environments, they will participate in the treatment programme more fully than physicians;
- Given that nurses are often less empowered within the health care system and have less advocacy within their professional organizations, they will experience harsher professional sanctions as a result of their substance use.

Design

A two-group before and after design was used, with no control group.

The study combined data collected through retrospective record reviews and prospective survey questionnaires. There were three types of dependent variables: initial clinical characteristics, treatment utilization patterns, and post-treatment functioning. Initial clinical characteristics were assessed by record review, while post-treatment variables were assessed by survey. Treatment utilization was assessed by both methods. The independent variable is membership in either the nurse or physician groups. Time in treatment and from discharge to follow-up was a covariate.

Participants and setting

All those enrolled in the treatment programme in the study period ($n = 195$) were included in the data collection. The samples included two treatment groups. No control group was used, given the ethical mandate to offer treatment to people seeking it and limited resources available to identify people needing but not seeking services. The participants were patients treated at a medical centre in the United States of America (USA) between 1995 and 1997.

During this time period, the treatment teams and services offered were fairly stable, thereby offering a somewhat consistent study period. The medical centre offers an addiction treatment programme specializing in the treatment of the addicted health care professional. The programme has been in operation since 1984. It combines intensive day treatment with an independent living community, and generally provides treatment to patients over an 8–12 week period. The programme is especially targeted at high-accountability professionals who may, on discharge, be returning to demanding work environments involving broad public trust. In addition, patients may continue to have access to their drug of choice after being discharged. The centre is among a handful of specialized treatment programmes and draws on a national and international referral base. The programme itself has been described in detail elsewhere (Angres *et al.* 1998).

A total of 195 questionnaires were sent to potential participants. These questionnaires were introduced by a cover letter explaining the purpose of the study, requesting consent for participation, clarifying the means by which confidentiality would be respected, and outlining the analytic procedures. One hundred and five (53·9%) questionnaires were returned. To assess response bias, we randomly selected a sample of 20 of those who were unwilling to participate in the follow-up and compared them with the consenters on the record review variables. We took extra measures to protect non-consenters from identification by our record reviewers by separating all identifying data from the record before the review procedure. The test for respondent bias found that the questionnaire returnees did not differ significantly from the 20 non-returnees selected on any of the following variables: age, gender, employment status or occupation, geographic location, race, religion, Drug Enforcement Agency (DEA) and licensure status, referral source, level of pretreatment motivation, drug of choice, length of stay, American Medical Association (AMA) status, or admission/discharge Global Assessment of Functioning (GAF) score. Returnees differed (*t*-test, $P < 0{\cdot}05$) from non-returnees on marital status (returnees were more likely to be married), nicotine use (returnees were more likely to be smokers), and completion of treatment (returnees were more likely to have completed treatment). We concluded that there was a slight positive response bias.

The 73 physicians and 17 nurses described in this paper are a sub-sample of the 105 health care professionals who consented to participate. These 90 subjects therefore account for 85·7% of the overall sample. The remaining subjects were pharmacists, veterinarians, dentists, and a psychologist.

Data collection

A letter of introduction, consent form, and questionnaire, together with a stamped return envelope, were mailed to each person on the list. If consent was granted, the participant entered the record review phase of the study. If they responded but did not complete the consent form, this was interpreted as refusal to participate. No response within 30 days triggered a second mailing. If no response was received within the subsequent 30-day period, this was interpreted as refusal to participate.

Graduate level research assistants had been trained to administer and score a series of record review rating scales

and forms (inter-rater reliability: $r = 0{\cdot}957$, $P < 0{\cdot}01$). They took approximately 30–45 minutes to conduct the record reviews. They then paired these data with the survey data and entered them into a database file for subsequent statistical analyses. All identifying information was removed once pairing occurred.

Instruments

Questionnaire

The instruments that comprised the questionnaire had been previously used in similar contexts, and appear to have adequate psychometric properties (Galanter *et al.* 1990, Carlson *et al.* 1994). The questionnaire typically took 30–60 minutes to complete. It included items from each of the following instruments: the Treatment Services Review (TSR) scale that assesses engagement in recovery activities (McLellan *et al.* 1992); the Client Satisfaction Questionnaire (CSQ-8) that measures satisfaction with the treatments received (Atkinsson & Zwick 1982); Form-90 that was recently used in the National Institute for Alcohol and Alcohol Abuse multi-site outcome studies (Miller 1996); the Addiction Severity Index (ASI) that monitors the intensity of chemical dependency (McLellan *et al.* 1992); the Symptom Checklist 90 (SCL-90) that assesses psychiatric impairment (Derogatis *et al.* 1973, Gabbard & Nadelson 1995); and a multidimensional assessment of patient status that measured substance use, medical, legal, social/family, and psychiatric functioning.

Record review

The record review protocol had been used in previous physician assessment and treatment research (McGovern *et al.* 1998a, 1998b). Reviewers searched for the following data: sociodemographic variables (age, gender, race, religion, *et cetera*); referral source, precipitant, and chief complaint; drug of choice; level or stage of motivation to change (based on the Prochaska & DiClemente 1986 model); DSM-IV admission and discharge diagnoses; GAF scores (American Psychiatric Association 1994); Severity of Substance-Related Disorder (SSRD) scale items; and the Severity of Psychiatric Illness (SPI) scale (Lyons *et al.* 1997a, 1997b). Treatment utilization data, such as length of stay, units and types of service, modalities of service, discharge statuses, and follow-up recommendations, were also extracted.

Ethical considerations

The research proposal was passed by the hospital's internal review board. Participants gave consent to participate in the follow-up, and all identifying information was separated from the service utilization and clinical data. They would only be studied in aggregate.

Data analysis

Comparisons were made between physicians and nurses on a wide range of demographic, psychological, health, social functioning and substance use variables. Statistically meaningful differences were detected using either chi-square or *t*-test statistics.

Results

Clinical characteristics

Demographic variables

Of the 90 health care professionals in the study, 18·9% ($n = 17$) were nurses and 81·1% ($n = 73$) were physicians. The proportion of females was significantly higher among the nurses compared ($\chi^2 = 33{\cdot}83$, $P < 0{\cdot}001$). The groups were similar in demographic variables such as race, age, religious affiliation and marital status. However, the distribution of non-married people differed between groups. Whereas 8·2% ($n = 6$) of physicians were single and 8·2% ($n = 6$) were separated, no nurses fitted into these categories. The nurses were more commonly in homosexual partnerships ($n = 2$) or divorced ($n = 2$).

With respect to the geographical regions in which the professionals worked, nearly 50% ($n = 34$) of physicians worked in an urban setting. The remaining physicians were equally divided between rural and suburban work environments ($n = 17$ and 18, respectively). The nurses, however, worked primarily in suburban settings (47·1%, $n = 8$), and only five worked in cities and four in rural settings (Table 1).

The majority of participants worked full-time before treatment (78·1%, $n = 57$ and 64·7%, $n = 11$, respectively). However, they tended to work in different settings. Nearly

Table 1 Demographic characteristics of physicians and nurses

Characteristic	Physicians ($n = 73$)	Nurses ($n = 17$)
Age (years)	46·0 (SD = 9·52)	42·9 (SD = 7·45)
Gender*	86·3% Male	82·4% Female
Race	93·2% Caucasian	88·2% Caucasian
Religion	62·5% Catholic or Protestant	60·0% Catholic or Protestant
Marital Status	72·6% Married	76·5% Married
	8·2% Single	0·0% Single
	8·2% Separated	0·0% Separated
Region	48·6% Urban	47·1% Suburban

*χ^2, $P < 0{\cdot}01$.

33% of the physicians worked in a group practice whereas 41·2% of nurses worked in a hospital ($\chi^2 = 28{\cdot}58$, $P < 0{\cdot}001$).

Referral and motivational characteristics

Participants differed significantly on their source of referral ($\chi^2 = 44{\cdot}57$, $P < 0{\cdot}001$). Most physicians were referred by state physicians' assistance programmes (54·8%, $n = 40$) or by themselves (19·2%, $n = 14$). Nurses, however, were most likely to be referred by their employers (64·7%, $n = 11$) (Table 2).

Physicians and nurses identified similar precipitants to referral. Both reported that occupational distress was the primary, and subjective distress the secondary, precipitant to referral. Social, marital, legal and medical issues were reported to be less pressing than these other forms of distress.

The groups did not differ in terms of stage of motivation (physicians: $M = 3{\cdot}34$, SD $= 0{\cdot}98$; nurses: $M = 2{\cdot}94$, SD $= 0{\cdot}97$). Both nurses and physicians scored within the preparation and action stages.

Initial clinical characteristics

The groups presented with differing clinical profiles. The SPI Scale and SSRD Scale quantified these differences.

The physicians scored significantly higher than the nurses on the Personality Disturbance Scale of the SPI ($t = 2{\cdot}09$, $P < 0{\cdot}05$). Conversely, they had a significantly higher Capacity for Treatment on the strengths section of the scale ($t = 2{\cdot}30$, $P < 0{\cdot}05$).

Table 2 Referral source information for physicians and nurses*

Source*	Physicians ($n = 73$) (%)	Nurses ($n = 17$) (%)
State programmes	63·0	12·6
Self	19·2	6·3
Family	4·1	0·0
Employer	4·1	68·8
Other	9·6	12·3

*χ^2, $P < 0{\cdot}001$.

The two groups differed significantly on one measure of the SSRD. The nurses lived and/or worked in environments with more common and intense environmental triggers, such as ready access to substances or exposure to others' substance use ($t = -2{\cdot}89$, $P < 0{\cdot}01$). In addition to these differences, the groups differed in their violation of interpersonal boundaries. Nearly 7% ($n = 5$) of physicians and no nurses violated sexual boundaries. The nurses, however, tended to be victims of physical and verbal aggression ($n = 4$), and were more likely than physicians to be victims of physical abuse ($n = 3$ and $n = 2$, respectively) (Table 3).

Drug of choice

Almost 70% ($n = 51$) of physicians primarily used one substance, either alcohol or prescription opiates being the most common. Around 30% ($n = 22$) of physicians used alcohol and prescription opiates.

The remaining physicians (30·1%, $n = 22$) used some combination of substances. The polysubstance use patterns mirrored the single substance patterns. The most common polysubstance use disorders were prescription opiates combined with other substances (24·7%, $n = 18$). Alcohol and other substances was the second most frequent polysubstance combination, with 15·1% ($n = 11$) of physicians reporting concurrent use.

Nurses reported slightly different usage patterns, and tended to use primarily one substance more than physicians. More than 82% ($n = 14$) of nurses had a single substance use disorder and were significantly more likely than doctors to only use prescription opiates ($\chi^2 = 7{\cdot}77$, $P < 0{\cdot}01$). Nearly 65% ($n = 11$) of nurses relied primarily on prescription opiates. Only three nurses used more than one substance. Nurses were also significantly more likely to smoke tobacco than physicians ($\chi^2 = 9{\cdot}83$, $P < 0{\cdot}001$).

Psychiatric comorbidity

Participants tended to have similar rates of comorbid psychiatric diagnoses (56·2%, $n = 41$ and 58·8%, $n = 10$, respectively). Psychiatric comorbidity status was determined by the presence of an additional axis I (clinical disorders and

Table 3 Initial clinical characteristics of physicians and nurses

Clinical characteristic	Mean (SD)			95% CI	
	Physicians	Nurses	Difference	Lower	Upper
Level of motivation	3·34 (0·98)	2·94 (0·97)	0·40	−0·13	0·92
Symptoms and functioning	2·00 (0·69)	2·18 (0·53)	−0·18	−0·53	0·18
Personality disturbance*	1·07 (0·99)	0·53 (0·80)	0·54	0·03	1·05
Capacity for therapy*	0·07 (0·25)	0·00 (0·03)	0·07	0·01	0·13
Environmental cues**	0·81 (0·54)	1·06 (0·24)	−0·25	−0·42	−0·08

**t*-Test, $P < 0{\cdot}05$; ***t*-test, $P < 0{\cdot}01$.

Table 4 Single substance abuse disorders and psychiatric comorbidity

Substance disorder	Physicians ($n = 73$) (%)	Nurses ($n = 17$) (%)
Alcohol only (% comorbid)	30·1 (11·0)	11·8 (11·8)
Opiates only (% comorbid)	28·8 (17·8)	64·7 (35·3)*
Sedatives only (% comorbid)	5·5 (4·1)	5·9 (0·0)
Cocaine only (% comorbid)	4·1 (1·4)	0 (0·0)
Other single substance (% comorbid)	1·4 (1·4)	0 (0·0)
Any single substance (% comorbid)	69·9 (34·2)	82·4 (47·1)
Total (% comorbid)	(56·2)	(58·8)

*χ^2, $P < 0{\cdot}01$.

other conditions that may be a focus of clinical attention excluding personality disorders and learning disabilities) or axis II diagnosis (personality disorders and learning disabilities) based on the record review data (American Psychiatric Association 1994). The most common types of axis I diagnoses were Depressive and Anxiety Disorders. The most common axis II diagnosis was Narcissistic Personality Disorder. The patterns of dual diagnoses were comparable across groups. Addiction to prescription opiates accounted for the psychiatric comorbidity of 17·8% ($n = 13$) of physicians and 35·3% ($n = 6$) of nurses (Table 4).

Treatment utilization

Discharge status

The groups were comparable with respect to discharge status variables: length of stay, proportion discharged against medical advice rather than completing treatment, and proportion prescribed psychotropic medications.

Recovery attitudes and activities

Participants tended to attribute their success in treatment to similar factors such as 12-step programmes (voluntary peer support groups that follow 12 guiding principles in maintaining abstinence from various addictions and dependencies) and family support. However, one difference appeared. Nurses reported a greater reliance on fellowship with other people in recovery (vs. family members, 12-step principles, and professional). They identified this factor as the primary support in maintaining abstinence and boosting their moods ($P < 0{\cdot}05$).

Post-treatment service utilization

As stated previously, the average follow-up period for participants was $2\frac{1}{2}$ years postdischarge. Therefore, the services utilized are reported from time of discharge to follow-up. The groups were statistically similar in their service utilization postprimary treatment. However, physicians tended to use more individual ($M = 47{\cdot}00$, SD $= 55{\cdot}04$ vs. $M = 29{\cdot}53$, SD $= 31{\cdot}33$, $P < 0{\cdot}10$) and marital/couples therapy ($M = 18{\cdot}34$, SD $= 71{\cdot}58$ vs. $M = 3{\cdot}65$, SD $= 12{\cdot}69$). Likewise, although not statistically significant, physicians used more addiction treatment services, including intensive outpatient ($M = 4{\cdot}23$, SD $= 19{\cdot}55$ vs. $M = 0{\cdot}24$, SD $= 0{\cdot}97$) and residential settings ($M = 1{\cdot}19$, SD $= 9{\cdot}72$ vs. $M = 0{\cdot}0$, SD $= 0{\cdot}0$). Participants reported similar levels of satisfaction with treatment. Overall, they reported they were 'mostly satisfied' with their treatment experiences on the CSQ-8 (Physicians' mean $= 3{\cdot}63$, SD $= 0{\cdot}37$; Nurses' mean $= 3{\cdot}58$, SD $= 0{\cdot}36$).

Post-treatment functioning

All participants reported abstinence from substances at the time of follow-up. The average period of abstinence for physicians was 127·80 weeks and for nurses it was 89·43 weeks ($t = 1{\cdot}828$, $P = 0{\cdot}10$).

Professional status at follow-up

The professional status of 64·7% ($n = 11$) of nurses and 41·1% ($n = 30$) of physicians changed after treatment. Nurses tended to work more hours. There was an 11·7% increase in the number of nurses working full-time during the study period. Physicians, on the other hand, experienced the opposite trend, with a 15·1% decrease in the number working full-time after treatment. Whereas the number of unemployed and part-time nurses decreased over time, the number of physicians in these categories increased.

Two trends describe the changes in licensure that both physicians and nurses experienced during the study period. Before treatment, a greater percentage of licenses had been suspended or were pending review. After treatment, more than 70% of both groups had active licenses.

In addition, both groups experienced increases in the number of individuals on regulatory board probation after treatment. The rates of these increases differed between the groups, however. Physicians experienced a 13·7% increase in the number on probation whereas nurses experienced a 23·5% increase. The rate at which nurses were placed on probation was not only higher than physicians prior to treatment, but was also disproportionately higher than doctors after treatment. Similarly, although nurses and physicians were equally likely to experience professional sanctions prior to treatment, nurses (53%) were more likely to be sanctioned after treatment (35%) (Figure 1).

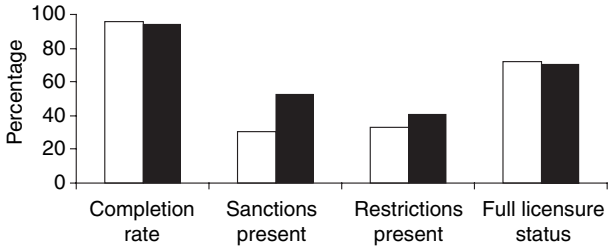

Figure 1 Post-treatment professional status and characteristics.

Psychological, health, and relational functioning

Participants reported varying levels of functioning at follow-up. Nurses tended to be more distressed on multiple measures. They reported a significantly higher number of days on which they suffered from problems with concentration and organizing their thinking ($P < 0{\cdot}05$), and were more distressed than physicians on the somatization and depression scales of the SCL ($P < 0{\cdot}05$) (Table 5).

Discussion

The results allow comparison of physicians and nurses who sought treatment for substance use disorders. In the majority of comparisons, the two demonstrated similar results. Despite being distinct professional groups, having significantly different gender distributions, and typically filling unique roles within the medical system, these professionals were comparable in terms of most initial clinical characteristics, treatment utilization patterns, and post-treatment functioning. However, in the midst of these similarities, there were noteworthy differences; for example, physicians tended to be male and working in a group practice. They were most commonly referred for treatment by a physician assistance programme, and primarily used alcohol or prescription opiates. They were functioning slightly worse at initial presentation but reported less subjective distress at follow-up.

Nurses tended to be female and working in a hospital. Their primary drugs of choice were prescription opiates, and their employers most commonly referred them for treatment. They functioned slightly better than physicians at presentation; however, they lived and worked in environments with more intense and omnipresent triggers to relapse. They tended to return to work faster and for longer hours, and reported significantly more subjective distress on three follow-up indicators (depression, somatization, disorganized thinking).

The two groups were similar in demographic variables, such as race, age, religious affiliation, and marital status. They also demonstrated comparable levels of distress on most variables at presentation. They identified similar precipitants to referral (occupational distress), tended to use one substance, and were both likely to have a comorbid psychiatric diagnosis. The groups were comparable with respect to discharge status variables: length of stay, proportion of people discharged against medical advice, and proportion prescribed psychotropic drugs. They attributed their success in treatment to similar factors (12 step programmes and family support).

The present study has three major limitations. First, the small sample size did not allow robust complex analyses to be conducted. Only 17 nurses, of whom 14 were female, and 10 female physicians were included in the study. These numbers limit the generalizibility of the results and fail to account for the confounding influence of gender. Second, given that a

Table 5 Mean scores on scales measuring functioning at follow-up

	Mean (SD)			95% CI	
Functioning scale	Physicians	Nurses	Difference	Lower	Upper
SCL somatization*	0·37 (0·38)	0·61 (0·36)	−0·24	−0·45	−0·03
SCL obsessive-compulsive	0·52 (0·53)	0·89 (0·90)	−0·37	−0·86	0·13
SCL interpersonal	0·63 (0·62)	0·91 (0·66)	−0·28	−0·63	0·07
SCL depression*	0·56 (0·54)	0·92 (0·71)	−0·36	−0·68	−0·04
SCL anxiety	0·40 (0·40)	0·61 (0·61)	−0·21	−0·58	0·15
SCL anger/hostility	0·35 (0·35)	0·44 (0·44)	−0·09	−0·31	0·14
SCL phobias	0·08 (0·30)	0·22 (0·42)	−0·14	−0·38	0·09
SCL paranoia	0·22 (0·40)	0·34 (0·48)	−0·13	−0·36	0·11
SCL psychosis	0·04 (0·15)	0·05 (0·10)	−0·01	−0·09	0·07
SCL general score	0·40 (0·52)	0·55 (0·38)	−0·15	−0·43	0·12
Sexual impulse	0·14 (0·41)	0·31 (0·13)	0·11	−0·01	0·23
Aggressive impulse	0·15 (0·26)	0·09 (0·15)	0·05	−0·85	0·19
CSQ-8 general score	3·63 (0·37)	3·58 (0·36)	0·05	−0·15	0·26

*t-Test, $P = 0{\cdot}05$.

primarily retrospective design was used, there was no control group against which the results can be compared. Prospective observational designs would provide valuable information. Third, these data were obtained from a single site, so that the ecological validity of the conclusions cannot be determined. It is unclear whether the sample is representative of all medical professionals struggling with addictive disorders. Replication of these comparisons with larger samples from multiple sites can be addressed in future research. Nonetheless, we will examine how these data address the study hypotheses.

The first hypothesis was that physicians would present with more severe symptoms, given that they have a variety of resources to buffer their addiction, work alone rather than in teams, and can self-prescribe. The data seem to support this hypothesis. Although nurses live and work in environments with more pressing triggers and therefore would be expected to have more severe chemical dependency, the groups are comparable with respect to substance use and psychiatric severity (except personality disturbance) at index presentation (Gromberg 1994).

Second, we hypothesized that nurses would engage in treatment more fully, given that they tend to have fewer financial resources and typically work in more collaborative environments. Surprisingly, physicians used more intensive services than nurses. Although both groups were under occupational distress, physicians had the support of a referral from a physician assistance programme, whereas nurses were referred, perhaps mandated, to treatment by their employers.

The follow-up data help to place this result in context. Whereas physicians tended to reduce their work commitments after treatment, nurses tended to work even longer hours. The increase in full-time employment among nurses does not seem to stem from recovered energy and enthusiasm. Rather, nurses reported intense and varied distress on three scales (depression, somatization and trouble in thinking/feeling overwhelmed) at follow-up.

It may be that economic pressures are the primary reason for the rapid return to work. Families that rely on a nurse's income are likely to have a smaller economic buffer and greater need for their continued earnings. The economic strain not only leads to little rest, but also leaves less money for treatment. Whereas physicians may conceivably apply more economic resources to their treatment, nurses were less likely to rely on the more expensive interventions, such as individual and/or marital psychotherapy. In spite of comparable levels of substance use and psychiatric severity, nurses tend to seek and/or receive fewer services than physicians after primary treatment. Nurses return to work faster and use less expensive mental health services after the initial treatment. Gender differences in social roles further add to the expectations surrounding nurses in recovery. Females may be more likely to be pressured by their partners to return to work or support their children.

The differences in motivation and capacity for treatment may be due less to internal factors, such as readiness or counterdependence, than to external factors. A person who has the funds to seek comprehensive services may be more motivated to engage in treatment. The nurses may simply see the costs or consequences of their treatment as particularly stark. Although treatment factors, such as psychological resistance or skepticism concerning treatment, may have contributed to the results, utilization factors, such as finances, transportation and time off, were the probable sources of difference. The equivalent use and value of 12-step groups seems to support this notion.

If economic pressures are primarily responsible for nurses' rapid re-entry into the workforce, the results concerning the third hypothesis are particularly troubling. We hypothesized that nurses would experience harsher professional and work sanctions, because their professional organizations are often less established than physicians' organizations. The data supported this hypothesis. Nurses are placed on probation and sanctioned more commonly than physicians, both at presentation and follow-up. Therefore, the group who can least afford to miss work appears to be most likely to be reprimanded and may be least likely to seek costly legal representation. Given these findings, nurse peer assistance and advocacy programmes seem to be particularly important resources that necessitate further development and broader accessibility.

An additional result is noteworthy. In recent years, increasing attention has been paid to the impact of boundary violations by health care workers (Gabbard & Nadelson 1995). Data from the present study adds to our understanding of such behavioural patterns. Nearly 7% of the physicians committed sexual boundary violations and 17·6% of the nurses were victims of physical aggression. Given the small samples, we cannot assess whether these trends would be statistically significant with larger numbers. However, given that boundary violations are such a salient concern at present, it is worth examining these non-significant trends. These results may primarily be due to gender differences between groups. Males are more commonly physically and sexually abusive; therefore, nurses would be expected to commit fewer sexual boundary violations and to be more frequent victims of physical and verbal aggression. However, both of these rates are alarmingly high. There is some reassurance in the decrease in reported boundary violations at follow-up. This trend suggests that abstinence from substances and stable recovery mediate behavioural volatility.

What is already known about this topic

- Health care professionals do not appear to use substances, except prescription drugs, more commonly than the general population.
- Numerous factors (medical specialty, gender, age, familial substance abuse, and access/familiarity with prescription drugs) are associated with excessive use of substances by health care professionals.
- Substance use among health care professionals significantly impacts the professionals themselves, their families, and the people they treat.

What this paper adds

- Nurses and physicians participating in substance abuse treatment programmes tend to present with parallel clinical characteristics, use comparable medical services, and function similarly at follow-up.
- Nurses demonstrate less personality disturbance than physicians, but tend to live in environments with more triggers to relapse, receive less primary treatment, work longer hours, and be more symptomatic.
- Nurses seem to report more frequent and severe work related sanctions as a consequence of their chemical dependency, and these differences have clear implications for clinicians, administrators, and policy makers.

Conversely, substance use appears to function as a disinhibitor that allows destructive impulses to be expressed through action. This result is consistent with previous findings such as Clark *et al.* (2001) identification of a link between substance use and traumatic experiences.

The treatment programme involved in this study has already been adjusted based on the issues identified here. In fact, this study confirms the clinical observations that programme staff had made in the past – professional and gender differences exist and must inform treatment and discharge planning. These adjustments and clinical observations continue to support the finding that there are no differences in recovery rates between nurses and physicians.

Conclusions

Future research can build on the present results through a variety of means. First, the hypotheses need to be tested with larger samples. Second, under-studied areas, such as boundary violations, need to be addressed in greater depth and with more methodological rigour. Last, the factors that predict substance misuse and recovery need to be identified more clearly. Prospective observational designs that account for potential gender confounds could be effective means for obtaining such results. In order to develop service delivery systems that treat the precise needs of physicians and nurses, a more sophisticated understanding of these differences should be cultivated. Not only individual clinical differences but environmental and service use variation should inform our design of treatment programmes. As such an understanding is developed, more comprehensive preventive strategies can be employed and substance-abusing individuals can be more effectively matched with the appropriate services.

Additional research is clearly needed. However, if these findings can be replicated in studies using larger samples and a control group, they can inform programmes developed to prevent substance use in medical environments, treat health care professionals once they become symptomatic, guide the advocacy work of professional organizations, and modify professional sanctions so as to be effective means of accountability, deterrence, and most importantly, recovery.

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