

Stress and Smoking in Hospital Nurses

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Abstract: The smoking behavior of hospital nurses and the association between work-related stress and smoking were studied by means of a questionnaire mailed to the entire direct patient care nursing staff at the University of Michigan Hospital. Prevalence of smoking was considerably lower than in the US nurse population surveyed in 1975 and in the general female population of the same age range surveyed in 1978. Significantly higher scores were obtained for smokers

than for non-smokers on scales concerning the physical and emotional stress of the job and the dissatisfaction with its rewards. The results supported more weakly the association of smoking with the perception of stress induced by role ambiguity, by nurse-doctor conflict, and by conflict between nurses. Some personal and situational variables were found to interact with perception of stress and smoking. (*Am J Public Health* 1982; 72:441-448.)

Introduction

Considerable attention has been given recently to the problem of smoking in women. The incidence of smoking in the United States female population has increased sharply during the past 25 years and, in certain age groups, has reached or surpassed that of the male population.^{1,2} During the same period, the cessation rate has been consistently lower for women than for men.³ This diverging behavior pattern has induced some researchers to hypothesize that different factors influence the motivation to initiate and to cease smoking in the two sexes, and that the apparent greater difficulty encountered by women in quitting smoking may be related to conflicts and stress generated by their changing roles in both the home and the labor market.⁴

It has been reported that more women than men feel that they smoke in order to cope with stressful situations.^{5,6} It has also been reported that the prevalence of smoking is higher in professional women than in the general female population.^{2,4,7-9} It seems reasonable to assume, then, that stress generated by the job situation may be one of the factors responsible for the increased smoking in young women and for the lower rate of cessation in the female population. Some data on the relation between job-related tension and smoking have, in fact, been reported in the literature.¹⁰ The data pertained primarily to cessation of smoking, however, and were derived from an exclusively male population.

A suitable area for studying the relationship between occupational stress and female smoking is the nursing profession. In the past the percentage of smokers has been reported as higher in nurses than in the general popula-

tion,^{11,12} in spite of the fact that nurses, as health professionals, have a good understanding of the risks of smoking and are aware of their role as behavior models for their patients. But nursing, it is generally agreed, is a stressful occupation: the emotional impact of dealing with critically ill or dying patients, the necessity of making life or death decisions, and the sheer physical exertion make this occupation a particularly demanding and taxing one.^{7,13-18} In addition, all is not well in the nurse-doctor relationship, where the conflict between the old conception of the nurse as the doctor's helper and her modern role as a health professional in her own right has surfaced.^{18,19}

The present investigation concerns the relation between smoking behavior and job stress in hospital nurses working in direct patient care. In particular, our study tries to establish whether nurses who perceive their job as stressful, in terms of the physical and emotional demands it places on them and the conflicts it generates, are more likely to smoke than nurses who do not have such perceptions.

Materials and Method

Sample

Hospital staff nurses constitute a considerable portion of the nurse population (64 per cent), as shown by a recent survey of the entire US nursepower.²⁰ From the local chapter of the Michigan Nurses' Association we obtained a current listing of the registered nurses involved in direct patient care in seven departments (Medical, Medical-Surgical, Operating Rooms, Pediatrics, Psychiatry, Obstetrics, Community Health) at the University of Michigan Hospital. Nurses in administrative, supervisory, or teaching positions were not included in the list. We mailed our questionnaire to the home address of 933 female nurses in May 1980. Three weeks after the first mailing, we sent a follow-up letter to the non-respondents. Of the 933 questionnaires mailed out, 25

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were later found to have been sent to nurses who were either no longer employed by the Hospital or no longer involved in direct patient care. Of 908 potential respondents, 448 completed and returned the questionnaire, resulting in a return rate of 49.3 per cent. This percentage probably underestimates the true return rate: the questionnaires were sent out by bulk mail, a system which makes it impossible to determine the number of undelivered letters.

Our respondent group consisted of 19.9 per cent smokers, 21.0 per cent former smokers, and 59.1 per cent non-smokers. We classified as a smoker a person who had smoked at least 100 cigarettes in her lifetime and was smoking at the time of the survey. A former smoker was one who had smoked at least 100 cigarettes in the past, but was not smoking at that time. A non-smoker was a person who had never smoked or had not reached a total of 100 cigarettes. Respondent age ranged from 20 to 62, with a median of 29 years. About half the respondents were currently single (unmarried, separated, divorced, or widowed). More than half (53.4 per cent) of the nurses had received a Bachelor of Science in Nursing (BSN), while 35.2 per cent had received a Diploma, and 11.4 per cent an Associate Degree in Nursing (ADN). Nearly half the respondents had worked as a nurse for five years or less, while the other half had worked more than five years.

The majority (62 per cent) of the respondents were full-time nurses, that is, they worked 40 or more hours per week. The remainder worked less than 40 hours per week.

The Questionnaire

The questionnaire* consisted of five sections: 1) career history, 2) job-related questions, 3) health-related questions, 4) smoking history, and 5) personal data. The career history section was aimed at identifying career factors that might affect levels of stress. Several of these questions were adapted from the Post Baccalaureate Studies of Nurses Questionnaire developed by Olesen and Davis.²¹

The job-related questions, aimed at identifying possible sources of stress, were modeled on Kahn's Job Tension Index²² a set of 15 items that measure the degree of stress related to job overload, role ambiguity, and role conflict. We modified and extended this Index by adding items suited to the stresses and strains unique to the nursing professions, such as dealing with critical illnesses and death, having to make life and death decisions, and being in professional status conflict with physicians. We compiled a set of 26 questions which we called the Nurse Stress Index.

We focused the health-related section on health beliefs, symptoms, and behaviors that could indicate stress (e.g., assessment of current health status and occurrence of headaches, fatigue, and neckaches) and could identify the practice of risk-reducing measures, such as using seat belts.** Some of the items in this section were suggested by Ly-saght's study on smoking in "theatre" nurses.¹⁵

The smoking history questions elicited data on respondents' behavior, beliefs, and attitudes regarding their present or past smoking. Amount smoked, attempts to quit, situations making them want to smoke, and reasons for continuing to smoke were among the variables examined.

Data Analysis

The data were coded on a PRIME computer system and were analyzed by MIDAS statistical program of the Michigan Terminal System (MTS). After we computed the rate of smoking in the respondents sample, we adjusted the percentages by estimating the non-respondent bias. As pointed out by others,²⁵⁻²⁷ when collecting data on the frequency of a particular behavior by survey methods, the results may be biased by the fact that the very behavior under observation influences the willingness to respond. If smokers are more reluctant than non-smokers to answer questionnaires on smoking, the returns would probably be biased in favor of a lower prevalence of smoking. On the other hand, former smokers may be more eager than smokers and non-smokers to respond and in such a case the bias would be in favor of a higher prevalence of former smokers. To correct for this possible bias, we contacted by telephone 96 nurses randomly selected from the list of non-respondents, and determined their smoking status. Following the procedure indicated by Oakes, *et al.*,²⁷ we then extrapolated the percentage of smokers found in the non-respondent sample to the whole group of non-respondents, and recalculated the smoking rate for the whole population surveyed. We followed the same procedure for the former smokers.

In analyzing the 26 questionnaire items concerning the nurses' perception of strain, tension, and conflict inherent in their working situation (the Nurse Stress Index) we constructed sub-scales addressing particular types of tension or stress. This is in agreement with the suggestion of some critics of the Kahn's Job Related Tension Index that sub-scales may provide a more sensitive measure of the multiple dimensions of work stress.^{33,34} We divided the 26 items of our Index into two major groups, one reflecting the stress and the strain of the job situation (Job-Related Stress), the other reflecting the nurse's role-related stress or conflict (Role-Related Stress). As illustrated in Figure 1, we subdivided the Job-Related items into two sub-groups, JR1 and JR2, and the Role-Related items into three sub-groups, RR1, RR2, RR3. For each sub-group, Figure 1 shows the number of applicable items on the questionnaire.***

For each item the respondents were asked how often they were bothered by the situation or occurrence which the item described: almost never, rarely, sometimes, rather often, almost all the time. These alternatives were given coding values from 1 to 5 respectively. A "does not apply" alternative was also provided. A respondent's "stress" score on the Index was the sum of her individual scores on the 26 items divided by the total number of items to which she had responded (with the exclusion of those marked "does not apply"); the "stress" score on each sub-scale was

* Available on request to author.

** An inverse relation between smoking and wearing seat belts has been a consistent datum coming out of recent studies.^{23,24}

*** A complete list of the items used in the questionnaire is available on request from the first author.

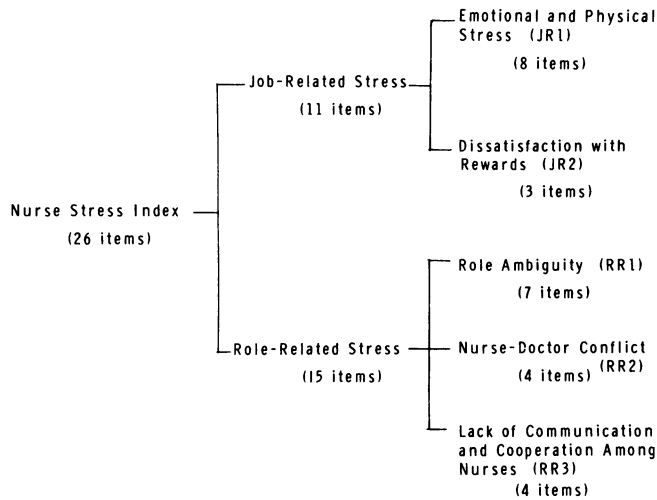


FIGURE 1—Sub-Scales of the Nurse Stress Index

similarly computed by averaging the scores on the items of that sub-scale.

Results

Smoking Behavior

Of the 448 respondents, 89 (19.9 per cent) were smokers (67 regular and 22 occasional smokers). There were 94 former smokers (21.0 per cent, see Table 1, 1st row). As expected, the non-respondent group contacted by telephone included a higher percentage of smokers and a slightly lower percentage of former smokers. By adjusting the respondents' figures according to the estimate for the non-respondents as described in the previous section, we obtained the percentages listed in the second row of Table 1. The prevalence of smokers, in both the respondents and the adjusted sample, is well below that reported in previous surveys of nurses and of the general female population (see 3rd and 4th row of Table 1).

Of the smokers, 41 per cent smoked 10 cigarettes or less per day (light smokers), 43 per cent smoked from 11 to 20 cigarettes (moderate smokers), and 16 per cent smoked more than 20 cigarettes per day (heavy smokers). Compared to the

other groups cited, our sample of nurses shows a greater prevalence of light and moderate smokers.

Only 26 per cent of the smokers smoked regular cigarettes, while 72 per cent smoked low-tar cigarettes, and 2 per cent smoked both. In contrast, the USPHS 1975 survey reported only 23 per cent of the nurses smoking low-tar (15 mg or less) cigarettes. While some of our respondents may have misclassified their brand of cigarettes as low-tar, it remains clear that the trend toward lighter cigarettes, already noticed in earlier reports,³² is continuing.

The percentage of our current smokers who had attempted to quit smoking was remarkably high (77 per cent). There was great variety in the length of time these smokers had refrained from smoking: overall, 59 per cent had quit for a period ranging from a few days to six months, while 41 per cent had quit for six months to several years.

No clear trend in the smoking rate of various age groups could be discovered. Only minor variations occurred in the five successive 5-year intervals from age 20 to age 44 (21.2 per cent, 18.7 per cent, 20.5 per cent, 18.6 per cent and 19.4 per cent, respectively). Heavier smoking tended to increase with age, but the difference in percentage of heavy smokers in the various age groups was not statistically significant.

Only 13.7 per cent of the married nurses smoked, as compared to 25.4 per cent of those who were single (p < .01). We found no relation between seniority (total number of years worked as a nurse) and smoking or between hours worked per week and smoking.

Of the eight hospital departments surveyed, Pediatrics showed the lowest rate of smoking among nurses (12.2 per cent). Next in sequence were Operating Rooms (18.2 per cent), Medical (20.5 per cent), Community Health (20.6 per cent), Surgical (23.8 per cent), Medical-Surgical (24.4 per cent), Obstetrics (25.6 per cent), and Psychiatric (28.6 per cent).

Of the 88 nurses working in the intensive care units of the various departments, 23 smoked (26.1 per cent). This is higher than the average of all the other units (18.2 per cent), but the difference does not reach statistical significance.

Smoking Behavior and Perceived Stress

The mean stress scores of smokers and non-smokers on the entire Index[‡] were 2.8464 and 2.7171 respectively.

[‡] Former smokers, a heterogeneous group that shares some of its properties with the smokers and others with the non-smokers, have been excluded.

TABLE 1—Smoking in U-M Hospital Nurses and Comparison Groups*

	Sample	S	FS	ES	FS/ES
U-M Hospital Nurses, 1980		%	%	%	
Respondents	448	19.9	21.0	40.9	51.3
Respondents & non-Respondents	908	23.6	19.8	43.4	45.6
US Nurses (USPHS, 1975)	2429	39.0	22.0	61.0	36.1
US Females, 20-64 years (Health Interview, 1978)**	—	34.7	14.7	49.4	29.8

*S = Smokers; FS = Former Smokers; ES = Ever Smokers; FS/ES = Cessation Ratio.
**Data recalculated after exclusion of population 65 years and over.

TABLE 2—Stress Scores of Smokers (N = 89) and Non-smokers (N = 262) on the Nurse Stress Index and on a Five Stress Sub-scales

		M	SD	F	P
Nurse Stress Index (26 items)	Sm	2.8464	.5158	3.8542	.0504
	NSm	2.7171	.5435		
Job-Related Stress Sub-Scales:					
JR1—Emotional and physical stress (8 items)	Sm	3.0411	.6199	4.4300	.0360
	NSm	2.8860	.5807		
JR2—Dissatisfaction with rewards (3 items)	Sm	3.3390	.8395	6.3547	.0122
	NSm	3.0712	.8742		
Role-Related Stress Sub-Scales:					
RR1—Role ambiguity (7 items)	Sm	2.6647	.6672	1.6573	.1988
	NSm	2.5578	.6806		
RR2—Nurse-doctor conflict (4 items)	Sm	2.7813	.8733	.0474	.4216
	NSm	2.6975	.8348		
RR3—Nurse-nurse conflict (4 items)	Sm	2.5084	.6633	1.3142	.2524
	NSm	2.4062	.7473		

Sm = Smoker
NSm = Non-smoker

Analysis of variance showed that the difference between the two approaches significance at the .05 level of confidence [$F(1,349) = 3.8542, p = .0504$]. Although the critical value of F ($F = 3.86$) is not reached, our data approximate it so closely that we can conclude that the job was perceived as more stressful by smokers than by non-smokers.

We then compared the mean scores of smokers and non-smokers on each of the five sub-scales. On all of them, the smokers' mean scores were higher than the non-smokers', although in only the two job-related stress sub-scales (JR1 and JR2) were the differences statistically significant (see Table 2).

To verify whether some characteristics of the respondents or some particular work situation may have been responsible for the smokers' higher stress scores, we looked at the demographic and employment data of the respondents. We found that on sub-scale JR1 (emotional and physical stress) the younger smokers (28 years old and below) produced significantly higher stress scores than the younger non-smokers, but in the older group (29 years and above) there was practically no difference between smokers' and non-smokers' scores (see Figure 2-A). The correlation between stress scores and age was moderate in the smokers' group ($r = -.35; p < .01$), but very weak in the non-smokers ($r = -.15; p < .05$). Age did not seem to be a factor in the responses to sub-scale JR2 (dissatisfaction with rewards) (see Figure 3-A).

Some interaction between marital status, smoking, and stress scores was also present. Among the single respondents (unmarried, divorced, separated, and widowed) the mean stress score on sub-scale JR1 was higher in the smokers than in the non-smokers, while among the married respondents there was practically no difference between the two groups (see Figure 2-B). Since single respondents are, in our sample, somewhat younger than married respondents, the difference between the scores of single and married nurses could be attributed to the difference in their age. Marital status did not seem to affect significantly the scores on sub-scale JR2, (see Figure 3-B).

Looking at the educational training of the nurses, we found that in the group with a BSN, the score of the smokers on sub-scale JR1 was significantly higher than that of the non-smokers, while among the nurses with an ADN the difference was not significant (see Figure 2-C). There was no difference between smokers' and non-smokers' scores among Diploma nurses. Here again the relationships may have been affected by age. On sub-scale JR2, the BSN nurses again had significantly higher scores for smokers than for non-smokers (see Figure 3-C).

Two general factors in the job situation appeared to have some influence on the stress response of the nurses, namely the number of hours they worked and the shift to which they were assigned. Among the respondents who worked 40 hours or more per week, the mean stress score on sub-scale JR1 was 3.1539 in the smokers and 2.8732 in the non-smokers. In the respondents who worked less than 40 hours per week, however, there was practically no difference (see Figure 2-D). Similarly, rotating shifts—the type of shift reported to be most disliked by the nurses—were associated with significantly higher score on sub-scale JR1 in smokers than in non-smokers, while no appreciable difference was found among nurses working in non-rotating shifts (see Figure 2-E). On sub-scale JR2, the stress scores were significantly higher in smokers than in non-smokers among part-time nurses (see Figure 3-D); among nurses on rotating shifts the difference between smokers' and non-smokers' scores was of borderline significance (see Figure 3-E).

Comparing the eight departments in which the nurses worked, we found that in six of them the scores on sub-scale JR1 (emotional and physical stress) were higher for the smokers than for the non-smokers, but none of the differences were statistically significant. On sub-scale JR2 (dissatisfaction with rewards) all eight departments showed higher mean scores for smokers than for non-smokers. The differences, with a single exception, were not significant. The exception was the Obstetrics Department which showed a substantially higher score for smokers than for non-smokers [$M = 4.1667, M' = 2.7843; F_{(1,25)} = 30.630, p = .0000$].

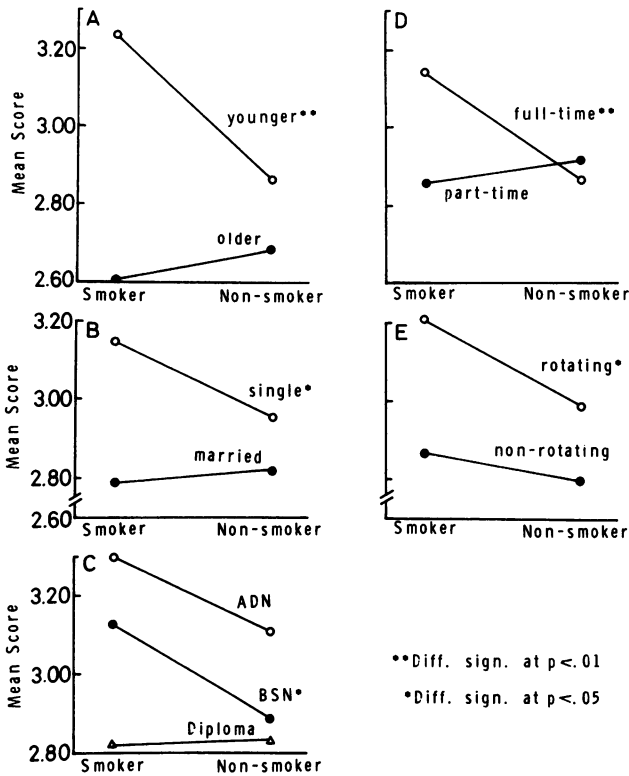


FIGURE 2—Mean Scores of Smokers and Non-Smokers on Sub-Scale JR1

The intensive care units (ICU) of the various departments, although dealing with different types of patients and operating in different set-ups, are believed to have in common a high degree of tension and strain. We found that the mean stress scores on sub-scales JR1 and JR2 for all the ICUs combined were higher than those of the other units. However, we did not find higher stress scores associated with smoking more often in nurses working in the ICUs than in nurses working elsewhere.

The mean stress scores on the three role-related sub-scales (RR1, RR2, and RR3) were all lower than those of the job-related sub-scales (see Table 2). Although the same pattern of higher stress scores for smokers than for non-smokers was evident, the differences were not significant. When we looked at particular sub-groups, however, we did find a few significant differences for sub-scale RR1 (role ambiguity). Scores were higher for smokers than for non-smokers among nurses working in rotating shifts (see Figure 4-A), and among nurses working in the Surgery Department and Obstetrics Department (see Figure 4-B). The Operating Room nurses had scores approaching those of Surgery and Obstetrics nurses, although the difference between smokers' and non-smokers' scores was not statistically significant. Community Health, Medical, Pediatrics, and Psychiatry clustered midway in the score range, and the Medical-Surgical Department, in the high range, showed practically no difference between smokers and non-smokers.

On sub-scale RR2 (nurse-doctor conflict) the smokers' mean score was higher than the non-smokers' [M = 3.0855,

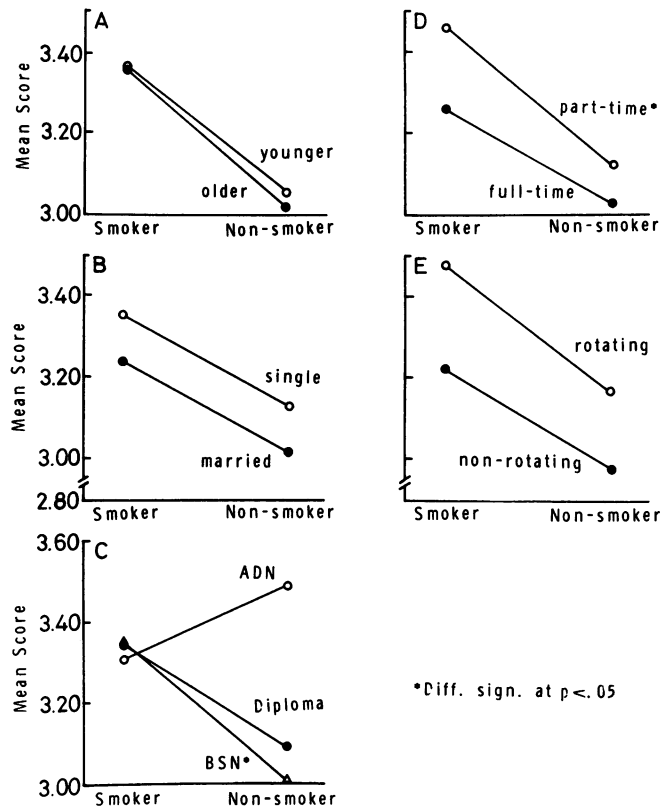


FIGURE 3—Mean Scores of Smokers and Non-Smokers on Sub-Scale JR2

$M' = 2.6848$; $F_{(1,151)} = 6.7152$, $p = .0105$]. Among the various departments, Surgery was the only one that exhibited a considerably large difference between the smokers' and the non-smokers' scores [$M = 3.4833$, $M' = 2.7616$; $F_{(1,51)} = 9.1517$, $p = .0040$].

Discussion

Our survey shows a lower prevalence of smoking among University of Michigan Hospital nurses than that reported in a 1975 survey by the US Public Health Service of the smoking habits of health professionals (physicians, dentists, nurses, and pharmacists),²⁸ a 1978 Public Health Service survey of the general female population (20 years and over),²⁹ and other recent surveys of the female population conducted in the same geographical area as the University Hospital.^{30,31} In addition, our data show a trend toward smoking fewer cigarettes per day and smoking low-tar cigarettes, two factors which promise to reduce the percentage of heavily addicted smokers in the nurse population.

The low smoking rate in our sample of nurses may be attributed to the influence of a progressive community which tends to discourage smoking; a hospital environment enforcing "non-smoking" policies; affiliation with a major research University disseminating the most recent research findings on the dangers of smoking; the nurses' perceptions of their roles as exemplars and providers of information in relation to

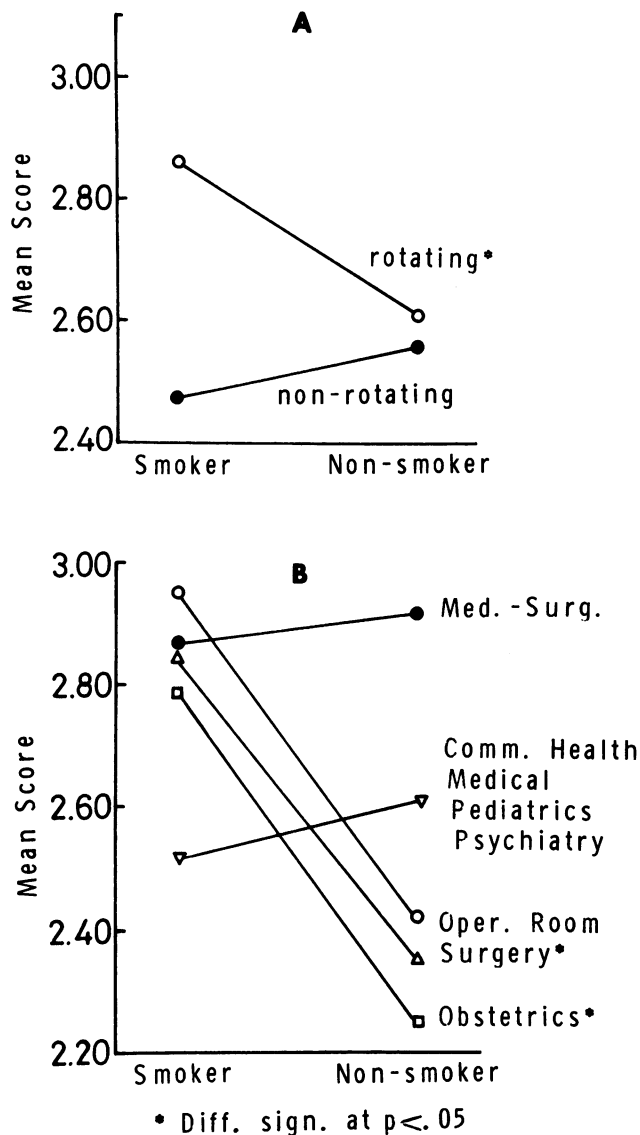


FIGURE 4—Mean Scores of Smokers and Non-Smokers on Sub-Scale RRI

their patients; pressures from peers, friends, and relatives who never smoked or have quit smoking; and the nurses' contacts with MDs whose rate of smoking has dropped drastically in the past ten years.¶¶ Comparisons with data from other hospitals are needed before the present results can be generalized to the entire population of nurses working in direct patient care.

It is interesting that the single nurses of our sample had a rate of smoking well above that of the married nurses (25.4 per cent vs 13.7 per cent). Abstinence from smoking in married women may be motivated by the presence of

¶¶Physicians' quit rate in 1975 was 64 per cent—well above the quit rate of 43 per cent for the general male population, while the nurses' quit rate was 36 per cent—only slightly above the quit rate of 34 per cent for the general female population.²⁸

children in the home or by actual or expected pregnancies.³⁵ The different plans and goals of the single and married nurses, which indicate a different career orientation, may also be responsible for the discrepancy.³⁶ Our data indicate, for example, that a larger percentage of single than of married nurses was working toward or planning to obtain an advanced degree and that a larger percentage of single than of married nurses expected to be working in five years. That the career orientation may be associated with a higher smoking rate finds support in previous studies reporting a higher smoking rate among working than among non-working women.²

When grouped by different work settings, the highest prevalence of smoking was found in the Psychiatric Department (28.6 per cent) and the lowest in the Pediatrics (12.2 per cent). The remaining six departments clustered between 18.2 per cent and 25.6 per cent. The low figure for the Pediatric Department contrasts sharply with an earlier study which reported the smoking rate in pediatric settings as one of the highest.³⁷

Working in the intensive care units was, in our sample of nurses, also associated with a higher smoking rate. The difference in percentage of smokers between ICUs and other units was not statistically significant, however.

Care should be taken to avoid thinking of the relationship between work stress and smoking in terms of cause and effect. After all, the majority of nurses started working in the stressful situation at an age when their smoking was already an established habit. The higher percentage of smokers in some situations; for example in the ICU, could be the result of a self-selection process rather than of stressful work: nurses who smoke may be more likely to choose challenging and responsible jobs than nurses who do not smoke.

Analysis of the data from the Nurse Stress Index and its sub-scales indicates that nurses who smoked had an overall tendency to produce higher stress scores than nurses who did not smoke. This result, therefore, supports our initial hypothesis that nurses who perceive their job as stressful are more likely to smoke than nurses who do not have such perceptions.

To identify the characteristics of the nurses who are likely to perceive their job as stressful and are also smokers, we have looked at some of the demographic and employment variables. The data from sub-scale JR1 (emotional and physical stress) indicate that the nurses most likely to perceive the physical and emotional demands made on them as stressful, and most likely to smoke are younger (under 29 years of age), single, have a BSN degree, work 40 or more hours per week, and work on rotating shifts. Further study is needed to determine whether smoking among younger nurses is a mechanism for coping with stress, or whether younger nurses who smoke are simply more likely than older or non-smoking nurses to perceive work situations as more stressful.

Dissatisfaction with the rewards of the job, and in particular with the salary, was wide-spread and strongly felt among the nurses. And in fact the overall scores on the JR2 sub-scale were higher than on the other sub-scales, for both smokers and non-smokers. The effect of personal and situa-

tional variables on the responses were less clear-cut and the resulting differences were in several cases not significant.

The three role-related sub-scales (RR1, RR2, and RR3) were designed to reflect areas of stress and conflict specific to the nurse's modern-day position in the health care system. The nurse's breaking away from old patterns of subservience and dependence and her struggle to obtain professional status are potential sources of conflict, particularly in the highly charged atmosphere surrounding critically ill patients. In addition, the nurse's position at the end of different lines of authority and communication (medical, supervisory, and administrative) fosters conflicting expectations and confusion.^{13,14,18,19,38,39} Although abundantly documented in the nursing literature, these stresses are not reflected in our data. In fact the role-related stress scores were lower, both for smokers and non-smokers, than those in the job-related sub-scales. The trend toward higher stress scores for smokers than for non-smokers was present in the three sub-scales, but the differences were not statistically significant.

Significantly higher role-related stress scores for smokers than for non-smokers did emerge in some of the sub-samples. Among nurses working in rotating shifts, sub-scale RR1 (role ambiguity) and sub-scale RR2 (nurse-doctor conflict) resulted in higher scores in smokers than in non-smokers. Because younger nurses are predominant in rotating shifts, age may once again be seen as one of the factors involved in the higher stress scores of smokers.

Although additional work on other hospital nurse populations will be needed to confirm our results, the study suggests that the trend toward a decrease in smoking shown by the medical profession in the past ten years may now be emerging also in the nursing profession. A decrease in the prevalence of smoking among hospital nurses would be of particular importance not only because of its beneficial effects on the nurses themselves, but also because of its influence on the patients with whom the hospital nurse is in daily contact and for whom she fills the role of health behavior model.⁴⁰ The recognition that stress originating from the job is associated with smoking, at least in some sectors of the nursing population, may be a useful starting point in the search for conditions favorable to the reduction of smoking among health professionals.

REFERENCES

1. US Public Health Service: Highlights of the Surgeon General's Report on Smoking and Health. *MMWR*, US Department of Health, Education, and Welfare, Centers for Disease Control, May 11, 1979, 28(18).
2. US Public Health Service: Smoking and Health: A Report of the Surgeon General. US Department of Health, Education, and Welfare. Office on Smoking and Health, January 1979.
3. Reeder L: Sociocultural factors in the etiology of smoking behavior: an assessment. *In: Jarvik ME et al (eds): Research on Smoking Behavior*. Maryland: National Institute on Drug Abuse, Research Monograph 17, 1977, 186-200.
4. Dicken C: Sex roles, smoking, and smoking cessation. *J Health Soc Behav* 1978; 19:324-334.
5. Frith C: Smoking behaviour and its relation to the smoker's immediate experience. *Br J Soc Clin Psychol* 1971;10:73-78.
6. Ikard R, Tomkins S: The experience of affect as a determinant of smoking behavior: a series of validity studies. *J Abnorm Psychol* 1973; 81:172-181.
7. Bates E: Stress in hospital personnel. *Med J Aust* 1975; 2:765-767.
8. Dicken C, Byrson R: The smoking of psychology. *Am Psychol* 1978; 33:504-507.
9. Kirkby R, et al: Smoking in nurses. *Med J Aust* 1976; 2:864-865.
10. Caplan R, Cobb S, French J: Relationships of cessation of smoking with job stress, personality, and social support. *J Appl Psychol* 1975; 60:211-219.
11. Eyres S: Public health nursing section report of the 1972 APHA smoking survey. *Am J Public Health* 1973; 63:846-852.
12. Green D: Nurses are kicking the habit. *Am J Nurs* 1970; 70:1936-1938.
13. Huckaby L, Jagla B: Nurses' stress factors in the intensive care unit. *J Nurs Adm* 1979; 9:21-26.
14. Leatt P: Differences in stress perceived by head nurses across nursing specialties in hospital. *J Adv Nurs* 1980; 5:31-46.
15. Lysaght E: A report on health problems of theatre nurses. *N Z Nurs J* 1979; 72:24-26.
16. Miller M: Self perception of nurse practitioners: changes in stress, assertiveness, and sex role. *Nurse Pract* 1977; 3:26-29.
17. Pines A, Mashack C: Characteristics of staff burnout in mental health settings. *Hosp Community Psychiatry* 1978; 29:233-237.
18. Watson J: Role conflict in nursing. *Superv Nurse* 1977; 8:40-50.
19. Kalisch B, Kalisch P: An analysis of the sources of physician-nurse conflict. *J Nurs Adm* 1977; 7:51-57.
20. Moses E, Roth A: Nursepower. *Am J Nurs* 1979; 79:1745-1756.
21. Oleson V, Davis F: Post-baccalaureate studies of nurses. Nursing Resources Division, US Public Health Service, Grant NU 0004-94-02, undated.
22. Kahn R, et al: *Organizational Stress: Studies in Role Conflict and Ambiguity*. New York: John Wiley & Sons, Inc., 1964.
23. Eiser J, Sutton S: Smoking, seat-belts and beliefs about health. *Addict Behav* 1979; 4:331-338.
24. Mechanic D: The stability of health and illness behavior: results from a 16-year follow-up. *Am J Public Health* 1979; 69:1142-1146.
25. Burgess A, Tierney M: Bias due to non-response in a mail survey of Rhode Island physicians' smoking habits—1968. *N Engl J Med* 1970; 282:908.
26. Oakes T, Friedman G, Seltzer C: Mail survey response by health status of smokers, non-smokers, and ex-smokers. *Am J Epidemiol* 1973; 98:50-55.
27. Oakes T, et al: Health service utilization by smokers and non-smokers. *Med Care* 1974; 11:958-966.
28. US Public Health Service: Smoking behavior and attitudes: physicians, dentists, nurses, pharmacists. US Department of Health, Education, and Welfare, Centers for Disease Control, National Clearinghouse for Smoking and Health, 1977.
29. US Public Health Service: Health US 1979. US Department of Health, Education, and Welfare. Office of Health Research, Statistics, and Technology, 1979.
30. Horvath W: Personal communication, 1980.
31. Tagliacozzo R: Smoking behavior and exposure to 'dissonant' information. *Int J Addict* 1981; 16:1149-1159.
32. Jaffe J, Kanzler M: Compulsive smoking—a new look at an old addiction. *In: Gottheil EL, et al (eds): Addiction Research and Treatment: Converging Trends*. New York: Pergamon, 1979.
33. LaRocco J, House J, French J: Social support, occupational stress, and health. *J Health Soc Behav* 1978; 21:202-218.
34. MacKinnon N: Role strain: an assessment of a measure and its invariance of factor structure across studies. *J Appl Psychol* 1978; 63:321-328.
35. US Public Health Service: The Health Consequences of Smoking for Women: A Report of the Surgeon General. US Department of Health and Human Services, Office on Smoking and Health, 1980.
36. Lewin E, Damrell J: Female identity and career pathways. *Social W Oc* 1978; 5:31-54.

37. Noll C: Health professionals and the problems of smoking and health. Report 5. Nurses, behavior, beliefs, and attitudes toward smoking and health. Report on NORC survey 4001. Chicago: University of Chicago, 1969, 99 pp.
38. Rein I: Medical and nursing students: concepts of self and ideal self, typical and ideal work partners. *J Pers Asses* 1977; 41:368-374.
39. Willis R: Options in managing stress. *Pediatr Nurs* 1979; 5:24-27.
40. Green D: Patterns of tobacco use in the US. *In*: Krasnegor NA, (ed): *Cigarette Smoking as a Dependence Process*. Maryland: National Institute on Drug Abuse, Research Monograph 23, 1979, 44-55.

ASAHP Receives Kellogg Foundation Grant for Creation of Leadership Center

Better health services for the public and improved education for allied health professionals are among the goals of a new National Center for Allied Health Leadership now being established by the American Society of Allied Health Professions (ASAHP). Made possible by an \$878,350 three-year grant from the W. K. Kellogg Foundation of Battle Creek, Michigan, the Center will be established within ASAHP, and will involve six universities, in the dissemination and implementation of recommendations of the National Commission on Allied Health Education.

Collaborating institutions are the State University of New York at Buffalo; Howard University, Washington, DC; University of Florida, Gainesville; University of Kentucky, Lexington; and University of Washington, Seattle. Baylor College of Medicine and the University of Texas Health Science Center, both at Houston, and Texas A & M University, Galveston, will participate as a consortium.

The center will focus on leadership in:

- improving the quality of health services;
- increasing the representation of minorities and women in top-level positions in the allied health fields; and
- ensuring the continued strengthening of allied health education and services, through increased policy development and program support.

The National Leadership Center's activities will include the dissemination of model approaches and available resources; the hosting of six regional leadership symposia to build skills and networks for local initiatives; follow-up monitoring; and information-sharing. The leadership symposia will be held between December 1982 and October 1983.

As part of the grant, ASAHP will initiate a Kellogg Minority Fellowship Program in late 1982. The nine-month Kellogg fellowships will be awarded to outstanding doctoral students or junior faculty to pursue a special project in the field or a doctoral dissertation within the Center and the universities.

Ann A. Bisconti, ASAHP's director of research and policy analysis, will be director of the new Center. For more information, contact American Society of Allied Health Professions, 1 Dupont Circle, Suite 300, Washington, DC 20036, Telephone 202/293-3422.