

Job Satisfaction, Positive Practice Aspects, Work Activities and Personality Characteristics of Nuclear Chain Pharmacists

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In the last ten years, the practice of nuclear pharmacy has changed from academic hospital-based to that of private community centralized service centers (1,2). There is some indication that growth of these chain pharmacies has had a positive effect on nuclear pharmacists' working conditions, including higher salaries and greater medical and non-medical benefits (1,2). However, employment conditions and levels of satisfaction among chain nuclear pharmacists have never been published.

In 1982, the Section of Nuclear Pharmacy, Academy of Pharmacy Practice, (APhA), conducted a membership survey (2). Respondents who were commercial nuclear pharmacists numbered 28. The survey included a few measures of satisfaction: to the statement, "Nuclear pharmacy excites me," the chain nuclear pharmacists responded with a mean score of 4.5 on a 5-point scale indicating agreement. They felt neutral about their salaries (3,3).

In a recent study (3), Board Certified Nuclear Pharmacists (BCNPs) were surveyed to determine their satisfaction with being board certified. The author concluded that BCNPs are generally satisfied with board certification. The greatest amount of satisfaction was accrued from factors reflecting self recognition/acceptance, the least amount from factors reflecting recognition/acceptance by employers.

The purpose of this study was to examine the personal demographics, training, demographics of current nuclear chain pharmacy positions, satisfaction with current positions, and orientation (toward self, interaction, or task) of nuclear chain pharmacists.

METHODS

A questionnaire was designed and mailed to a pre-test sample of six nuclear chain pharmacists employed by two commercial nuclear pharmacies in the metropolitan Atlanta area. The pre-test yielded four responses which were used in refining the instrument and establishing content validity. In August 1988, three copies of the final questionnaire were mailed to 98 outlets of three chain nuclear pharmacy corporations (a total of 294 questionnaires were mailed). Question-

naires were addressed to the manager at the site who was instructed to distribute them to all pharmacists and to make additional copies if needed for each pharmacist. Data analyses included standard descriptive statistics.

Of 117 items in the questionnaire, 13 covered personal demographics, 9 covered training, and 44 covered demographics of the present nuclear pharmacy position. Twenty-four items were designed to measure satisfaction with the present nuclear pharmacy position. These consisted of positive and negative statements regarding particular facets of day-to-day nuclear pharmacy practice. Responses were measured on a five-point, Likert-type scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree). The remaining 27 questions were a standardized measure of personality characteristics called "The Orientation Inventory" (4). Specifically, it measured task orientation versus interactional orientation versus self-orientation.

RESULTS

Response

A total of 31 questionnaires were returned representing 31.6% of the total number of nuclear chain pharmacies.

Personal Demographics

The respondents were comprised of 24 (77.4%) men and 7 (22.6%) women. The typical respondent can be described as follows:

1. Has a mean age of 30.1 ± 5.5 yr.
2. Is married.
3. Holds a BS in pharmacy as the highest academic degree.
4. Is not currently pursuing an advanced degree, residency, or fellowship.
5. Has worked 4.1 ± 3.2 yr in nuclear pharmacy.
6. Does not have a second job.
7. Is undecided about whether to make nuclear pharmacy a life-long career.
8. Is not board certified in nuclear pharmacy.
9. Holds membership in one pharmacy organization.
10. Feels neither satisfied nor dissatisfied (3.1 on a 5-point scale) with the pharmacy job held prior to working in nuclear pharmacy.

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When asked about previous job setting, responses were: nuclear pharmacy- 8 (25.8%); hospital or institutional pharmacy- 6 (19.4%); community chain- 5 (16.1%); no prior job- 5 (16.1%); community independent- 4 (12.9%); academic- 2 (6.5%); pharmaceutical industry or wholesaler- 1 (3.2%).

Training

The Nuclear Regulatory Commission (NRC) has mandated that 200 hr of training include the following course material and hours: physics and instrumentation (85 hr); radiation protection (45 hr); mathematics (20 hr); radiation biology (20 hr); and radiopharmaceutical chemistry (30 hr) (5). The majority, 16 (51.6%), received this training after employment by a nuclear pharmacy. Other sources of training included the following: pharmacy school- 13 (41.9%); residency or fellowship- 1 (3.2%); and grandfathering- 1 (3.2%).

Based upon their practice experience, the respondents were asked how they would change the NRC's distribution of the 200 hr of training. Regarding each subject area, respondents marked their preference as (a) keep the same number of hours, (b) increase the number of hours, (c) decrease the number of hours, and (d) delete the subject. For the subjects of radiation protection and mathematics, the majority preferred to keep the same number of hours, 18 (58.1%) and 20 (64.5%), respectively. For the subject of radiopharmaceuticals, the majority, 21 (67.7%), wanted an increase in the number of hours. Regarding physics and instrumentation, 15 (48.4%), wanted to keep the same number of hours; 11 (35.5%)- decrease the number of hours; and 5 (16.1%)- increase the number of hours. For radiation biology, 15 (48.4%) preferred to keep the same number of hours; 13 (41.9%)- increase the number of hours; and 3 (9.7%)- decrease the number of hours.

Demographics of Present Nuclear Position

An average of 200.10 ± 131.8 prescriptions were being filled daily at the respondents' nuclear pharmacy sites. In further describing their practice sites, respondents noted who performed daily quality assurance activities—pharmacists, pharmacy technicians, pharmacy interns, or others. The term "pharmacy technician" included those who had received on-the-job or formal training. The term "other" included non-

technical personnel such as drivers, secretarial support, etc. Nineteen respondents (61.3%) noted that daily radiation safety tests were performed by pharmacy technicians; according to another 19 (61.3%) the daily dose calibrator quality assurance was performed by pharmacists; and according to 20 (64.5%) instrument quality assurance was performed by pharmacists. Regarding who performs radiopharmaceutical quality assurance, responses were evenly distributed between pharmacists and pharmacy technicians.

The pharmacists were asked to describe their present and preferred duties in the areas of: filling prescriptions; clinical nuclear medicine activities; radiation safety compliance; quality assurance; and managerial duties.

Respondents indicated the percent of time they spend in each type of duty at their present position and the percent of time they prefer to spend in these activities (Table 1). The respondents indicated a clear preference for increased cognitive responsibilities in the areas of clinical nuclear medicine and management. Furthermore, they preferred a decrease in the technical activities of filling prescriptions, radiation safety compliance, and quality assurance. Standard deviations were quite large, reflecting the different staffing patterns in the nuclear pharmacies (a phenomenon not examined in the study). Generally, more supportive personnel are available as workload increases. The workload in the pharmacies sampled ranged from 68–332 prescriptions filled per day.

When asked to provide their job titles, 14 (45.2%) answered manager; 14 (45.2%)- staff pharmacist; 1 each (3.2%)- regional manager; assistant manager; and radiation safety consultant. Respondents were asked if they were the designated radiation safety officer per their radioactive materials license. Seventeen (54.8%) answered yes. This finding is of interest (when compared to the job titles above) because the NRC's licensing guide for nuclear pharmacies suggests that the manager be the designated radiation safety officer (6).

Respondents were also asked whether upper-level management personnel were officed at their facility. Five (16.1%) answered yes. When these five were asked if they felt additional stress due to the presence of on-site upper management, the response was neutral, an average of 2.8 (on a 5-point scale).

The majority have been employed at their present nuclear pharmacy job 2.3 ± 1.5 yr; are full-time employees, 30

TABLE 1. Present and Preferred Job Duties*

Job duties	Present (mean % of work time) (s.d.)	Preferred (mean % of work time) (s.d.)
Filling prescriptions	41.7 (26.6)	32.0 (24.4)
Clinical nuclear medicine	4.9 (4.9)	12.8 (10.0)
Radiation safety compliance	14.0 (11.1)	12.5 (7.9)
Quality assurance	9.7 (9.6)	6.6 (4.2)
Management	29.8 (24.6)	36.5 (25.9)

* Reflects responses from locations where 68-332 prescriptions are filled daily.

(96.8%); and work alternating shifts, 21 (67.7%). When asked about the requirement of living within a certain distance/time from the nuclear pharmacy, responses were evenly split between yes/no, 15 (48.4%).

The majority, 24 (77.4%), do not have an employment contract. Of those with a contract, the majority indicated the length was 2 yr, 4 (57.1%); the contract contained a restrictive covenant, 9 (81.8%); and the contract contained no training payback clause, 5 (71.4%). Five (62.5%) preferred to have their contract eliminated.

All were paid on a salaried basis (rather than hourly). The mean salary was \$44,555.56 ± \$9,410.85. Nine (29.0%) of the respondents indicated that at their location new graduate pharmacists received additional compensation for completing their 200 hr of basic training prior to their employment. Nineteen (61.3%) valued their fringe benefits at less than \$5,000 per yr.

From a list of benefits, respondents indicated their level of satisfaction using these choices: (a) do not receive this benefit; (b) dissatisfied; (c) neutral; (d) satisfied. The majority were satisfied with the fringe benefits they received (Table 2).

Satisfaction With Current Position

Table 3 contains 24 statements regarding job satisfaction. An item analysis was conducted to see which of these questions were truly measuring the same construct—satisfaction with the present position. This item analysis resulted in questions 1–12 (Table 3) being combined to produce a single satisfaction score on the 5-point scale. The average score was 3.15 ± 0.55 indicating the pharmacists were neither satisfied

nor dissatisfied with their present nuclear pharmacy position. This score was computed using the Method of Summated Rating (7).

Mean scores were consistently neutral for the items measuring satisfaction with filling prescriptions (items 1, 13, 14); radiation safety compliance (items 15–17); and quality assurance activities (items 18–20). However, for clinical nuclear medicine activities (item 21), the mean score was higher, indicating satisfaction with that activity. This finding corroborates the data in Table 1, where pharmacists indicated a clear preference for more cognitive responsibilities.

The majority of respondents had indicated they were not board certified but planned to pursue certification (see section titled Demographics of Present Nuclear Position). While this is probably due to not yet meeting The Board of Pharmaceutical Specialties minimum hour requirements, management may also be partially responsible. According to Table 3 (items 4–7) management encourages certification but provides no incentives.

Personality Characteristics

The questions comprising The Orientation Inventory (ORI) consisted of statements or questions regarding attitudes and opinions to which the respondents answered by choosing both the most and least preferred of three alternatives. The ORI produced the following three scores for each respondent: (a) the self-orientation score reflected the extent a respondent is concerned mainly with self, not co-workers' needs, or the job to be done; (b) the interaction-orientation score reflected the extent a respondent is concerned with maintaining happy,

TABLE 2. Satisfaction with Fringe Benefits*

Benefit	Do not receive n (%)	Dissatisfied n (%)	Neutral n (%)	Satisfied n (%)
Hospital insurance	0	1 (3.2)	3 (9.7)	27 (87.1)
Major medical insurance	0	1 (3.2)	2 (6.5)	28 (90.3)
Dental insurance	1 (3.2)	3 (9.7)	2 (6.5)	25 (80.6)
Company car	18 (58.1)	1 (3.2)	3 (9.7)	9 (29.0)
Vacation time	0	5 (16.1)	6 (19.4)	20 (64.5)
Tuition reimbursement	2 (6.5)	1 (3.2)	9 (29.0)	19 (61.3)
Profit sharing	11 (35.5)	4 (12.9)	7 (22.6)	9 (29.0)
Retirement	1 (3.2)	0	12 (38.7)	18 (58.1)
C.E. reimbursement	8 (25.8)	0	7 (22.6)	16 (51.6)
Convention reimbursement	5 (16.1)	0	7 (22.6)	19 (61.3)
Life insurance	0	0	4 (12.9)	27 (87.1)
Disability insurance	0	0	5 (16.1)	26 (83.9)
Liability insurance	11 (35.5)	0	7 (22.6)	11 (35.5)
Paid sick days	1 (3.2)	2 (6.5)	5 (16.1)	23 (74.2)
Over-time	7 (22.6)	3 (9.7)	4 (12.9)	17 (54.8)
Dues for nuclear medicine organizations	8 (25.8)	1 (3.2)	1 (3.2)	21 (67.7)
Dues for pharmacy organizations	14 (45.2)	1 (3.2)	3 (9.7)	13 (41.9)
On-call pay	1 (3.2)	2 (6.5)	0	28 (90.3)

* Respondents included 1 regional manager, 14 managers, 1 assistant manager, 14 staff pharmacists, and 1 radiation safety consultant.

TABLE 3. Attitudinal Questions Concerning Present Nuclear Pharmacy Position

Statement	Mean*	s.d.
1. I find filling radiopharmaceutical prescriptions to be professionally stimulating.	3.2	0.9
2. I do not feel I am at risk from exposure to ionizing radiation at work.	3.5	1.2
3. My 200 hr of basic training in radioisotope handling techniques adequately prepared me for my current radiation safety responsibilities.	3.1	1.4
4. At my place of work, management encourages pharmacists to become board certified in nuclear pharmacy.	3.2	1.2
5. At my place of work, board certification in nuclear pharmacy helps a pharmacist advance.	2.4	1.0
6. At my place of work, board certification in nuclear pharmacy enhances respect shown by customers.	2.5	0.9
7. At my place of work, board certification in nuclear pharmacy enhances respect shown by co-workers.	2.5	0.9
8. I am compensated adequately considering the potential risk I endure at work.	2.8	1.0
9. At my place of employment, work shifts are alternated in a fair manner so that work is evenly distributed.	4.0	0.8
10. I am satisfied with the way work shifts are alternated at my place of employment.	3.8	1.0
11. Working in nuclear pharmacy makes me feel more like a professional pharmacist than other areas of practice.	3.7	0.9
12. Compared to non-nuclear pharmacy positions, I am paid competitively.	3.2	1.2
13. The filling of radiopharmaceutical prescriptions should be performed by technical assistants.	2.7	1.2
14. I am satisfied with the quantity of radiopharmaceutical prescriptions I fill daily.	3.4	1.1
15. I find performing radiation safety tasks (wipes, surveys, bioassays, etc.) to be professionally stimulating.	2.7	0.8
16. Radiation safety tasks should be performed by technical assistants.	3.9	0.8
17. I am satisfied with the amount of radiation safety compliance responsibilities I have.	3.7	0.7
18. I find performing quality assurance tests on radiopharmaceuticals to be professionally stimulating.	2.7	0.9
19. Quality assurance tests on radiopharmaceuticals should be performed by technical assistants.	3.5	0.9
20. I am satisfied with the amount of responsibility I have for quality assurance of radiation detection equipment.	3.6	0.6
21. I find clinical nuclear medicine activities (professional consultations, in vitro assays, phase III investigations, etc.) at my place of work to be professionally stimulating.	3.9	1.1
22. I am satisfied with the amount of clinical nuclear medicine responsibilities I have at my place of work.	2.9	1.3
23. Radiation safety tasks (wipes, surveys, bioassays, etc.) are performed on a <i>routine basis</i> at my place of work.	4.6	0.8
24. When conducted, radiation safety tasks (wipes, surveys, bioassays, etc.) are <i>performed correctly</i> at my place of work.	4.4	1.0

* Rated on a 5-point scale where 1 = strongly disagree; 2 = disagree; 3 = neutral; 4 = agree; 5 = strongly agree. Some items were originally stated in the negative but have been reversed here and for scoring.

harmonious relationships in a superficial sort of way; and (c) the task-orientation score reflected the extent a respondent is concerned about completing a job, solving problems, working persistently and doing the best job possible (8).

The maximum possible score on any one orientation is 54. Interpretation of the three scores can be made by comparing the respondents' mean scores to normative means (the scores of examinees representing all educational levels, both sexes, and all ages) (8).

The mean self-orientation score for chain nuclear pharmacists was 23.5 ± 6.4 . When compared to the normative data (24.8 ± 6.2), this indicated the pharmacists were "average" (not high or low) in self-orientation.

The mean interaction-orientation score for these pharmacists was 22.1 ± 6.0 . In comparison to the normative data (24.6 ± 6.8), this indicated the pharmacists were also "average" (not high or low) in interaction-orientation.

The mean task-orientation score was 35.4 ± 5.4 , indicating

the pharmacists were high in task-orientation in comparison to the normative data (32.0 ± 5.1). Task-orientation, as measured by the ORI, seems to have some relationship to confidence, persistence, and possibly success in learning. Task-oriented individuals are likely to be more of an asset to teams and are seen to work harder as participants. They tend to work hard within the group to make it as productive as possible. The task-oriented individual will fight hard for what he regards as right (8).

DISCUSSION

A limitation of this study was a lack of support from the nuclear chain pharmacy industry overall. Had the industry accepted the need for a study of this nature, a greater response rate may have resulted. The reader is cautioned that the results presented are based on a small sample and may not be representative of the entire nuclear chain industry.

The origins of commercial nuclear pharmacy began with Robert Lee Sanchez opening Nuclear Pharmacy, Inc. in Houston, Texas in 1974 (9). Since that time, the industry has expanded to include over 100 outlets owned by three major corporations. The average age of our respondents indicated that our sample did not include the individuals involved in the early days of commercial nuclear pharmacy.

According to this study, the majority of chain nuclear pharmacists received their training at the post-baccalaureate level. Documents suggest that the industry has a preference for conducting its own training programs in lieu of supporting established academic programs (Ref. 10 and Keese RE, *personal communication*, 1990). This has implications for the survival of nuclear pharmacy programs in schools of pharmacy.

The industry is providing these nuclear pharmacists with base salaries that are commensurate with the salaries of pharmacists practicing in independent, chain, and hospital pharmacies (11). The nuclear pharmacists are also receiving benefits packages with which they are satisfied. The nuclear pharmacists are satisfied with the way their work shifts are alternated, a common complaint among pharmacists practicing in other settings (12).

Nuclear chain pharmacists indicated a clear preference for cognitive activities over technical activities which was corroborated by their satisfaction scores.

The personality type of the chain nuclear pharmacists studied is one of task-orientation. This is important to consider because personality effects how a person reacts to a job and those working with him (8). A task-orientation would seem necessary in light of nuclear medicine's use of diverse specialists working as a team. The present high turnover rate in the industry would suggest a need for greater attention to personality type in hiring (Ref. 10 and Keese RE, *personal communication*, 1990).

The task-orientation of our respondents is in line with their desire to become board certified in spite of the fact that board certification is not rewarded by management. If a task-oriented individual is interested in what he is doing, he will fight hard for what he regards as right (8). This finding is similar to that reported by Ponto in 1989 (3).

REFERENCES

1. Levine G, Goodman C. Radiopharmacist profile-baseline 1974-75. *Contemp Pharm Pract* 1979;2:123-127.
2. Chilton H. Membership survey: Section of Nuclear Pharmacy, Academy of Pharmacy Practice (APhA). Unpublished study, 1982.
3. Ponto JA. Satisfaction with board certification in nuclear pharmacy. *Am Pharm* 1989;NS29:16-20.
4. Bass BM. *The orientation inventory*. Palo Alto, CA: Consulting Psychologists Press; 1977.
5. DelMedico J. NRC's approach to nuclear pharmacy education. *Am Pharm* 1981;NS21:48-49.
6. Guide for the preparation of applications for nuclear pharmacy licenses. Washington, DC: Nuclear Regulatory Commission; 1983:7.
7. Edwards AL. *Techniques of attitude scale construction*. New York, NY: Appleton-Century-Crofts; 1957.
8. Bass BM. *Manual for the orientation inventory*. Palo Alto, CA: Consulting Psychologists Press; 1977;3, 5, 23.
9. Nuclear Pharmacy, Inc. Stockholder Report, Aug. 15, 1985:4.
10. Comments of Syncor International Corp. on the National Association of the Boards of Pharmacy model regulations for nuclear pharmacy. Submitted to The National Association of Boards of Pharmacy, May 15, 1987.
11. Cardinale V. What employee pharmacists are earning. *Drug Topics* 1989;May 15:37.
12. Epstein D. Inside today's pharmacist. *Drug Topics* 1988;Aug. 1:45.