Do You Need to Smoke to Get a Break?

Smoking Status and Missed Work Breaks Among Staff Nurses

Linda Sarna, RN, DNSc, FAAN, Stella Aguinaga Bialous, RN, DrPH, FAAN, Marjorie J. Wells, PhD, RN, Jenny Kotlerman, MS, Erika Sivarajan Froelicher, RN, PhD, Mary Ellen Wewers, RN, PhD, FAAN

Introduction: The prevalence of missed work breaks by smoking status in healthcare settings is unknown. The work routines of nurses (Registered Nurses [RNs] and Licensed Practical Nurses [LPNs]), who smoke at higher rates than other health professionals, may be influenced by smokers who use breaks to avoid nicotine withdrawal. The purpose of this study was to examine the relationship between nurses' smoking status and work breaks and to explore the relationships among personal, professional, and workplace variables associated with missed work breaks.

Methods: A web-based survey of 2589 staff nurses from 34 hospitals was conducted in 2006. Each hospital had been designated as a Magnet hospital by the American Nurses Credentialing Center. Data analysis included descriptive statistics, chi-square tests, and multivariate logistic regression.

Results: The majority (90%) were nonsmokers; 97% were RNs. Missed breaks were common (70%) and differed by smoking status: 59% of smokers and 72% of nonsmokers frequently missed work breaks. Multivariate logistic regression determined that nonsmokers (OR=1.81, 95% CI=1.36, 2.42), LPNs (OR=2.37, 95% CI=1.16, 4.84), older nurses (OR 1.02, 95% CI=1.01, 1.03), those in emergency rooms (OR=1.75, 95% CI=1.25, 2.47), and in intensive care units (OR=1.60, 95% CI=1.22, 2.09) were more likely to miss breaks.

Conclusions: Missed work breaks were common among nurses. Those who did not smoke were almost twice as likely to miss their work breaks as compared to smokers. Inequities in breaks, especially by smoking status, may cause dissension in the workplace and negatively affect patient care. Policies that support work breaks for all nurses are needed.
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Introduction

Work breaks are important for maintaining a healthy work environment and enhanced productivity.[1–3] Among healthcare professionals, work breaks improve performance and job satisfaction.[4,5] Available data on work breaks among nurses demonstrate that breaks are frequently missed,[6,7] and that skipping a break may negatively affect nurses' health and eating habits.[6–8] None of these studies on nurses' work breaks report their smoking status. Smokers may take more work breaks than nonsmokers to reduce nicotine withdrawal symptoms.

To protect patients and healthcare providers from the health risks of exposure to secondhand smoke and to provide a positive model for health, the Joint Commission (previously known as the Joint Commission on the Accreditation of Healthcare Organizations) required hospitals seeking accreditation in the U.S. to become smoke-free in 1992.[9] Compliance with this policy has been high and some employees in the smoke-free hospitals have quit smoking or reduced consumption,[9–12] similar to other workplaces.[13] In addition to the interior of hospitals, campus grounds also are becoming smoke-free.[14] Research on the relationship between a smoke-free campus and the smoking status of employees is ongoing, with early reports of high policy acceptability and decline in tobacco use among employees following implementation.[9,15] However, there is evidence that employees who continue to work in smoke-free healthcare facilities make special efforts to find places to smoke during working hours.[16] It is unknown what the consequences of a smoke-free healthcare campus will mean for missed work breaks or for duration of breaks. As smokers will be required to go off campus to smoke, sometimes a considerable

From the School of Nursing (Sarna, Wells), David Geffen School of Medicine (Kotlerman), University of California, Los Angeles, Los Angeles, California; Tobacco Policy International (Aguinaga Bialous), School of Nursing & Medicine (Sivarajan Froelicher), University of California, San Francisco, San Francisco, California; and College of Public Health, The Ohio State University (Wewers), Columbus, Ohio

Address author correspondence and reprint requests to: Linda Sarna, RN, DNSc, FAAN, University of California, Los Angeles, School of Nursing 700 Tiverton Avenue, Box 956918, Los Angeles CA 90095-6918. E-mail: lsarna@sonnet.ucla.edu.

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distance, this might mean that work breaks for smokers are prolonged, making it more difficult for nonsmokers to take breaks; this could have a negative impact on patient care.

Smoking among workers has a negative impact on the health of the workforce, increases absenteeism, and decreases productivity.[17,18] For nurses, smoking is also a concern for public health. Healthcare professionals who smoke are less likely to provide tobacco-dependence interventions for patients who smoke, and portray a negative role model to the community.[19–21] In 2003, smoking prevalence of Registered Nurses (RNs) was 11.9%, and Licensed Practical Nurses (LPNs) 23.4%,[22] compared to 20.3% of smoking among adults in the U.S. (men, 24.1% , women, 19.2%).[23] RNs (94%) and LPNs (95%) are predominantly female.[24,25] The majority of RNs (81.8%) and LPNs (67%) are white. Smoking rates among RNs vary by level of education, with current smoking higher among nurses with less than a baccalaureate education (14.4%) as compared to those with at least a baccalaureate (8.6%).[22] Differences in SES,[23] class,[26] and access to cessation services could contribute to the variation in smoking among nurses, similar to the general population.[23]

The increased demand on nurses' schedules caused by the nursing shortage[27] may make missed work breaks more common. Similar to employees who smoke in other organizations,[16,28] nurse smokers may take more frequent work breaks to avoid nicotine withdrawal.[29] Focus group data from nurses who were current and former smokers provided evidence that smokers were perceived as more likely to take work breaks than nonsmokers and that this inequality created dissension in the workplace, potentially affecting morale and patient care.[29] Nurses described planning their workday around taking a work break to have a cigarette. Other nurses reported that fear of not being able to take work breaks if they quit smoking was a barrier to their own cessation efforts. Former smokers cited workplace smoking restrictions as an incentive to quit, but smokers described efforts they made, including walking far distances, to get smoke breaks.[29] Despite these findings and anecdotal information that nurses who smoke take more breaks, to the best of authors' knowledge no published studies document the relationship between smoking status and nurses' work breaks in the hospital setting.

The purpose of this study was to examine the relationship between nurses' smoking status and work breaks. Smokers were hypothesized to be less likely to miss breaks, compared to nonsmokers. The influence of demographic, professional, and workplace factors on missed work breaks also was examined. The prevalence of smoking in the state[23] where the hospital was located and the presence of a statewide smoke-free policy[30] were conceptualized as contextual influences that might affect the acceptability of smoking in the workplace.

Methods

Sample

Data for this study were extracted from a national survey to evaluate the impact of awareness of the Tobacco Free Nurses Initiative on interventions with patients who smoke.[31] Inclusion criteria for this study included being a staff nurse and caring for adult patients. Nurses were selected from Magnet-designated hospitals, as determined by the American Nurses Credentialing Center. Approximately 4% of all U.S. hospitals have Magnet status, which indicates healthcare facilities with the highest standard of nursing care. It was postulated that the frequency of smoking cessation interventions delivered by nurses in these facilities as well as the relationship of smoking status to missed breaks could provide benchmarks for future comparisons with nurses working in non-Magnet institutions. Other factors influencing the decision to use such facilities were that contact information for the Chief Nursing Officer (CNO) was available from the American Nurses Credentialing Center and that nurses in these institutions would be more likely to participate in data collection related to evidence-based practices.

At the time of the survey, in 2006 (from September to November), 171 Magnet facilities (representing 167 healthcare organizations) cared for adult patients, in 42 states and the District of Columbia. CNOs from 35 organizations (21% of the 171 facilities) agreed and participated in the study. Administrators and advanced practice nurses were excluded from this analysis, as their ability to take work breaks might be influenced by different demands than those placed on staff nurses.

The sample included 2589 staff nurses (74% of the respondents) working in 19 states and the District of Columbia (eight in the South, five in the Northeast, four in the Midwest, and three in the West). Based on information from the CNO at each institution about the number of employed nurses, the median response rate at each facility was 9.3% (range 0.1%–33.7%). Respondents were mostly white (88%), female (93%), mean age of 41.7 years, and mean number of years as a nurse of 15. Among nonwhite nurses (n=309), most were African American (n=149) and Asian (n=107). RN education level was mostly baccalaureate (48%) or Associate/Diploma in Nursing (46%). Most worked in medical–surgical units (46%), full time (87%), on day shifts (66%) (Table 1). The respondents were similar in age (43.2 years) to nurses working in hospital settings in the U.S., and similar in race (81.8% white) and gender (94.2% female) to the general population of RNs in the U.S.[24] However, the RNs in this sample were more highly educated than general population of RNs in the U.S. (34.2% baccalaureate and 51.7% diploma/associate degree).

Measures

The Helping Smokers Quit 30-item, web-based questionnaire, based on a previous survey developed by the investigators,[32] included items about the delivery of smoking cessation interventions to patients, as well as questions about the nurse's missed work breaks; smoking status; smoking characteristics;

Table 1. Comparison of staff nurses' characteristics by frequency of missing a break (N=2589)

Demographic, professional, smoking, and workplace characteristics	Total N=2589[a] Mean (SD)	Miss work breaks never/rarely *n*=763 29.7% Mean (SD)	Missed work breaks always/often *n*=1808 70.3% Mean (SD)	*p*-value*
Age (years)	41.7 (11.1)	40.5 (11.0)	42.2 (11.1)	**0.0004**
Years working as a nurse	15.1 (11.1)	14.6 (10.8)	15.3 (11.2)	0.17
	n (%)	*n* (%)	*n* (%)	
Smoking status				**<0.0001**
Current smoker	248 (9.7)	102 (41.1)	146 (58.9)	
Nonsmoker	2307 (90.3)	656 (28.4)	1651 (71.6)	
Gender				0.91
Male	177 (6.84)	51 (29.3)	123 (70.7)	
Female	2412 (93.2)	712 (29.7)	1685 (70.3)	
Race				**<0.0001**
White	2262 (88.0)	630 (28.0)	1620 (72.0)	
Nonwhite	309 (12.0)	126 (41.6)	177 (58.4)	
Education				**0.03**
LPN	65 (2.5)	12 (19.1)	51 (81.0)	
AA/diploma	1183 (45.7)	340 (28.8)	842 (71.2)	
BS	1241 (47.9)	389 (31.7)	839 (68.3)	
MS/PhD	100 (3.9)	22 (22.5)	76 (77.6)	
Unit				**0.0005**
Intensive care	451 (17.9)	106 (23.5)	345 (76.5)	
Medical–surgical/cardiovascular	1158 (46.0)	385 (33.4)	768 (66.6)	
Obstetrics/gynecology	314 (12.5)	91 (29.0)	223 (71.0)	
Psychiatric	72 (2.9)	26 (36.1)	46 (63.9)	
Emergency room	247 (9.8)	57 (23.2)	189 (76.8)	
Outpatient/home health	278 (11.0)	82 (29.5)	196 (70.5)	
Shift				0.52
Day	1610 (66.4)	489 (30.4)	1118 (69.6)	
Evening	187 (7.7)	60 (32.4)	125 (67.6)	
Night	629 (25.9)	179 (28.5)	449 (71.5)	
Work status				0.30
Part-time	339 (13.1)	92 (27.3)	245 (72.7)	
Full-time	2248 (86.9)	671 (30.1)	1561 (69.9)	
State smoking prevalence[b]				0.07
High[c]	1244 (52.0)	389 (31.4)	850 (68.6)	
Low[d]	1345 (48.1)	374 (28.1)	958 (71.9)	
Statewide smoke-free workplace policy				0.36
Yes[e]	695 (73.2)	195 (28.3)	494 (71.7)	
No	1894 (26.8)	568 (30.2)	1314 (69.8)	

*p-value is calculated using χ^2 statistic for frequencies and t-test for continuous variables, all p-values in boldface are statistically significant
[a]Totals differ due to missing data
[b]Based on the national median of 20.2% for the year 2006
[c]Arkansas, Florida, Georgia, Indiana, Pennsylvania, Ohio, North Carolina, South Carolina
[d]Colorado, Connecticut, Illinois, Maine, Maryland, New Jersey, New York, Texas, Utah, Virginia, Wisconsin, District of Columbia
[e]Colorado, Connecticut, Florida, Maine, New Jersey, New York, Utah

and demographic, professional, and workplace characteristics. Reliability of the questionnaire was re-established for administration over the Internet (κ=7.0). The instrument took approximately 5–7 minutes to complete. The frequency of missed work breaks was assessed by responses (never, rarely, often, always) to the question: "In the past week how often have you missed your break period?" Smoking status (never smoker, current smoker, former smoker) was evaluated as follows: Never smokers were defined by a negative response to the question, "Have you ever smoked 100 or more cigarettes in your life?" Current smokers were identified by a positive response to the question, "Do you smoke now?" Former smokers were identified by a positive response to a history of smoking but a negative response to current smoking. Level of nicotine addiction was assessed by asking the time of first cigarette after waking up.[32] Information about previous quit attempts and interest in quitting were collected, along with information about demographics (age, gender, and race/ethnicity), professional characteristics (level of nursing education, years of nursing practice, and primary position as staff nurse), and work setting (full- or part-time position, shift, and usual work unit).

Smoking prevalence within the state where each hospital was located was identified[23] and the presence of comprehensive statewide smoke-free workplace policies (i.e., smoking not allowed in any designated smoking area in the workplace, no exemptions on workplace size, and including both public and private workplaces), based on data from Americans for Nonsmokers Rights.[30] Post hoc, an attempt was made to evaluate the extent of each hospital's smoke-free policy (e.g.,

smoking allowed in designated smoking areas, 100% smoke-free campus) through a search of publicly available sources, including the hospital's website. Descriptions and interpretations of a smoke-free policy varied widely. For example, hospitals would state they had a 100% smoke-free policy and then identify designated smoking areas, mostly outdoors or in courtyards. Because of these inconsistencies and the lack of confirmation of the smoke-free status of each hospital, the extent of the smoke-free policies at each hospital could not be verified and were not used in this analysis.

Procedures

E-mail invitations, with three follow-up e-mails over a 4-week period, were sent to CNOs of all facilities, inviting the nursing staff to participate in the study. A link to the web survey, administered using SurveyMonkey.com, was sent to the CNO for distribution to the staff nurses. The survey included a statement that completion of the survey constituted informed consent to participate, and clarified that participation was optional and that all answers were anonymous. Nurses had 4 weeks to complete the survey; participants were eligible to enter in a lottery to win $100 in cash. The study was approved for exemption by the IRB, University of California, Los Angeles.

Statistical Analysis

Descriptive statistics were used to describe the frequency of missed breaks; the smoking status of the sample; and personal, professional, and workplace factors. Differences in the frequency of missed work breaks (often/always and never/rarely) were examined by smoking status (smokers and nonsmokers) using chi-squares for categoric variables and *t*-tests for continuous variables. Additionally, differences in the frequency of missed work breaks by demographic and by professional and workplace factors were identified. Differences in these factors by smoking status also were assessed.

Several variables were collapsed for comparisons, including the unit in which respondent worked (e.g., medical–surgical with cardiovascular units), race (dichotomizing into white/nonwhite), education (associate degree with diploma, Masters with doctorate). State smoking prevalence was used to classify hospitals: high (above the 2006 national median for adult smoking prevalence of 20.2%[23]) or low (below the national median). The presence or absence of a statewide smoke-free policy was determined.

Multiple logistic regressions of factors influencing the likelihood of always/often missing work breaks was performed using all possible predictors from the bivariate analysis. Because an analysis using only significant factors yielded similar results, only the full model is presented. The following referents were used: smoking status (smoker), race (white), education (baccalaureate degree), unit (medical–surgical unit), work status (full-time), shift (day), and state smoking prevalence (low). Age was included as a continuous variable.

Because the primary focus was on exploration, no statistical adjustment for multiple tests was done; thus, conservative interpretation is suggested. Statistical analysis was carried out using SAS version 9.1.3. Level of significance was set at $p<0.05$.

Results

The majority of never smokers (70%) and current smokers (59%) reported frequently missing breaks (Table 1). Approximately 9.5% of nurses were current smokers. There were differences in the demographic, professional, and workplace characteristics by missed work breaks. Nurses who were older, nonsmokers, white, or LPNs were significantly more likely to miss breaks. Nurses who worked in emergency rooms and intensive care units missed breaks more frequently than nurses in other units.

There also were significant personal, professional, and workplace variables by smoking status (Table 2). Nurses who smoked were younger; male; had fewer years of nursing experience; and were more likely to work in emergency rooms and psychiatric units, to work the evening or night shifts, and to work full-time. LPNs and RNs with less than a baccalaureate were significantly more likely to smoke. Smokers were more likely to work in states where smoking prevalence was higher than the national median.

About one third (33.2%) of smokers had their first cigarette within 30 minutes of waking, 24.2% smoked 31–60 minutes after waking, and 42.1% smoked after 60 minutes. Approximately one third (36%) of smokers reported trying to quit at the time of the survey. The average number of previous quit attempts was 5.4 (SD=8.4).

Table 3 shows multiple logistic regression of factors associated with increased likelihood of missed breaks. Factors significantly related with missed breaks included being a nonsmoker, older age, white, and working in intensive care or emergency rooms. Nonsmokers were almost twice as likely to miss breaks (OR=1.81, CI=1.36, 2.42) as compared to smokers. LPNs were more than twice as likely to miss breaks compared to RNs (OR=2.37, CI=1.16, 4.84), regardless of their smoking status. Missed work breaks were not related to states' smoking prevalence or the presence of state smoke-free policies.

Discussion

To the investigators' knowledge, this is the first study to describe the relationship of smoking and missed breaks among nurses. Missing work breaks appears to be the norm, not the exception, among this sample of nurses. These findings also indicate disparities in work breaks. Work break inequalities were influenced by smoking status, age, and level of education. Nonsmokers were almost twice as likely to miss work breaks as were nurses who smoked. This finding confirms reports from focus groups of current and former smokers.[29] Only one third of the smokers responded that they were trying to quit, and the differences in missed work breaks reinforce the fear of smokers of losing their breaks if they

Table 2. Comparison of staff nurses' characteristics by smoking status (N=2555)

Demographic, professional, and workplace characteristics	Smokers n=248 (9.7%) Mean (SD)	Nonsmokers n=2307 (90.3%) Mean (SD)	p-value*
Age (years)	40.2 (9.7)	41.9 (11.2)	**0.02**
Years working as a nurse	12.7 (9.7)	15.3 (11.2)	**0.0003**
	n (%)	n (%)	
Gender			**0.02**
Male	25 (14.6)	146 (85.4)	
Female	223 (9.4)	2161 (90.7)	
Race			0.06
White	226 (10.1)	2012 (89.9)	
Nonwhite	20 (6.7)	279 (93.3)	
Education			**<0.0001**
LPN	9 (14.3)	54 (85.7)	
AA/Diploma	155 (13.2)	1017 (86.8)	
BS	82 (6.7)	1140 (93.3)	
MS/PhD	2 (2.0)	96 (98.0)	
Unit			**<0.0001**
Intensive care	41 (9.2)	405 (90.8)	
Medical–surgical/cardiovascular	110 (9.61)	1035 (90.39)	
Obstetric/gynecology	23 (7.3)	291 (92.7)	
Psychiatric	17 (23.9)	54 (76.1)	
Emergency room	39 (15.9)	206 (84.1)	
Outpatient/home health	15 (5.4)	262 (94.6)	
Shift			**<0.0001**
Day	123 (7.7)	1474 (92.3)	
Evening	27 (14.6)	158 (85.4)	
Night	92 (14.8)	530 (85.2)	
Work status			**0.04**
Part-time	22 (6.6)	313 (93.4)	
Full-time	225 (10.1)	1993 (89.9)	
State smoking prevalence[a]			**0.02**
High[b]	137 (11.2)	1092 (88.9)	
Low[c]	111 (8.4)	1215 (91.6)	
Work in state with smoke-free workplace policies			0.54
Yes[d]	62 (9.1)	618 (90.9)	
No	186 (9.9)	1689 (90.1)	

*p-value is calculated using χ^2 statistic for frequencies and t-test for continuous variables, all p-values in boldface are statistically significant

[a]Based on the national median of 20.2% for the year 2006

[b]Arkansas, Florida, Georgia, Indiana, Pennsylvania, Ohio, North Carolina, South Carolina

[c]Colorado, Connecticut, Illinois, Maine, Maryland, New Jersey, New York, Texas, Utah, Virginia, Wisconsin, District of Columbia

[d]Colorado, Connecticut, Florida, Maine, New Jersey, New York, Utah

quit, possibly posing a barrier to efforts to support nurses in quitting.

Fagan and colleagues[33] called for additional research to better understand the social context of disparities in tobacco use, with the inclusion of occupation and education. As expected, characteristics of nurses who smoked varied from nonsmokers in other ways that might influence work breaks. Smoking was highest among the least-educated nurses (i.e., LPNs and associate degree/diploma graduates), and higher among male as compared to female nurses and among older nurses. The prevalence of smokers was highest in psychiatric units and emergency rooms, among those on evening and night shifts, and among those working in states with high smoking prevalence. Sorensen and collaborators[34–36] suggested models to reduce educational and social disparities in smoking status through workplace cessation programs. The findings from this study indicate that smoking among nurses may mirror their workplace environment, and programs to support nurses' quit efforts need to address the social context of quitting, educational level, characteristics of demanding clinical settings, and should be made available for all shifts.

Age, education, and work setting were associated with missed breaks, regardless of smoking status. Older nurses were more likely to miss work breaks, perhaps indicating differences in workload, patient acuity, job expectations based on experience, or different attitudes about taking breaks. LPNs were more than twice as likely to miss work breaks, regardless of smoking status, shedding light on what might be an education- or income-based workplace inequality not previously reported. Because of the small sample size of LPNs who were current smokers, showing differences in smoking status by missed work breaks was not possible. Missed breaks also varied by unit, and were more common among nurses working in emergency rooms and psychiatric units, units which also had the highest smoking prevalence.

The impact of smoking status on work breaks and work routine is an important area for future research. Another important area for research is the impact on smoking of enforcement of hospitals' smoke-free policies. Quitting among smokers has been noted to increase when smoke-free policies are instituted. However, even with the strictest smoke-free policy, it is possible that smokers will make extraordinary efforts to take their smoking breaks, as, for example, driving to a location off campus in order to smoke. As was evident in the preliminary review of hospital policies, "smoke-free" had a variety of meanings. Wheeler and col-

Table 3. Multiple logistic regression of factors associated with staff nurses always/often missing a work break (N=2327)

Variables	OR (95% CI)	*p*-value
Smoker	1.0	
Nonsmoker	1.81 (1.36, 2.42)	**<0.0001**
Age[a]	1.02 (1.01, 1.03)	**<0.0001**
White	1.0	
Nonwhite	0.56 (0.43, 0.73)	**<0.0001**
Female	1.0	
Male	0.97 (0.67, 1.42)	0.89
Education		
LPN	2.37 (1.16, 4.84)	**0.02**
AA/diploma	1.15 (0.95, 1.39)	0.17
BS	1.0	
MS/PhD	1.34 (0.79, 2.27)	0.27
Unit		
Medical–surgical	1.0	
Emergency room	1.75 (1.25, 2.47)	**0.001**
Outpatient/home health	1.02 (0.76, 1.39)	0.88
Intensive care	1.60 (1.22, 2.09)	**0.001**
Obstetric/gynecology	1.18 (0.89, 1.58)	0.25
Psychiatric	0.85 (0.49, 1.48)	0.57
Work status		
Full-time	1.0	
Part-time	1.10 (0.83, 1.45)	0.51
Shift		
Day	1.0	
Evening	0.93 (0.66, 1.32)	0.68
Night	1.18 (0.95, 1.48)	0.14
State smoking prevalence		
Low prevalence[b]	1.0	
High prevalence[c]	0.84 (0.70, 1.01)	0.06

p-values in boldface are statistically significant
[a]Age is a continuous variable, thus for each year the odds are 1.2 times higher than those for the previous year
[b]Colorado, Connecticut, Illinois, Maine, Maryland, New Jersey, New York, Texas, Utah, Virginia, Wisconsin, District of Columbia
[c]Arkansas, Florida, Georgia, Indiana, Pennsylvania, Ohio, North Carolina, South Carolina

leagues[9] discussed the successful implementation of a smoke-free hospital campus, but did not address the impact on smokers' ability to take work breaks. As smoke-free campuses expand, efforts of smokers to take smoking breaks may exacerbate the disparities of missed breaks identified in this study.

Several limitations to this study should be considered in interpreting the findings. The low response rate, similar to the rates of web-based surveys reported by others,[37,38] may have biased the findings, as it was impossible to determine if smokers or those who missed breaks would be less likely to respond. Future research should include assessment of other factors that may have influenced missed breaks, such as acuity level of patients, hospital census, patient–nurse ratio, and the severity of the nursing shortage.

This study focused on nurses in the U.S. International reports show that smoking by healthcare professionals, specifically nurses, is a barrier in the implementation of smoke-free hospitals.[39–42] Smoking rates among nurses and nursing students in some countries are as high, or higher, than smoking among women in the general population.[43,44] Cessation programs for nurses are an essential strategy to facilitate the implementation of smoke-free hospitals worldwide.[42,45,46]

Qualitative research methods may be useful in understanding the social context of work breaks. Further research is needed to explore how work breaks are perceived and valued by nurses and if there are differences among nurses by smoking status. Efforts are needed to examine the impact of smoke-free policies on the work routine, including breaks.[47] Inequalities related to missed breaks can be addressed through policies that support the health of all workers and ensure that, regardless of unit, shift, patient acuity, or smoking status, all nurses have the opportunity to take their scheduled breaks.

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