EVALUATING USAGE, PREFERENCES, AND PERCEIVED RESTORATIVE QUALITIES OF STAFF BREAK AREAS IN HEALTHCARE FACILITIES

A Dissertation

by

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ABSTRACT

Nurses are extremely important to the healthcare industry, and maintaining the quality of nursing care is one of the central concerns of today's healthcare managers. Unfortunately, the nursing profession in the U.S. is on the precipice of a crisis. Healthcare facilities are suffering from high rates of staff burnout and turnover, and interest in the profession among younger students is on the decline. Healthcare leaders are concerned for improving nurses' satisfaction, performance, and job retention, but they often overlook the importance of respite for nurses, and underestimate the value of well-furnished staff break areas. A healthy break area can improve nurses' mood, attitude, and alertness, factors that have been associated with a higher quality of patient care and better facility outcomes. In this study, the researcher gathered empirical evidence regarding nurses' desires and responses to different environmental features of staff break areas. The design interventions that were tested included (a) the proximity of break areas to work areas, (b) levels of socializing vs. privacy, (c) visual and physical access to the outdoors, (d) the presence of artworks, plants, and natural light, and (e) amenities for indoor and outdoor break spaces. These break-room features were examined in regard to their perceived restorative qualities and their potential to affect staff usage and satisfaction. A multi-method approach was used in the research, employing both qualitative explorations (focused interviews and narrative survey questions) and quantitative measurements (discrete survey questions and a visual

ranking of break-room spaces). Important findings include the result that staff break areas are more likely to be used if they are in close proximity to nurses' work areas, that these spaces need complete privacy from patients and families, and that it is most effective to provide a mixture of opportunities for individual privacy and socialization with co-workers. Having physical access to private outdoor spaces (e.g., balconies or porches) was shown to have a significantly greater restorative effect in comparison with window views, artwork, or indoor plants. The study outcomes were incorporated into a set of design and policy suggestions to encourage effective improvements in the quality of nurses' rest breaks.

DEDICATION

I dedicate this dissertation to my wonderful family. A special feeling of gratitude is extended to my loving parents, Abbasali Nejati and Tahereh Rezaei, for their endless love, support, and encouragement—and also to my siblings, Azadeh, Elham, Hamed, and Omid, who have never left my side and are very special to me.

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CHAPTER I

INTRODUCTION

1.1. Problem Statement

One of the central concerns of current healthcare research is how the needs of nursing staff can be better incorporated into the design of hospital environments. Health facilities have for some time been suffering from a high staff turnover rate, which according to one study averages as much as 20% per year (Joint Commission, 2002). Job dissatisfaction, work-related stress, staff burnout and fatigue, and the quality of working environments were found to be factors that affected nurses' decisions to leave the profession (AMN Healthcare, 2012; McHugh, Kutney-Lee, Cimiotti, Sloane, & Aiken, 2011). The resulting shortage of nursing staff, as well as a lack of younger registered nurses who are inspired to enter the profession, has been cited as a major issue currently facing the healthcare industry (Auerbach, Buerhaus, & Staiger, 2007; Hader, Saver, & Steltzer, 2006; Health Resources and Services Administration, 2013).

Healthcare facilities are ranked as one the most stressful contemporary work environments for their employees, and this is especially true for nurses (Tummers, Janssen, Landeweerd, & Houkes, 2001). Some of the reasons for the fatigue and exhaustion experienced by nurses are their extended hours, consecutive working shifts,

insufficient sleep, long travel/walking distances, and a lack of rest breaks during shifts (Hendrich et al., 2008; Rogers & Hughes, 2008). While there is a substantial need for healthcare facilities to improve the experience of nursing staff by implementing new employment policies, the architectural aspects of the working environment can also contribute, either negatively or positively, to staff satisfaction levels. Healthcare facilities often lack high-quality staff break rooms. The quality of patient care environments is often prioritized in a way that marginalizes the needs of staff, for example by locating break areas in distant locations and without access to windows or outdoor connections (Peck, 2010; U.S. Department of Labor, 1961a, 1961b). The resulting burnout and fatigue among nursing staff can often lead to a lack of focus and concentration, which can have drastic consequences not only for the staff members themselves, but also for patient outcomes (Wagner-Raphael, Jason, & Ferrari, 1999; Witkoski & Dickson, 2010).

Meta-analysis studies show that extensive research has been done on the connection between patient care environments and patient outcomes. However, there is very little data regarding the impact of healthcare facility design on the experiences and effectiveness of nursing staff (Rechel, Buchan, & McKee, 2009). In 2008, Ulrich and colleagues conducted an extensive literature review of rigorous empirical studies that linked design strategies or environmental interventions to healthcare outcomes. Their summary showed only minor attention given to staff experiences and to staff-specific

design factors. Furthermore, this review indicated a significant lack of evidence regarding the impact of staff-oriented environmental interventions.

One of the most basic and widely recognized design factors affecting human well-being is the availability of natural light, open air, and views within the built environment (Hollwich & Dieckhues, 1980; Golden et al., 2005; Bringslimark et al., 2011; Farley & Veitch, 2001). Considering the many health benefits provided by natural access in work environments, it is striking that relatively few studies have explored the effects of visual and physical access to the outdoor environment in staff break rooms. The hesitancy to tackle this issue may be related to the difficult design challenges posed by crafting natural access, especially as deep-plan buildings have been encouraged by an emphasis on energy conservation and rapid advancements in lighting and building technologies (Collins, 1975; Ulrich, 2006; Verderber, 1986). In addition, there is currently a lack of comprehensive guidelines for designing health-promoting interfaces between the indoors and outdoors in hospital work environments (Verderber & Reuman, 1987). Most previous studies related to indoor-outdoor interfaces in healthcare facilities have been limited only to the effects of windowed vs. windowless spaces (rather than more direct access), and most of the research in this area has been focused on the experience of patients (rather than staff). In order to help mitigate this lack of evidence, the current study was designed to investigate the effects of various types of access to nature, natural light, and fresh air in staff break areas. These design features

were investigated in relationship to nurses' fatigue levels, job performance, and reported satisfaction with the work environment, as well as their preference for and usage of break areas.

1.2. Research Aims and Objectives

The study began with an exploration of the barriers that prevented nursing staff from taking refreshing breaks in healthcare facilities. Both environmental features and institutional policies were investigated in order to diagnose obstacles that interfered with staff rest breaks. Usage patterns, verbal/visual preferences, and the perceived environmental qualities of specific design features in staff break areas were then evaluated in terms of their potential to reduce stress, increase productivity, and enhance nurses' overall job satisfaction. The methods used in this investigation included a review of available literature, interviews with nurses involved in the healthcare design industry, and an online written survey and visual assessment conducted with more than 10,000 members of the Academy of Medical-Surgical Nurses in the United States. The specific research aims and objectives were broken down as follows:

Objective 1: Understand the main challenges that prevent nursing staff from taking restorative breaks in healthcare facilities.

Aim 1: Understand federal, state, and institutional policies and regulations related to staff breaks, as well as health-promoting programs for staff (literature review).

Aim 2: Evaluate the quality of existing indoor and outdoor staff break areas in healthcare facilities in terms of conveniences and environmental amenities, focusing on the proximity to patient care areas, privacy and tranquility, and level of access to nature, natural light, and fresh air (interviews and written surveys).

Objective 2: Assess the usage patterns, verbal/visual preferences, and perceived restorative qualities of specific design features in staff break areas.

Aim 1: Understand how nursing staff make use of their indoor and outdoor break areas (interviews and written surveys).

Aim 2: Explore verbal and visual preferences, and perceived restorative qualities, of specific design features in break areas (interviews, written surveys, and visual assessment).

Aim 3: Use the empirical data collected in this study to create a prototype model of design and policy recommendations for creating effective and restorative staff break rooms in healthcare facilities.

1.3. Research Questions

The central research question motivating this study was: *Will higher levels of access to nature, natural light, and fresh air in the staff break areas of healthcare facilities have a positive impact on nurses' alertness, job performance, and satisfaction with their work environment?* The study was designed to gather evidence that can help to answer this question, and to evaluate the effects of particular break-room design features. Specific research questions related to study objectives were broken down as follows:

Objective 1 research questions:

1. How much stress do nurses perceive in their work environments?
2. What policy-related challenges do nurses face in regard to taking restorative breaks?
3. What do nurses' break patterns look like? Aside from a primary meal break, do they take opportunities for short, non-meal breaks during their working shifts?
4. How can healthcare facilities better educate staff about the importance of restorative breaks, and what are the most important break-related policies to implement in order to reduce nurses' fatigue?

Objective 2 research questions:

5. Does nurses' satisfaction with the environmental qualities of their break areas have a positive association with their break patterns and usage of those areas?
6. Do nurses perceive well-designed staff break areas as playing an important beneficial role in relation to overall job satisfaction, staff retention, job performance, quality of patient care, and job-related health concerns? If yes, then what are the main environmental predictors of positive perceptions?
7. Do break areas that are located closer to nurses' workstations have higher usage and preference rates, and greater perceived restorative qualities, as compared to those that are further away?
8. Do break areas with higher levels of privacy and tranquility have higher usage and preference rates, and greater perceived restorative qualities, as compared to those that are public and shared with patients and families?
9. Do break areas with direct physical access to the outdoors have higher usage and preference rates, and greater perceived restorative qualities, as compared to those that have only widow views?
10. Do break areas that incorporate elements of nature and natural light have higher usage and preference rates, and greater perceived restorative qualities, as compared to those that lack these elements?
11. What are the most important amenities/appliances for improving nurses' satisfaction with indoor and outdoor break areas?

1.4. Significance of the Research

This research improves our understanding of the role that restorative breaks have for reducing nurses' fatigue in healthcare facilities. It also provides new empirical evidence in identifying barriers that prevent nurses from taking restorative breaks, and in assessing the value of specific break-related policy and design interventions. It demonstrates why healthcare leaders and designers need to support a greater emphasis on high-quality break areas in the early phases of space programming and strategic planning. High rates of nursing staff turnover, lack of interest in the profession, the rising incidence of medical errors, and lapses in quality of patient care all indicate that improvements in the job satisfaction and alertness levels of nurses is a vital need in the healthcare industry. The focus of this study was to investigate the effects of well-designed break rooms, and to evaluate specific design features, including the proximity of break areas to work areas, levels of privacy, visual and physical access to the outdoors, the presence of artworks, plants, and natural light, and amenities for indoor and outdoor break spaces. By investigating the needs and responses of nursing staff, this study revealed the value of health-promoting break areas and identified the most effective interventions for improving the quality of nurses' breaks.

1.5. Overview of the Dissertation

This introductory chapter provided an outline of the problem the research study was designed to answer, the importance of this problem, and a specific breakdown of objectives and research questions. In chapter 2 a literature review is presented, covering the challenges of staff retention and performance in today's healthcare industry, as well as previous studies on the health-promoting aspects of built environments. Chapter 3 is a discussion of the study's design and research methods. In chapters 4 and 5, the results from the interviews, written surveys, and visual assessments are presented. Chapter 6 includes a detailed discussion of these results and their relationship to the previous research literature. Finally, chapter 7 provides a summary of the study's main findings, a list of proposed design and policy recommendations, a discussion of the limitation of study, and suggestions for future research on this topic.

CHAPTER II

LITERATURE REVIEW

Nurses are one of the most valuable resources of the healthcare industry. However, nursing is also an extremely stressful job, and it can be difficult for healthcare facilities to maintain the quality of their staff. In this chapter I review the existing scholarly literature regarding the challenges faced by nurses and healthcare facilities in their attempts to enhance staff satisfaction and performance. The main reasons for nurses' stress and burnout are discussed, followed by the negative consequences that fatigue has for both the health of staff members and patient outcomes. More optimistically, I then turn to the positive impact of restorative breaks on staff health and performance. I review the existing literature on the role of physical environments in facilitating refreshing breaks for nurses in healthcare facilities. Finally, broader theories of restorative environments are summarized, including existing evidence on how access to nature, natural light, and fresh air can improve human health, performance, and satisfaction.

2.1. The Decline of the Nursing Profession in the U.S.

The nursing profession in the U.S. is on the precipice of a crisis. The growing shortage of nursing staff, along with the aging composition of the profession and the eminent

retirement of the “old guard” of registered nurses, is a major challenge currently facing the healthcare industry. By the year 2020 he dearth of registered nurses in the United States is projected to grow to somewhere between 340,000 (Auerbach, Buerhaus, & Staiger, 2007) and 800,000 (U.S. Department of Health and Human Services, 2002), with the higher number representing a shortfall of 30% below industry needs. The reasons for this shortfall include both a low number of new students entering nursing school and a growing propensity for existing nurses to leave the profession (Rosseter, 2014). Currently, the average age of registered nurses in the U.S. is 44.6 years, with only 15% of the profession younger than 30 years old (Health Resources and Services Administration, 2013).

The current population of experienced nurses is a vital resource to the healthcare industry, as their leadership and practical knowledge accumulated over years of service helps to keep the system afloat. However, it is unclear what will happen when these experienced nurses begin to retire *en masse*, leaving behind a much slimmer and diminished profile within the profession. It is likely that a certain amount of knowledge will be lost. Somewhere between 35% to 50% of registered nurses will reach retirement age within the next six years (Health Resources and Services Administration, 2013; Hader, Saver, & Steltzer, 2006). Furthermore, the healthcare industry is already suffering from a high staff turnover rate, as nurses become burned out and leave the profession. This leads to increased expenses related to staff replacements, and

decreased productivity due to the need to rely on temporary staffing. The extra cost incurred in replacing a nursing staff member has been calculated as between 50% to 150% of the nurse's base salary (Kosel & Olivo, 2002). These costs have a significant effect on the industry, comprising as much as 3.4% to 5.8% of the operating budgets of healthcare facilities (Jones, 2004; Waldman, Kelly, Arora, & Smith, 2004).

Job dissatisfaction, work-related stress, fatigue, and the poor quality of working environments have been shown to be associated with the increased turnover rates in the healthcare industry. In one recent study, survey data were collected from 95,499 nurses; the analysis revealed that 24% of hospital nursing staff and 27% of nursing-home staff were dissatisfied with their profession. "Feeling burned out" was also reported by 34% of hospital nursing staff and 37% of nursing-home staff (McHugh, Kutney-Lee, Cimiotti, Sloane, & Aiken, 2011). In separate studies, 38% of nurses reported stress as the biggest problem that they faced (Joint Commission, 2002), 50% worried about the negative impact of their job on their health, and 44% stated they were unsure if they would again select nursing as a career if they were starting out today (AMN Healthcare, 2012).

2.2. Nursing Staff Stress and Burnout

Healthcare facilities are ranked as one of the most stressful contemporary work environments for their employees, and this is especially true for nurses (Pines &

Maslach, 1978; Tummers, Janssen, Landeweerd, & Houkes, 2001). Job-related stress can rapidly lead to burnout in nurses, especially for those in high-mortality specialties such as intensive care, hospice, and oncology (Braithwaite, 2008; Sherman, 2004). One recent study, for example, found that as many as one-third of intensive care nurses exhibited symptoms of severe burnout (Poncet et al., 2007). Other studies have confirmed this result, while linking nurses' workplace stress and job dissatisfaction with their rates of burnout (Le Blanc, De Jonge, De Rijk, & Schaufeli, 2001; Myhren et al. 2013).

The phenomenon of burnout has been studied and quantified since the 1970s, when Freudenberg (1974) described it as a condition in which young adults work hard and endanger their health and wellbeing to help society while receiving little or no appreciation or rewards. Maslach and Jackson (1986, p. 1) defined the effects of burnout as a combination of "emotional and mental exhaustion, depersonalization, and reduced sense of personal accomplishment." Their diagnostic instrument, the Maslach Burnout Inventory (MBI), has been implemented in numerous later studies as a way to measure this phenomenon and its association with factors such as job stress. A study by Kalliath and Morris (2002) indicated that job dissatisfaction was a significant predictor of burnout, with a direct effect on emotional exhaustion and an indirect effect on depersonalization. Physically, burnout can result in muscle tension, fatigue, headaches, and sleep disorders, among other symptoms (Costantini et al., 1997;

Duquette et al., 1995; Maslach & Jackson, 1982). In addition, it can lead to to mental health problems such as anxiety, depression, and feelings of anger, guilt, and shame (Eriksson, Starrin, & Janson, 2008; Meadors & Lamson, 2008). Thus, burnout can have a strong effect on the physical and psychological wellbeing of nursing staff.

Staff burnout also can negatively affect patient outcomes, including the quality of care, patient safety, and patient satisfaction with the healthcare facility. Poghosyan and colleagues (2010) surveyed 53,846 nurses from six countries to analyze the relationship between nurse burnout and healthcare facility quality ratings, and found a strong and consistent association between higher level of burnout and lower quality of care. Burnout can affect patient safety by increasing the risk of medical error. Staff with burnout have a decreased ability to identify errors and resolve them before harm is inflicted (Braithwaite, 2008; Halbesleben, Wakefield, Wakefield, & Cooper, 2008). Additional studies have shown that nurses' burnout can significantly decrease overall patient satisfaction (Argentero, Dell'Olivo, & Ferretti, 2008; Garman, Corrigan, & Morris, 2002; Vahey, Aiken, Sloane, Clarke, & Vargas, 2004). Furthermore, nursing staff burnout has been associated with low morale, higher levels of absenteeism (Eriksson, Starrin, & Janson, 2008; Meadors & Lamson, 2008), higher rates of intention to leave the profession (Barrett & Yates, 2002), and higher rate of actual institutional turnover (Jayaratne & Chess, 1984; Siefert, Jayaratne, & Chess, 1991).

2.3. Nursing Staff Fatigue and Performance

Fatigue, also known as exhaustion, is a somewhat different phenomenon than burnout. Whereas burnout is a long-term outcome of difficult working conditions, fatigue is a more immediate condition that can vary from day to day and from hour to hour (though, of course, ongoing experiences of fatigue can contribute in burnout over the long run). Aaronson and colleagues (1999) defined fatigue as "a decreased capacity for physical and/or mental activity due to an imbalance in the availability, utilization, and/or restoration of resources needed to perform activity" (p. 46). Fatigue has been recognized as a significant problem among nursing staff, and the most important factors contributing to this fatigue have been identified as nurses' extended working hours, consecutive working shifts, insufficient sleep, long travel/walking distances, and lack of rest breaks (Rogers & Hughes, 2008).

2.3.1. Reasons for Staff Fatigue

2.3.1.1. Length of Working Shifts

To provide 24-hour care for patients, nursing staff traditionally worked on three rotating eight-hour shifts—the day shift, the evening shift, and the night shift. Due to staff shortages beginning in the late 1970s, however, nurses' working hours were gradually extended, and today it is more common for nurses to work on two twelve-hour rotating shifts (generally a day shift beginning at 7am, and a night shift beginning at 7pm) (Josten, Ng-A-Tham, & Thierry, 2003). Based on a recent survey by the

American Nurses Association (2009), 59% of nurses in the U.S. work twelve-hour shifts. The length of these working hours leave nurses susceptible to fatigue and lapses in concentration. In addition, staff shortages and scheduling issues often mean that nurses are required to work for long periods of time without a day off. A recent longitudinal study of 2,273 registered nurses indicated that 29% of the participants worked six or more consecutive shifts at least once during a six-month period (Trinkoff, Geiger-Brown, Brady, Lipscomb, & Muntaner, 2006). Working long shifts for many days in a row without time off has been associated with severe fatigue and longer recovery time (Wallace, 2003).

2.3.1.2. Sleep Deficiency and Walking Distances

Maintaining a healthy and consistent sleep schedule can become very difficult for nurses who work night shifts, and especially for nurses who are required to switch back and forth between day shifts and night shifts. Lee (1992) found that 20% of nurses who work permanent night shifts regularly struggle to stay awake while delivering patient care. A similar study by Gold and colleagues (1992) reported that the incidence of falling asleep happened at least once a week for 32% of nurses with permanent night shifts, 35% percent of nurses with regularly rotating day/night work shifts, and 21% percent of nurses who worked day shifts interspersed with occasional nights.

The fatigue created by extended working shifts and disturbances in sleep patterns can be further exacerbated by the physically and mentally demanding nature of nursing care. One of the most important factors in this regard is the sheer amount of territory that nurses must cover while making their rounds. Hendrich and colleagues (2008) found that nurses walk on average 2.4 to 3.4 miles during each daytime shift. This effort is in addition to all of the routine exertions of nursing activities, both physical and mental, that the staff are engaged in during the course of their work.

2.3.1.3. Lack of Rest Breaks

A final concern that has been associated with nurses' fatigue is a lack of meal and non-meal breaks during the course of their shifts (Witkoski & Dickson, 2010). There are relatively few studies focused on this issue for hospital nursing staff, but research in other work settings has indicated the importance of rest breaks for reducing fatigue and improving short-term performance (Dababneh, Swanson, & Shell, 2001; Faucett, Meyers, Miles, Janowitz, & Fathallah, 2007; Galinsky, Swanson, Sauter, Hurrell, & Schleifer, 2000; Tucker, Folkard, & Macdonald, 2003). Existing studies on healthcare environments do show that nurses often lack opportunities to take breaks (even if researchers have largely failed to investigate the performance-related results of this deficiency). Rogers, Hwang, and Scott (2004) found that nurses had no opportunities at all to sit down for a break during as many as 10% of their shifts. Furthermore, in an additional 43% of their working shifts, nurses were not free from patient care

responsibilities during breaks, leading to frequent interruptions. On average, the total amount of time that nurses spent on break was only 26 minutes during their entire twelve-hour shift. In another study Trinkoff and colleagues (2006) reported very similar results, finding that nurses had no opportunities at all for taking breaks during 11% of their working shifts. A large study by the American Nurses Association (2009) indicated that 35% of nurses reported taking a meal-length break "rarely or never."

2.3.2. Challenges/Barriers That Prevent Nurses from Taking Refreshing Breaks

The reasons that nurses were unable to take refreshing breaks were not always clearly enumerated in the literature discussed above. However, the studies demonstrated than nurses frequently had to sacrifice their breaks in order to fulfill the patient-care tasks assigned to them. One barrier against refreshing breaks is simply institutional policies that result in heavy workloads, insufficient staffing, and poor scheduling (Faugier, Lancaster, Pickles, & Dobson, 2001). A contributing factor is the absence of federal regulations mandating break periods for hospital nursing staff. In the United States, federal law leaves the option of providing short breaks at the discretion of individual employers, and stipulates that longer meal breaks do not need to be compensated as paid working time (U.S. Department of Labor, 1961a, 1961b; Witkoski & Dickson, 2010). State-level regulations can also provide rights to employees, but currently only twenty states have any kind of laws that provide nursing staff with a legal right to take rest breaks. Many high-population states with large healthcare industries, such as Florida,

Ohio, and Texas, simply reiterate the sparse federal regulations (U.S. Census Bureau, Population Division, 2013). This lack of oversight extends to the creation of restorative spaces for staff breaks, which are also seldom required by law (Witkoski & Dickson, 2010).

2.3.3. Consequences of Nursing Staff Fatigue

Fatigue—whether it emerges from long shifts, insufficient sleep, lack of rest breaks, or all of the above—is strongly associated with negative impacts on nurses' quality of life. It can lead to physical and psychological health issues and an overall reduction in wellbeing (Wagner-Raphael, Jason, & Ferrari, 1999). Staff fatigue is also highly relevant to the quality of patient care that nurses are able to provide, and therefore to institutional outcomes and various associated costs in the healthcare industry.

2.3.3.1. Consequences for Nurses' Physical Health

Fatigue can directly affect the physical health of nursing staff by increasing their risk of injuries, particularly "needlesticks" (when a nurse's skin is accidentally punctured by a used needle) and musculoskeletal injuries. Trinkoff and colleagues (2007) examined the association between long working hours and the risk of needlesticks among more than 2,000 nurses. The researchers found that working twelve-hour shifts or longer, and working any shifts other than day shifts, were associated with a significant increase in the odds of a needlestick. In a separate study of more than 11,000 nurses, Clarke (2007)

also found a correlation between the length of nursing shifts and the likelihood of a needlestick injury. In regard to musculoskeletal risks, multiple studies have shown that the physical demands of the nursing profession, when combined with fatigue and sleep deprivation, can lead to increased rates of injuries and disorders (especially of the neck, shoulders, and back) (Haack & Mullington, 2005; Lipscomb, Trinkoff, Geiger-Brown, & Brady, 2002; Trinkoff, Le, Geiger-Brown, Lipscomb, & Lang, 2006). Healthcare facilities can face significant costs related to these on-the-job injuries. For example, in one recent study researchers found that the cost of treating needlestick injuries in the state of Washington averaged approximately $200,000 per year (Shah, Bonauto, Silverstein, & Foley, 2005). In another study conducted in the southeastern U.S., the cost of musculoskeletal injuries—including workers' compensations, diagnostic tests, and treatment services—was found to be between $50,000 to $100,000 per injury (Nelson et al., 2006).

2.3.3.2. Consequences for Nurses' Mental Health

Existing studies on the mental health aspects of fatigue have focused primarily on the results of sleep deprivation. The inability to maintain a health sleeping schedule can directly affect nurses' psychological health by increasing the risk of depression and cognitive, psychomotor, and behavioral disorders (Banks & Dinges, 2007). A recent study by Bara and Arber (2009) found an association between working night shifts or varied shift patterns for more than four years and higher levels of anxiety and

depression. Ruggiero (2003) likewise found that nurses who work night shifts reported a greater incidence of depression. Furthermore, fatigue caused by chronic insufficient sleep has been found to increase negative mood and decrease levels of psychosocial functioning (Franzen, Siegle, & Buysse, 2008; Haack & Mullington, 2005).

These negative mental-health aspects of fatigue have implications for nurses' ability to provide high-quality care for patients. For example, fatigue caused by sleep deficiency has been found to significantly reduce performance in psychomotor vigilance tasks. Nurses whose mood and psychological health has been eroded by fatigue exhibit decreased alertness, and a greater frequency and duration of lapses of attention (Dinges et al., 1997; Franzen, Siegle, & Buysse, 2008). Studies have consistently shown that mental fatigue can result in slowed response time, errors of omission and commission, compromised problem-solving skills, reduced motivation, and decreased vigor in completing necessary tasks (Gravenstein, Cooper, & Orkin, 1990; Jewett, Dijk, Kronauer, & Dinges, 1999; Kahol et al., 2008; Lim & Dinges, 2008; Van-Griever & Meijman, 1987).

2.3.3.3. Consequences for Patient Outcomes

Physical and mental fatigue can lead to decreased staff performance and higher odds of medical error, sometimes with drastic implications for patients (Rogers & Hughes, 2008; Witkoski & Dickson, 2010). Dorrian and colleagues (2006) conducted an extensive

study on the association between medical errors and fatigue resulting from a lack of sleep. They found that sleep duration was a significant predictor of error occurrence, with the incidence of errors rising as nurses' hours of regular sleep diminished. Notably, these researchers also found that a lack of sleep resulted in a lower likelihood of nurses catching errors committed by others.

Rogers and colleagues (2004) examined the association between the length of nurses' working hours and the incidence of error. They found that nurses working 12.5-hour shifts or longer were three times more likely to make an error in patient care, as compared to nurses working shorter shifts. Working for more than 40 hours per week was also found to significantly increase the likelihood of making an error while providing patient care. These researchers found that 58% of the errors reported during their study period were related to the improper administration of medications. Additional studies have replicated these results, indicating that nurses who work extended shifts are significantly more likely to make errors or near-errors in patient care, and to have a higher incidence of adverse events (Scott, Rogers, Hwang, & Zhang, 2006; Barger et al., 2006).

In addition to outright medical errors, fatigue can erode more subtle aspects of nurses' performance, such as perceived attentiveness to patients. Barker and Nussbaum (2011) examined the relationship between mental and physical fatigue and nurses' overall job

performance. They found that mental fatigue levels were higher than physical fatigue, that longer shifts and more working hours per week were positively associated with fatigue levels, and that all of their measured fatigue dimensions were significantly associated with reductions in perceived performance. Josten, Ng-A-Tham, and Thierry (2003) found that even very small variations in fatigue could have an effect on nurses' performance. These researchers compared nurses who worked 8-hour shifts with those who worked 9-hour shifts. They found that the longer-working nurses exhibited more fatigue, had more health complaints, were less satisfied with their jobs, and received poorer performance ratings (Josten, Ng-A-Tham, & Thierry, 2003).

2.4. The Value of Restorative Breaks

2.4.1. Health-Promoting Break Programs

Some healthcare facilities have begun to take the initiative in providing better work environments for their staff. They have implemented programs to help nurses better manage their stress and lower their fatigue, and thereby increase performance in serving patients and their families. Most of these initiatives are focused on improving staffing ratios, implementing more reasonable schedules, and educating staff about the value of regular sleep, healthy diets, and stress-relieving exercise. However, there is still a significant need for healthcare facilities to promote rest breaks by implementing new policies and providing better break-room environments. The initial evidence from pilot programs in this area has indicated that adequate breaks can play a significant role in

reducing fatigue. For example, Massachusetts General Hospital recently experimented with an hour-long, off-unit meal break program as part of their "Transforming Care at the Bedside" initiative. Day-shift nurses working in a 20-bed medical-surgical unit were encouraged to leave the work environment and take an extended break during the middle of their shift. The program required a major cultural adjustment in the unit, as staff were not accustomed to being able to step away from their work while on-shift. However, after settling into this new structure, nurses reported feeling refreshed and less fatigued. They were able to engage more alertly with their colleagues, and demonstrated improved time-management skills (Stefancyk, 2009).

Another example of a health-promoting break program has been developed by Tylor (2005). In Tylor's model, nurses are allowed to take collective "booster breaks," which last around 10 to 15 minutes and can include restorative activities such as healthy snacks and mindfulness exercises (yoga, tai chi, meditation, etc.). As with the Massachusetts program, this initiative requires a cultural change in the work environment as nurses learn to temporarily step away from their responsibilities. However, Tylor has argued that this change will foster nurses' physical and psychological wellbeing by providing a regular reprieve from the ongoing stress of their working environment. The Washington State Nurse Association has likewise endorsed "uninterrupted rest breaks" that will give healthcare staff a chance to relax. This organization has supported legislation to ensure that all nurses have break

opportunities, for the benefit of both their own wellbeing and that of their patients (Washington State Nurse Association, 2008).

When considering the value of restorative break programs, it is necessary to define what is meant by "rest." In the programs described above, rest is understood not merely as a cessation of certain physical activities, but rather as an opportunity to relax into a different mindset. This understanding is grounded in research literature on what constitutes a restorative break. Nurit and Michal (2003) provided an extensive meta-survey on the nature of meaningful, restorative rest, and formulated a definition of rest as "physical and mental activity resulting in a relaxed state" (p. 227). Their results indicated that the restorative value of rest emerged from engaging in "activity that was personal, quiet, and effortless, experienced alone or with friends" (p. 227). Thus, programs that support restorative breaks need to focus not merely on a reprieve from active duties, but also on positive opportunities for staff to engage in healthy non-work activities.

2.4.2. Strategic Napping Programs

There is some controversy in regard to the value of sleeping during breaks at healthcare workplaces. A few hospital organizations, such as the Veterans Health Administration, have implemented a "strategic napping" program as part of their initiatives to address nurses' sleep deprivation. The intention of such programs is to improve the alertness

and performance of frontline healthcare workers. These initiatives include the creation of dedicated areas in the unit where nurses can take quick restorative naps. There are a handful of studies in healthcare settings that indicate such naps can have a benefit in reducing fatigue. Many healthcare leaders, however, remain skeptical about the effectiveness of these programs and about the institutional value of encouraging employees to sleep during their work shifts.

Arora and colleagues (2006) conduced a year-long study of fatigue levels among 38 interns in an academic teaching hospital. Some of the interns were assigned to a schedule that included naps, while others maintained a standard schedule without naps (the two groups swapped schedules every two weeks). The researchers found that while interns were on the napping schedule they received more overall minutes of sleep per day and reported less overall fatigue. A similar study by Smith-Coggins and colleagues (2006) indicated that a 40-minute nap during the course of 12-hour night shift led to reductions in fatigue levels. Comparing a napping group to a control group, these researchers found that the napping group had fewer performance lapses, and reported more vigor and wakefulness. In this study the researchers also found that it took some time for the staff to reach maximum performance after taking a nap—they demonstrated poorer memory immediately upon waking. However, the staff also showed fewer behavioral signs of inattentiveness and sleepiness during the remainder of the shift, in comparison to the control group.

2.4.3. Rest Breaks and the Quality of Patient Care

Very few studies have been performed to examine the effect of nurses' rest breaks on the quality of patient care and eventual patient outcomes. Mitra, Cameron, Mele, and Archer (2008) conduced a two-part study; they first examined the effects of a restorative break program on nurses' fatigue levels, and then examined the overall performance level of the unit. These researchers found that the restorative break program significantly decreased nurses' tiredness at the end of their shifts, and that it was associated with an improvement in several key performance indicators. In another study Rogers, Hwang, and Scott (2004) examined the relationship between medical errors and work breaks among 393 hospital nurses. Although these researchers did not establish whether or not the absence of breaks had an effect on the rate of errors, they did show that longer breaks were associated with fewer errors, in contrast to shorter breaks. They found that there was a 10% decrease in the chance of making an error when nurses were given an additional 10 minutes for their meal and break periods.

There is also some evidence from beyond the healthcare industry to indicate the value of restorative breaks in enhancing performance. Tucker (2003) provided a review of studies from diverse industries in which employees were engaged in fatiguing, lengthy work sessions. In this summary, restorative breaks were consistently shown to be effective in improving sustainable performance and lowering the risk of errors and accidents.

2.5. Restorative Break Environments in Healthcare Settings

Recently meta-analysis studies have indicated a surge of scholarly interest in how physical environments can affect healthcare industry outcomes (Chaudhury, Mahmood, & Valente, 2009; Rechel, Buchan, & McKee, 2009; Ulrich et al., 2008). These reviews show that there is an extensive amount research being done on the impact of healthcare design on patients. However, the reviews also show that little is known about how different healthcare environments affect nursing staff. In 2008, Ulrich and colleagues concluded that only 25% of existing studies on healthcare environments took into account the experiences of the nursing staff. Furthermore, they concluded that most of the studies that did account for nursing staff only considered nurses' experiences within the patient-care environment. They did not take into consideration design issues in the non-patient areas of healthcare facilities (e.g., the design of staff break rooms).

Rechel and colleagues (2009) conducted an extensive literature review of studies that analyzed the impact of healthcare facility design upon the staff working within those facilities. These researchers found that there was very limited evidence on the topic—but the evidence that was available revealed that better design could have a positive affect on nurses' health, job performance, and desire to remain in the profession. Along with other important design factors, these researchers emphasized the need for nursing staff to have personal space, privacy, and quiet time available within the job

environment. In 2011, Sadler and colleagues drew from existing studies to develop a business-oriented argument for building better staff break areas within healthcare facilities. These researchers also proposed that staff break areas should allow for private relaxation and reflection, and listed this design goal as a priority in reducing nursing-staff turnover rates.

The next two sections review theories about the creation of restorative environments, and then specific design interventions for establishing such environments in healthcare facility break areas.

2.6. Theories of Restorative Environments

2.6.1. Biophilia

The biophilia hypothesis is one conceptual outlook that underlies the design of restorative environments. Biophilia theorists argue that human beings have an innate inclination to associate with other non-human living organisms, and in particular, with integrated ecological systems (often referred to in shorthand as “nature”) (Wilson, 1984, 1993). Many biophilia theorists hypothesize that this affinity is rooted our genetic heritage and is a product of biological evolution (Ulrich, 1993). Working from this theoretical perspective, researchers have conducted empirical studies showing that environments without visual or physical contact to nature can have negative impacts on human health and quality of life (Grinde & Patil, 2009).

2.6.2. Supportive Design

Ulrich (1991) developed an architectural theory that he called “supportive design,” based on the idea that stress is a very important problem for human health and wellbeing in the modern world. Healthcare facilities are a paradigmatic backdrop for supportive design, due to the stress that is commonly experienced by healthcare staff, patients, and their families. In Ulrich’s theory, a supportive environment needs to have three main characteristics in order to foster coping and promote wellness. It should (a) provide a sense of safety and control in relation to the surrounding physical and social environments, (b) provide opportunities to socialize, and (c) provide access to positive distraction in order to help users relieve stress and improve their wellbeing.

2.6.3. Affordances

Gibson (1976, 1979) developed the theory of affordances based on how human beings use information in their surroundings to determine the amiability of the local environment. He suggested that humans are constantly processing data from their surroundings and forming different conclusions or functional patterns for how they might interact with nearby objects based on features such as materials, texture, surfaces, and arrangements. The potential functionality of those objects are called their “affordances.” A healing environment, in this outlook, should be designed to offer the maximum possible affordances for human use. It should provide for users’ needs and

preferences while creating destinations to help them socialize, cope with stress, and find positive distraction.

2.6.4. Prospect and Refuge

Jay Appleton (1975) developed his theory of "prospect and refuge" based on aesthetic preferences and an interpretation of aboriginal survival instincts. Appleton proposed that humans prefer environments that enable them to observe everything around them clearly (prospect) from a safe position in which they themselves cannot be observed or exposed to potential danger (refuge).

2.6.5. Environmental Preferences

Stephen Kaplan and Rachel Kaplan (1982) also developed a theoretical framework for understanding human environmental preferences. In their outlook, the ideal environment should provide a balance of the familiar and the unknown, allowing users to both explore and to feel comfortable. In other words, the environment should both make sense and stimulate investigation. The four main characteristics of their environmental framework are coherence, legibility, complexity, and mystery. The best design for restorative environments in this theory is one that can combine these diverse elements. It should provide enough complex details and mystery to induce users' curiosity and their sense of exploration, while the same time being coherent and legible enough to ensure users' sense of safety and wellbeing.

2.6.6. Attention Restoration

The theory of attention restoration, also developed by Stephen Kaplan and Rachel Kaplan (Kaplan 1995; Kaplan & Kaplan, 1989), has important implications for designing healthcare work environments. It is vital that these environments promote nurses' capacity to provide consistent and directed attention to their patient-care tasks. Directed attention requires extensive mental effort to block distractions and focus on a particular, often tense and challenging, assignment. Kaplan and Kaplan argued that restorative environments can offer an opportunity to relax into indirect or involuntary attention, thereby restoring mental capacity and regenerating one's ability to focus after returning to work. In this theory, attention-restoration settings should have four main characteristics. They should (a) convey a sense of escape from the source of stress and fatigue, (b) present opportunities for physical or mental exploration, (c) facilitate fascination and wonder, and (d) be compatible with individual users' needs and preferences.

2.7. Design Interventions for Staff Break Areas

The current study is focused on a handful of basic design interventions to improve staff break areas, including access to nature, natural light, and fresh air. These design features were chosen due to their relative simplicity and because of the strong evidence that already exists regarding the effectiveness of these environmental features in other work settings (Aries, 2010; Kaplan, 1993; Lottrup, Stigsdotter, Meilby,

& Claudi, 2013; Lottrup, Stigsdotter, Meilby, & Corazon, 2012). This study also considers the relative effectiveness of full physical access to the outdoors vs. merely visual access through windows. Recent studies have compared the effectiveness of these different design features in other institutional settings (e.g., office workspaces) (Largo-Wight et al., 2011; Lottrup, Grahan, & Stiggsdotter, 2012), but these investigations have not yet been extended to the context of the healthcare industry. The therapeutic impacts of access to nature, natural light, and fresh air are discussed in more detail in the following sections.

2.7.1. Windowed vs. Windowless

Several previous studies have shown that workspaces without windows were associated with negative impacts on staff health and negative work-related attitudes. Researchers have found that employees in windowless offices were significantly less positive in regard to their job satisfaction, job perception, perceived quality of the physical working environment, and overall employment experience (Farley & Veitch, 2001; Finnegan & Solomon, 1981). Further exploring this phenomenon, Bringslimark and colleagues (2011) studied the ways in which employees attempted to adapt to windowless environments. These researchers found that in windowless spaces, employees brought plants into their work environment at five times the rate of employees in windowed work environments, suggesting they might have felt deprived

of nature-related stimuli. Additionally, the employees in windowless environments were three times more likely to bring pictures of nature into their workspaces.

2.7.2. Nature as a Positive Distraction

Multiple studies have shown that access to nature can provide for improved stress reduction and restoration, in comparison with purely man-made environments. Leather and colleagues (1998) found that windows open to natural elements such as trees and other vegetation reduced the negative impact of job stress. In a similar study Shin (2007) interviewed 931 office workers and found that, regardless of other factors, workplaces with forest views were found to be highly associated with reduced job stress and increased satisfaction. Dravigne and colleagues (2008) likewise found that staff who worked in offices with live plants and windows reported higher overall quality-of-life scores, and better feelings about their work, in comparison with staff who worked in offices without live plants and windows. Pati and colleagues (2008) conducted a study on windows in a healthcare setting, measuring the restorative effects of exterior views on nurses' stress levels and alertness. These researchers found that the amount of time the nurses spent looking out of the window had the greatest relevance to stress reduction, but also that the content of the view (nature vs. non-nature) mediated the extent of this stress-reduction effect.

In 2008, Kahn and colleagues conducted an intriguing study in which they compared the effects of an actual window (with a natural view), a plasma-screen displayed window (with a real-time view of nature), and a blank wall. To evaluate the effect of these different environments the researchers measured heart-rate recovery times following low-level work-related stressors. The researchers found that the plasma-screen image of a window was no more restorative than a blank wall, while the actual window had significant restorative benefits. From this evidence, it appears that the human brain is not readily "tricked" into believing that it is in contact with other living organisms.

2.7.3. Natural Light

A well-designed indoor/outdoor interface in staff break rooms can provide health-supporting benefits through exposure to ample amounts of natural light. Numerous studies have demonstrated the importance of sunlight exposure in enhancing physical and psychological wellbeing. Daylight absorption through the retina and skin helps to regulate the nervous/endocrine systems and maintain circadian rhythms (Ott, 1990; Wurtman, 1975; Boyce, Hunter, & Howlett, 2003; Samuels, 1990). Moreover, daylight entering the retina can influence the function of the pituitary gland, which controls hormonal secretions. Melatonin, naturally secreted when there is an absence of daylight, can result in drowsiness, low levels of consciousness, and feelings of depression (Hollwich & Dieckhues, 1980; Ott, 1997). Exposure to bright natural light, in

contrast, can be an effective treatment for depression by controlling the hormonal state and inducing serotonin secretion (Hollwich & Dieckhues, 1980; Golden et al., 2005).

2.7.4. Physical Access to the Outdoors and Fresh Air

The pheromones, oxygen levels, and negative ions found in fresh, natural air have been shown to enhance physical and psychological wellbeing. Tom and colleagues (1981) evaluated the effect of negative ions in the air on human performance and mood. These researchers found that study participants in environments with higher negative air ions reported significant higher energy levels and ease of concentration. Other studies have consistently shown improvements in health, work attitude, and satisfaction among employees who have regular access to outdoor environments, even when the physiological mechanisms of these improvements were not fully understood or carefully studied. For example, in a recent investigation Lottrup and colleagues (2012) found a significant relationship between physical access to workplace greenery and a positive workplace attitude. Study participants who had physical access to greenery had the most positive attitudes, followed by those participants who only had visual access to greenery, while those with no access to greenery at all exhibited the most negative attitudes.

A similar study was conducted in a healthcare setting by Faris, Stigsdotter, Lottrup, and Nilsson (2012). These researchers interviewed staff members who had access to an outdoor garden in their healthcare facility, and used it for short-duration breaks during their shifts. The researchers found that the garden provided significant stress-relieving effects by allowing the staff to step away from their regular working environment. In another qualitative study conducted in England, researchers collected anecdotal evidence of the restorative value of direct physical access to nature. One of the nurses who participated in the study noted, ‘‘It makes you happier to be working in a nice environment, pleasant view, sufficient daylight, and the possibility of opening a window for fresh air’’ (PricewaterhouseCoopers, 2004).

2.8. Summary

The existing literature related to the decline of the nursing profession in the U.S., the high levels of burnout and turnover that the industry is currently experiencing, and the negative consequence of fatigue for both nursing staff and patients, demonstrates the pressing need for interventions to improve the working conditions of nurses. Additional literature on the restorative effects of breaks, and the value of well-designed break areas, indicates that efforts to improve break-room design can play an important role in improving nurses’ job satisfaction and performance. Access to nature, natural light, and fresh air have been shown to be effective and straightforward design interventions across a wide variety of working environments. The current research project was

designed to investigate how these environmental improvements can best be implemented in healthcare break-room settings, in order to foster nurses' health and wellbeing and thereby allow them to provide the best possible care for their patients.

CHAPTER III

RESEARCH DESIGN AND METHODOLOGY

3.1. Research Questions

The central question motivating this study was: *Will higher levels of access to nature, natural light, and fresh air in the staff break areas of healthcare facilities have a positive impact on nurses' alertness, job performance, and satisfaction with their work environment?* Specific research questions that were addressed in the data-collection portion of this investigation were broken down as follows:

1. How much stress do nurses perceive in their work environments?
2. What policy-related challenges do nurses face in regard to taking restorative breaks?
3. What do nurses' break patterns look like? Aside from a primary meal break, do they take opportunities for short, non-meal breaks during their working shifts?
4. How can healthcare facilities better educate staff about the importance of restorative breaks, and what are the most important break-related policies to implement in order to reduce nurses' fatigue?
5. Does nurses' satisfaction with the environmental qualities of their break areas have a positive association with their break patterns and usage of those areas?

6. Do nurses perceive well-designed staff break areas as playing an important beneficial role in relation to overall job satisfaction, staff retention, job performance, quality of patient care, and job-related health concerns? If yes, then what are the main environmental predictors of positive perceptions?
7. Do break areas that are located closer to nurses' workstations have higher usage and preference rates, and greater perceived restorative qualities, as compared to those that are further away?
8. Do break areas with higher levels of privacy and tranquility have higher usage and preference rates, and greater perceived restorative qualities, as compared to those that are public and shared with patients and families?
9. Do break areas with direct physical access to the outdoors have higher usage and preference rates, and greater perceived restorative qualities, as compared to those that have only widow views?
10. Do break areas that incorporate elements of nature and natural light have higher usage and preference rates, and greater perceived restorative qualities, as compared to those that lack these elements?
11. What are the most important amenities/appliances for improving nurses' satisfaction with indoor and outdoor break areas?

3.2. Research Methods

3.2.1. Multi-Method Approach

A multi-method approach was used to answer the study's research questions, including both qualitative and quantitative methods. Qualitative methods were used during the early phases of the study, in order to provide insight and bring a sense of order to the complexities of the research topic. Quantitative methods were then used to investigate more specific hypotheses among a larger population sample and with greater objectivity. This multi-method approach has been described as one of the best ways to reach conclusions about complicated research questions, as it allows the different methods to complement each other and makes use of their differing strengths. Using multiple research methods also allows for the triangulation of findings and comparisons between different aspects of the study in order to confirm the accuracy of results (Leedy, 1993; McNeill & Chapman, 2005). It can also help to increase the validity and reliability of the study by improving the likelihood of identifying and eliminating confounding variables (Campbell & Fiske 1959; Zeisel, 2006).

Three different research methods were used in the study: (a) focused interviews, (b) an online written survey, and (c) an online visual assessment of differing break-room spaces. The information collected during the initial interviews was used to create a stronger research design for the following two quantitative stages—the development

of written and visual surveys to assess nurses' usage, preferences, and perceptions of different types of nature access and natural light in staff break areas.

3.2.2. Focused Interviews

Interviews are typically analyzed in a qualitative fashion. This form of research is one of the most powerful methods available for achieving comprehensive, in-depth insight into complex human behaviors. In focused interviews, the researcher systematically poses a series of questions to explore how people feel, perceive, and act in a particular environment, and to develop working hypotheses about this behavior (Zeisel, 2006). In the current research project, focused interviews were conducted to develop an initial understanding of how nursing staff felt about their break areas, how they defined their environmental needs and preferences, and what they considered important about taking rest breaks and having high-quality break spaces. The following list indicates the main topics that were discussed with nurses during the focused interviews (the full interview guide is provided in Appendix G):

- Challenges that prevent nurses from taking restorative breaks
- Main places to take breaks, including indoor and outdoor areas
- Main activities during break time
- The quality of existing break rooms/areas
- How much value is placed on access to the outdoors from break areas
- Needs and preferences for amenities in outdoor areas

- Perceived importance of high-quality break areas, in terms of their influence on job satisfaction, productivity, quality of patient care, and staff retention

Zeisel (2006) provided a protocol for successful focused interviews, which was followed during this study. To obtain high-quality interview data, all the interviewees need to have experience with a common environmental situation (in this case, the experience of working as a nurse in a large healthcare facility). The researcher develops topics for discussion, focusing on the main features, configurations, and relationships that are of interest in the shared situation. An interview guide is created to help the researcher keep the discussion focused on these relevant topics. The researcher also uses the technique of "probing" to encourage interviewees to keep talking, discuss more details, or specify certain aspects of a situation, thereby enhancing the quality of the data. When properly conducted, focused interviews are considered to be one of the most credible methods for collecting qualitative research data (Lincoln & Guba, 1985).

Strengths of the focused interview method include:

- The ability to explore a phenomenon in great detail, to investigate both verbal and non-verbal behavior, and to account for the complex, multi-dimensional nature of human behavior.

- The ability to carry out the research in a natural setting rather than in a controlled environment. Pursuing research in natural settings can lead to more accurate assessments of “real-life” behavior.
- Validity enhancements (in comparison to surveys) based on the ability of the human interviewer to be responsive and adaptable, to comprehend holistically, to grasp and process data as soon as it becomes available, to investigate and clarify new hypotheses as they emerge, and to explore unusual responses in more detail.
- The ability to develop new theories and hypotheses that are fully “grounded” in rich qualitative data. Using inductive analysis, researchers can recursively expand their working outlooks and refine their theories in collaboration with other inquirers.

Weaknesses of the focused interview method include:

- The limited ability to generalize interview findings to a larger population, due to the uniqueness of individuals and specific research contexts. Further work must always be done to test the broader applicability of qualitative results.
- The risk of researcher subjectivity, bias, reactivity, and inaccuracy. To minimize these pitfalls, researchers must have the skills, experience, and maturity to conduct qualitative research as objectively as possible.

- The need for sufficient time and funding to discover appropriate natural contexts for qualitative research, select an interview sample, develop trust with these interlocutors, and then gather and analyze the qualitative data.

The difficulty of replicating qualitative studies and reproducing their results. Multi-method approaches are needed to increase the credibility of the hypotheses generated from qualitative interviews, and to facilitate statistical analysis.

3.2.2.1 Sampling Strategy for Focused Interviews

Interviews were conducted with 10 nurses who worked as consultants in the healthcare design and construction industry. The main advantage of this participant selection was that the complex topic of taking breaks could be examined from the perspective of individuals who had both the experience of working as nurses in a hospital setting and a familiarity with the process of healthcare facility design in architectural firms. Familiarity with design and construction complemented the interviewees' on-the-job experience, allowing them to offer thoughtful, grounded insights about the interaction between facility design and nurses' needs. These study participants exhibited extensive knowledge and thoughtfulness about the ways in which architectural design affects how nurses work, rest, and interact with others around them.

To locate these interview participants, the researcher initiated contact with all of the top-100 healthcare-sector architectural firms in the U.S. (Cassidy, 2013), in order to inquire if each firm had a nurse on staff serving as a healthcare consultant (the letter of recruitment is provided in Appendix B). I received 10 responses from nurses who agreed to serve as interviewees. One in-person and nine phone interviews were conducted and audio-recorded with the participants' permission. Each interview lasted between 20 and 30 minutes, and the researcher sent a formal thank-you letter following the interview sessions. After the recorded interviews were transcribed, content analysis was used to code and organize the data into mutually exclusive and exhaustive categories (Huberman & Miles, 1994; Rubin & Rubin, 1995). The findings from these interviews were later triangulated with written surveys and visual assessments in order to reduce potential bias effects and thereby increase the objectivity and validity of the study (Lincoln & Guba, 1985).

3.2.3. Written Survey

Surveys are one of the most powerful and reliable research methods used in the social sciences. They provide a quick, effective, and inexpensive means of gathering large amounts of data, both qualitative and quantitative. Validated and standardized questionnaires can be used in multiple studies, allowing researchers to reproduce results and compare answers from different populations at different times and locations. Surveys are most commonly used to collect large amounts of quantitative

data—however, they can also incorporate open-ended questions in order to improve researchers' qualitative insight, help catch errors, and increase research validity (Zeisel, 2006). In the current study, established protocols were followed in order to develop a valid and reliable survey instrument (Fowler Jr, 2008; Passmore, Dobbie, Parchman, & Tysinger, 2002). After identifying research questions based on informal discussion, visits to local healthcare facilities, and a literature review, the researcher drafted a survey instrument that would test and triangulate developing hypotheses. While drafting the questionnaire, the researcher consulted valid survey instruments that were previously used in related studies (Sorra & Nieva, 2004; Lottrup, 2012). Background and demographic questions were also cued to the member profile registry of the Academy of Medical-Surgical Nurses (AMSN), an organization that accepted the researchers' request to distribute the survey to its extensive membership base. This correspondence was useful in confirming the representativeness of the respondent sample, by comparing it against the organization's overall membership data. It will also allow for better comparison of the study results against any future surveys conducted through the same organization.

The survey instrument included a total of 50 questions, divided into seven major sections:

- Demographic Information
- Work Environment and Experience

- Rest Break Patterns
- Quality of Staff Break Areas
- Future Staff Break Areas
- Dedicated Space for Quick Restorative Naps
- Additional Feedback

Background questions included items such as age, gender, race, ethnicity, and level of education. Questions related to work experience included a broad range of information about professional status, employment history, primary positions, and specialties. In regard to the current work environment, the survey questions were focused on perceived levels of stress, break patterns, break-space usage, and main activities during break times. The participants were then asked to provide detailed information about their break spaces and adjacent outdoor areas, if applicable. They were asked about their satisfaction with the features of these existing break areas, and the degree of importance that they attributed to these feelings. Towards the end of the survey, participants are asked about their recommendations for the environmental features of future break areas, their opinion on dedicated spaces for quick restorative naps, and any additional feedback that they might wish to share (the full survey questionnaire can be seen in Appendix H).

3.2.3.1. Pre-testing

After drafting the questionnaire and formatting it using the Qualtrics Online Survey software package, the survey was pre-tested with the same 10 nurses who participated in the study interviews. A few days before the interview sessions, these individuals were asked to review and complete the survey while taking notes on any problems, ambiguity, or incompleteness that they encountered. At the end of each interview session, these participants were asked to share their insights about the survey and to suggest improvements. Based on these responses and the overall data collected during the interviews, the survey questions were then revisited, a few of them were removed, and several new questions were added to the survey. For example, the entire section on "Dedicated Space for Quick Restorative Naps" was added after one of the interviewees pointed out the extent of sleep deprivation issues for healthcare facilities and the ongoing debate over the value of "strategic napping" (Howard & Schuldheis, 2008).

3.2.3.2. Survey Distribution and Sampling Strategy

The survey instrument (and this study in general) was primarily focused on the experiences of nurses who work in inpatient settings. Stress, fatigue, and burnout are more significant in these environments (in comparison with outpatient settings), as are higher levels of acuity, extended working hours, and patterns of insufficient sleep (Rogers & Hughes, 2008). Inpatient nurses are faced with more substantial challenges

in their attempts to take rest breaks and get away from their hectic working conditions. Since the creation of restful break areas is more critical in inpatient settings, the survey distribution was oriented toward this demographic.

Major nursing organizations such as the American Nurses Association (ANA), the Academy of Medical-Surgical Nurses (AMSN), and the Association of periOperative Registered Nurses (AORN) were contacted to assist in this study by sending the anonymous survey link to their members. After a full board review of the project objectives and research design, the AMSN offered their dedicated support. This organization included the survey link in their website and electronic newsletter, disseminating information about the online survey to their entire membership of more than 10,000 nurses. This organization also allowed the researcher to access statistical information about their overall membership base. According to this data, 99% of AMSN members are registered nurses, 90% work in inpatient settings, and 84% work as either staff nurses or unit managers (see Figures 3.1 and 3.2).

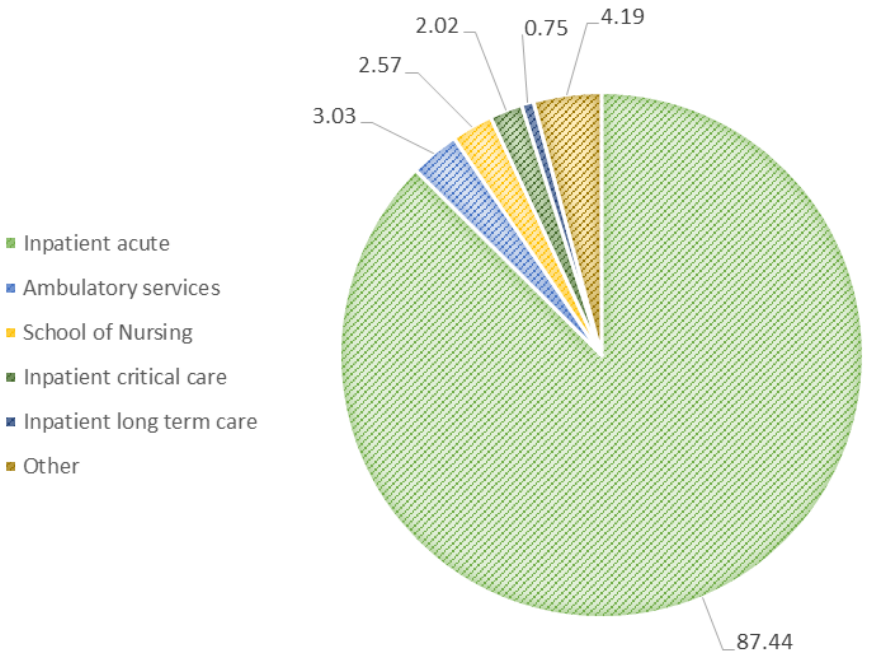


Figure 3.1. AMSN Members' Primary Practice Area

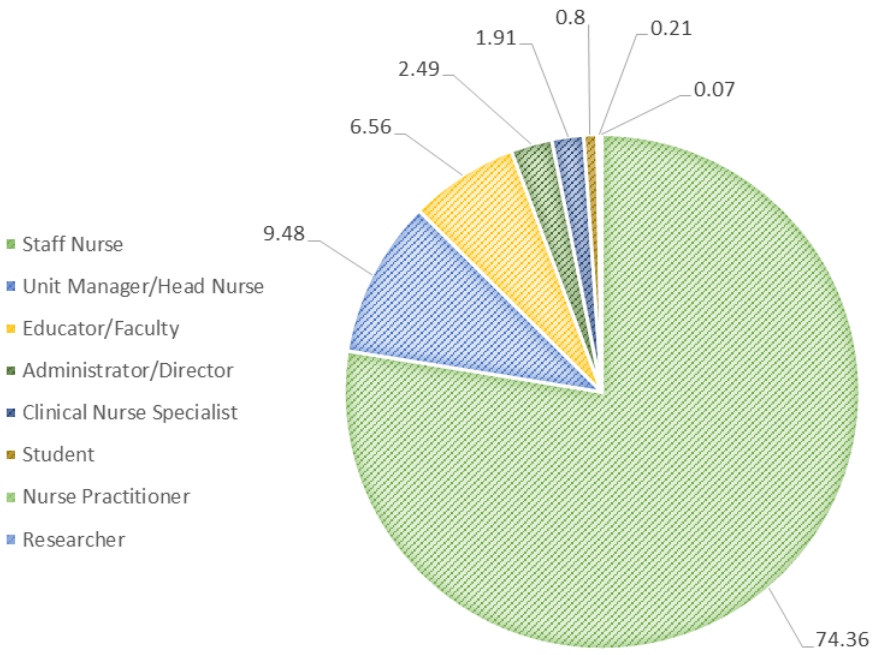


Figure 3.2. AMSN Members' Job Title

3.2.4. Visual Assessment

Human beings interact with their surrounding environments using multisensory information, but the predominant source of perception in most situations is the sense of sight. Therefore, visual assessment is a central means of non-verbal environmental evaluation (Shuttleworth, 1980; Smardon, Palmer, & Felleman, 1986). In order to enhance the study data and further triangulate the verbal/linguistic preferences expressed in interviews and surveys, the study design made use of a visual simulation of break-room spaces. Respondents were asked to indicate their responses to these images in terms of the relative feelings of restfulness and refreshment that they engendered.

To create valid visual comparisons, the images used need to be straightforward, precise, credible, unbiased, and representative of real-world contexts (Sheppard, 1989; Rodiek, 2004). Furthermore, confounding variables should be controlled as much as possible by using images that are very similar with the exception of a single relevant feature (Rodiek & Fried, 2005). In the current study, a photo bank was created using pictures of actual staff break rooms/areas drawn from a convenience sample of healthcare facilities in Texas. Two representative photos were selected from this set based on (a) how typical they were of staff break rooms in healthcare facilities, (b) how clearly they depicted the environmental features to be tested, (c) how free they were

from distracting elements such as intense color schemes or patterns, and (d) how easy it was to modify them in order to add or remove components.

The selected photos were then modified using Photoshop CS6 editing software. Five versions of each picture were made, which were exactly the same except for the digital addition or removal of specific environmental features (see Figures 3.3 and 3.4). This method allowed for the isolation of specific design features, while eliminating the potential confounding variables that can be a significant problem when entirely different images are used for environmental comparisons (Karjalainen & Tyrvainen, 2002). The modifications that were made to the images followed the visual assessment methods established by Rodiek (2004), who argued that design interventions need to be *specific* (e.g., a plant, a piece of artwork, or a window), to show a clear *contrast* (noticeable changes), to be *realistic* (e.g., images of real plants or an existing window view), and to show *main examples* (not an excessive number of differing variations). In the current study, images of staff break rooms were modified to add or remove indoor plants, artwork depicting nature, a window with a view, and a balcony with physical access to the outdoors.

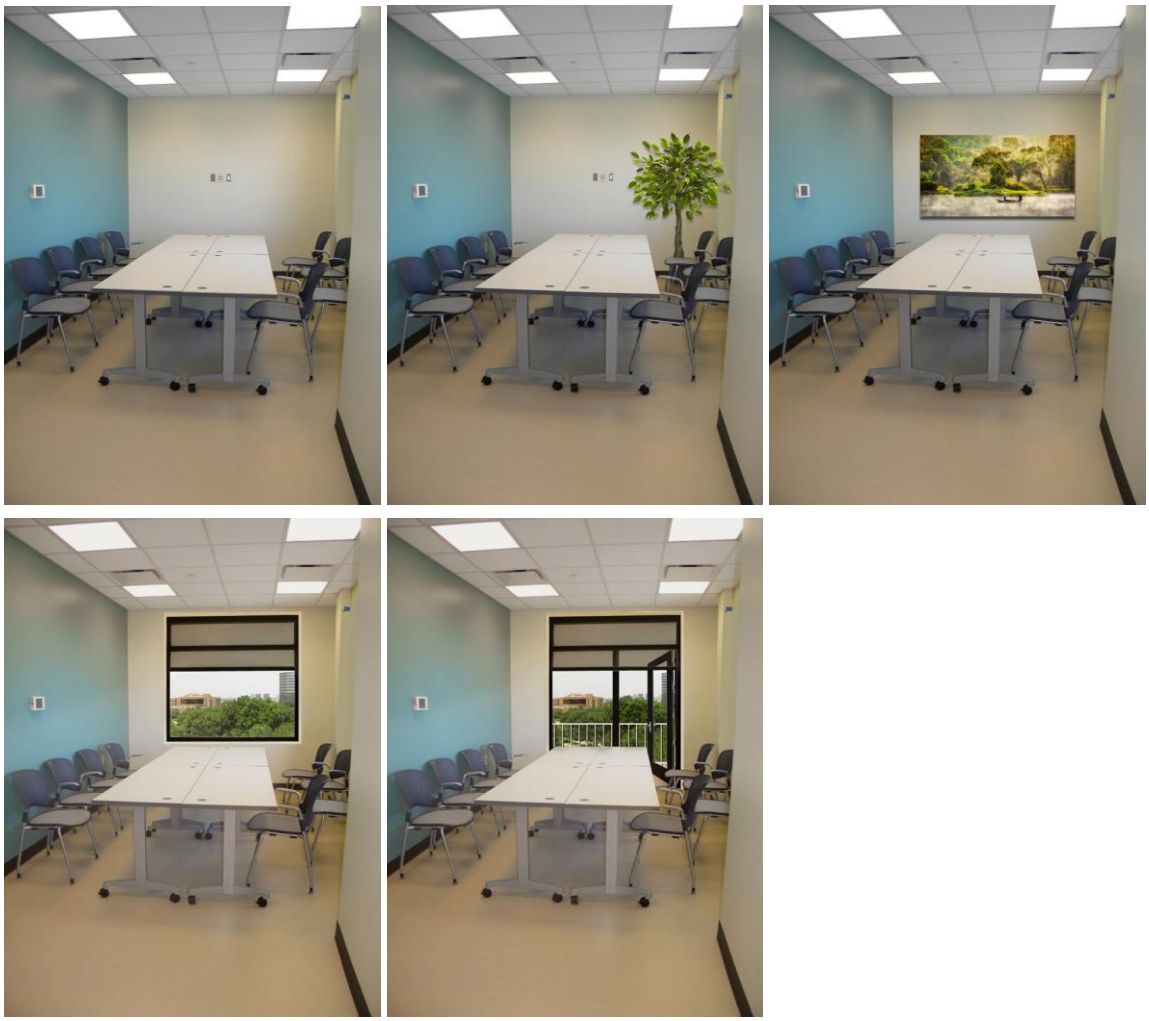


Figure 3.3. First Set of Visual Assessments: Original Image, Followed by Variations with Indoor Plant, Nature Art, Window, and Balcony

To create more realistic images, all the added elements were taken from real photographs rather than being digitally generated. The view from the added windows and balconies were actual exterior views from the same buildings in which the break-room photographs were taken (oriented so that each case presented a similar percentage of artificial structures, greenery, and sky). The added nature artworks were

selected to be approximately the same size as the window views, and were intended to be slightly more aesthetically attractive than the window views (this was in order to counter unconscious aesthetic bias against hypothesized artwork) (Rodiek & Fried, 2005). All of the images underwent several rounds of alteration using the editing software to touch up shadows, reflections, and other potentially distracting digital artifacts. The modified images were reviewed by Dr. Susan Rodiek—an authority on visual assessment studies—in order to confirm that they exemplified the main protocols of visual assessment laid out in her methodological work. In addition, these images were pre-tested with the same 10 nurses who participated in the study interviews, in order to solicit feedback on their appropriateness and realism.

The final image sets were included as two questions in the "Recommendations for Future Staff Break Areas" section of the online survey. Participants were asked to evaluate each image on a scale of 0 (low-quality) to 10 (high-quality), stating how effective they thought the portrayed environment would be in relieving stress and helping them to feel more refreshed. The respondents were able to view each set of images simultaneously, and could select their ratings from a dropdown list at the bottom of each image. It was also possible to enlarge each image by clicking on it to see more detail. Using the features of the Qualtrics Online Survey software, the images were presented in a randomized order for each participant who took the survey.

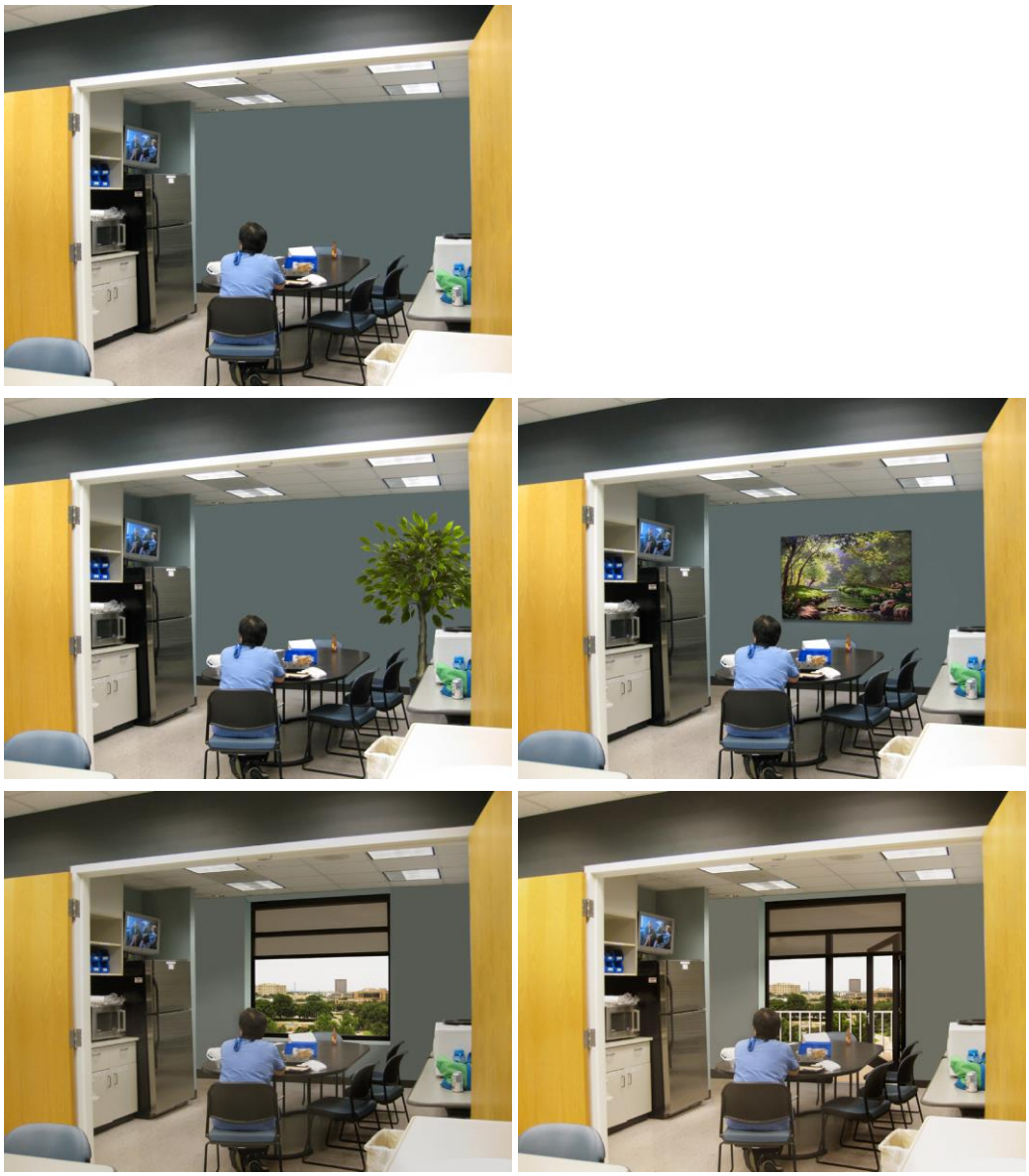


Figure 3.4. Second Set of Visual Assessments: Original Image, Followed by Variations with Indoor Plant, Nature Art, Window, and Balcony

The data from the written survey and visual assessment were analyzed using descriptive statistics as well as correlation and analysis of variance (ANOVA), in order to quantify the respondents' preferences for each particular environmental feature.

Hierarchical multiple regression analyses were also implemented to develop appropriate statistical models for dependent variables (such as perceived stress, rest-break duration, and satisfaction with break rooms/areas), based on independent variables (such as demographics, work conditions, and environmental qualities of break rooms/areas).

3.3. Research Validity

To help ensure the statistical validity of the study results, the written survey and visual assessment were sent to a large number of potential respondents, consisting of more than 10,000 members of the Academy of Medical-Surgical Nurses. This made it possible to achieve a large variability in terms of independent variables, while minimizing the effect of covariates by setting up a series of control factors in the statistical models. The survey instrument made it possible to control for facility rest break policies, geographical conditions, and the variability of break rooms/areas, in addition to various demographic features of the participants and their work settings. The ability to control for confounding variables in the presentation of visual images, using modified variations of the same photograph, also helped to triangulate and confirm the validity of reported preferences in the written survey.

External validity refers to the extent that the study findings can be generalized to a larger population beyond the study sample (Shadish et al., 2002; Vogt & Johnson,

2011). In the current study, the population selection strategy was focused on medical-surgical nurses, a core field that is one of the most demanding specialties in healthcare settings. The study took place entirely within the United States, but was not additionally limited to specific facilities or climate regions (a factor that can be very important when examining access to nature). The survey respondents were located in many different regions across the U.S., and had varied work environments, cultural backgrounds, personal histories, and local (state) healthcare systems. This broad sampling strategy helped to ensure a relatively higher level of generalizability of the study findings to the entire inpatient nursing field within the U.S. healthcare industry.

3.4. Research with Human Subjects

Based on the U.S. Code of Federal Regulations Title 45 (2011), this study required Institutional Review Board (IRB) approval for research on human subjects through interviews, written surveys, and visual assessments. The initial IRB application for the study was accepted for an expedited review and approved by the Texas A&M University Office of Research Compliance (IRB protocol number: IRB2013-0692). After the interviews were conducted, additional refinements to the survey instrument and images were also submitted and approved as an amendment (the IRB approval forms are provided in Appendix A). Personally identifiable information such as names, emails, or IP addresses was not collected from the survey and visual assessment respondents.

3.5. Summary

This study was designed to address a number of insufficiently researched issues in the U.S. healthcare industry, including the challenges that nurses face in taking restorative breaks and the impact of specific break-room design features. Focused interviews were conducted with 10 nurses who were involved as consultants in the healthcare design industry. The qualitative data from these interviews, along with a literature review and on-site observations of local healthcare facilities, was used to develop, revise, and refine a written survey and a visual assessment in order to test specific hypotheses about the impact of break-room design features. The survey and visual assessment instruments were distributed to the members of the Academy of Medical-Surgical Nurses. In the following chapter, a detailed data analysis is provided for the results of the interviews. In chapter 5, the results of the written survey and visual assessment are reported and analyzed through tables, graphs, figures, diagrams, and photographs.

CHAPTER IV

INTERVIEW RESULTS AND ANALYSIS

4.1. Introduction

The qualitative information collected from interviews was examined using content analysis (Krippendorff, 2012; Huberman & Miles, 1994; Rubin & Rubin, 1995). After completing a verbatim transcription of the interview recordings, the text was coded and organized into mutually exclusive and exhaustive categories. This helped the researcher to discover overarching themes that emerged organically from the linguistic content of the interviews. The constant comparative method (Glaser & Strauss, 1967) was used to develop grounded theories and hypotheses based on the interview content. Rather than starting from predefined hypotheses, the main intention during this portion of the research was to seek out new ideas and themes by exploring the research questions with the study participants.

4.2. Data Analysis Procedure

The data analysis began with multiple reviews of the interview recordings and transcriptions. Looking over the interview material multiple times helped the researcher to ensure the veracity of the transcriptions and to gain an initial impression of the central themes that emerged during the course of the interviews. Next, in order

to develop a more systematic and rigorous analysis, ideas that emerged during the interviews were carefully parsed into specific categories. The nurses' responses to each interview topic were coded by examining specific words and phrases that appeared throughout the interviews (see Figure 4.1). This allowed the researcher to calculate the frequency of responses for each conceptual category.

Topic 1a. What challenges are nursing staff facing for taking breaks?													
	Responses	**Categories**											
		More than one challenge	Workload	Coverage/teamwork/staff shortage	Time Spent on briefing and debriefing	Proximity of break room/area	Breaks are short	Level of acuity	Size of the Unit doesn't support coverage	Assignment doesn't support coverage	Lack of technology	Uncertainty of schedules	Nurses cheat themselves on breaks
Nurse 1	I think the biggest challenge is just the demand of patient care — patient loads, the acuity of patients, and the amount of care that they require, that coupled with some of the uncertainty of time. You're not sure exactly when someone is going to show up to transport a patient to x-ray or when a particular department is going to be ready for them or need something. So it makes it a little challenging; not only are you juggling a lot of things but you're also meeting the demands of so many other times and needs.		1					1				1	
Nurse 3	I think from my perspective, right now as I'm thinking about it, it's two fold. One is coverage. For me to take a break, there has to be a floating nurse that will cover me. And that means that nurse has to come find me for my break, and then I have to report to him or her what's happening with my patient load. So by the time I get to take a break, you are looking at basically about half an hour of time to get to take a break and sometimes that's not even worth it. So I've reported off to that nurse, you know, what's going on with my patients, I get to go take a break, and then I come back and she has got to report off to me what happened, et cetera. So if I leave the unit to go to some outdoor space and it takes me 10 minutes to get there and I get a 15-minute break, well, I can't even do it.	1		1	1	1	1						
Nurse 4	The issues that nurses face in taking breaks are; number one, the activities that they do are situational, so with situation based tasks, you can't – they're not planned. So events occur and does not allow them to have a schedule that plans for breaks accordingly, for the most part. So that's the first thing, it's their type of activities. The second thing is often times they don't like to leave their patients. Even if they have someone to cover them, they still feel compelled at times to stay with the families and the patients depending on how ill the patient is. And then thirdly, the third thing is where the break area is located, if they're not able to have immediate access back to the unit like if the break room is not on the unit, often times they won't take the breaks. So those are my experiences with the three reasons.					1		1				1	

Figure 4.1. An Example of Coding and Categorizing Interview Responses

Based on a framework developed by Holsti (1969) and Jones (1985, p. 125), the categories of ideas that emerged from the interviews were demarcated with the following principles in mind: (a) to reflect the purpose of the research, (b) to be exhaustive in not leaving out any important concepts from the interviews, (c) to be mutually exclusive so as to prevent overlap, (d) to allow particular phrases and words to be assigned independently, and (e) to be derived from a single classification principle. After the interview material was divided up into multiple emergent categories, the names given to these categories were printed on colored index cards (with a different color assigned to each interview topic/question). Finally, these categories of ideas were sorted into broad, overarching themes (see Figure 4.2). In the later sections of this chapter, each of the primary emergent themes will be discussed in detail.

Figure 4.2. Developing Overarching Themes from Categories

4.3. Participant Information

Ten nurses who worked as consultants in the healthcare design and construction industry agreed to be interviewed for this study. One in-person and nine phone interviews were conducted and audio-recorded with the permission of the participants; each lasted between 20 and 30 minutes. The respondents were given identifying tags as “Nurse 1,” “Nurse 2,” and so forth (or for short, N1, N2, etc.). All the nurses were female and between the ages of 50 and 65. Geographically, they represented nine

different states in the U.S., distributed throughout the country. All of the participants had considerable experience in healthcare design, nursing, and inpatient care settings (see Table 4.1).

Table 4.1. Years of Work Experiences in Different Fields

	1–5 yrs.	**6–10 yrs.**	**11–15 yrs.**	**16–20 yrs.**	**21+ yrs.**
Healthcare design		N5 N9 N10	N1 N2 N6 N7	N4	N3 N8
Nursing		N3 N4	N2 N8		N1 N5 N6 N9 N10
Inpatient care	N3 N5 N6 N9	N4 N8	N1 N2	N10	N7

4.4. Interview Theme I: The Unique Context/Nature of Nursing Practice

The interviewees repeatedly pointed out that the nature of nursing work sets it apart from other professions, creating unique employment situations and needs within the industry. Healthcare environments are extremely stressful work settings and require distinctive strategies to ensure nurses' health, productivity, and satisfaction (which can in turn lead to better patient outcomes). When the interviewees were asked about

barriers that prevented nurses from taking restorative breaks, the main categories of ideas that emerged on this topic were related to the unique context of nursing practice and the challenges that it presented. The interviewees also pointed out that there are many different sub-environments within the healthcare industry (e.g., inpatient vs. outpatient), and that each of these settings requires different approaches to enhance staff satisfaction and patient outcomes. One of the most experienced nurses in the interview sample elaborated on this issue in detail:

> *The rhythm of work along the continuum of healthcare is very different from location to location. Inpatient is not at all like ambulatory care. Ambulatory care is not like the emergency department in any way, shape, or form. And because of that it drives, I think, a different understanding about what types of breaks individuals actually take, and then as a result of the type of work they're doing, what kind of support they need. The nature of the work for each of those categories is so fundamentally different, and honestly I don't think that there are things that apply across them.* (Nurse 5)

4.4.1. Inpatient Care Settings

The interviewees indicated that nursing practice in inpatient settings is particularly intense, requiring the full focus of nursing staff and constant, direct attention to patients. Nurses described this environment as working “in a bubble” (Nurse 3) without

any engagement with the outside world. The ordinary course of nursing activities in inpatient settings allows almost no personal time or opportunities to think about life beyond the workplace. In addition, inpatient nurses are frequently involved with patients in a very immediate fashion. In some cases "they get extremely traumatized when people they are caring for are dying or have horrible stories" (Nurse 4). The intensity of this work creates a greater need for restorative breaks:

> *On the inpatient unit if I am working a 12-hour shift, not only do I have to eat at some point during that shift, maybe even twice, but I probably need a break in there too, just to get off of the unit to catch my breath sort of thing. That is not the experience in ambulatory care at all*. (Nurse 5)

Because of the intense nature of nursing in inpatient care units, the researcher elected to orient the study toward the critical issue of improving restorative break spaces in these particular environments.

4.4.2. Acuity Level and Uncertainty of Schedules

The interviewees also pointed out that differing acuity levels among patients contributes to the difficulty that nurses have in taking regular restorative breaks. Because of their conditional needs and demands, patients with differing acuity levels often require different amounts of care. Thus, even when healthcare facilities attempt

to provide nurses with reasonable schedules and opportunities to take regular breaks, it is often the case that nurses will skip or reduce those breaks out of concern for particularly problematic patients. The frequency and duration of nurses' breaks, as well as the respite rooms/areas that they go to for taking breaks, directly depends on what their patients are going through at any particular time:

> *The issues that nurses face in taking breaks are, first, their activities are situational . . . they're not always planned. So events occur and it does not allow them to have a schedule to plan for breaks accordingly for the most part. The second thing is, often times they don't like to leave their patients even if they have someone to cover them. They still feel compelled at times to stay with the families and the patients depending on how ill the patient is.* (Nurse 4)

4.4.3. Respecting Individual Needs and Preferences

The interviewees suggested that greater flexibility to account for nurses' needs is one of the principal solutions to the challenges of healthcare environments. The discussions indicated that nurses often have to be explicitly encouraged to prioritize their own wellbeing—as one respondent explained, "nurses cheat themselves on breaks all the time" (Nurse 5). Providing greater flexibility can help to reduce this phenomenon. When they do take time for breaks, nurses need the opportunity to engage in a variety of activities, depending on their individual personalities and the needs of the moment.

The interviewees indicated that, most importantly, nurses prefer to have a choice about whether to spend their break time alone or with a group of other nurses. Sometimes, they just want to get away from their duties and spend time in a private place to relax, refresh, and restore themselves. At other times, nurses would prefer to socialize with fellow staff members and talk about their personal lives, work-related problems, or more neutral topics.

One of the nurses noted that "sometimes people just need to get away from everybody and just kind of decompress and chill and take a deep breath" (Nurse 8). Another comment similarly indicated that sometimes nurses "just want to eat and talk about, hey what did you do last night? . . . [but] sometimes if you have had really a bad day we don't want to talk to anybody. We just want some silence" (Nurse 6). Other break activities mentioned by the interviewees included checking e-mail, making phone calls to friends and family, taking short outdoor walks, sitting down and resting, or lying down to read. Although napping was not frequently mentioned as a normal break activity, a couple of the interviewees indicated that they would appreciate the option of combining a few of their break times into a short nap period, particularly if they are working night shifts or extended schedules.

4.5. Interview Theme II: Facility Policies and Their Implementation

The interviewees frequently brought up issues related to healthcare facility policies and regulations. These ideas most commonly emerged when interviewees were asked about barriers that prevented nurses from taking restorative breaks, the value of restorative napping programs, and the degree of importance that they attributed to high-quality staff break areas.

4.5.1. Staffing

Eight of the ten interview participants mentioned that inadequate staffing in healthcare facilities was a factor in preventing nurses from taking regular restorative breaks. This was one of the most frequently highlighted issues that arose in the interviews, as the nurses indicated that staffing shortages can lead to massive workloads and ineffective teamwork or coverage. For example, when asked about the reason why many nurses do not take adequate breaks, one of the interviewees hesitantly but recurrently came back to the issue of workloads caused by inadequate staffing:

> *Well, it's probably multifaceted. One [issue] is the workload for the nurse. Two is how is the unit set up in terms of teamwork. So, does the unit have a buddy system so that the nurse has coverage while she goes to have a break? And part of the perception is that—well, there are two perceptions. One perception is that the workload is too heavy and the buddy can't cover for them*. (Nurse 2)

4.5.2. Break Regulations

The interviewees indicated that a lack of regulations mandating breaks also contributed to nurses' not getting enough rest. Several nurses brought up the fact that due to a lack of unions in the U.S. healthcare environment, breaks remain an optional feature of healthcare facilities' employment practices. In contrast, other countries that have unionized healthcare workers have achieved mandatory break periods (most often designated as 15 minutes of break time for every two hours of work). In the absence of such formal stipulations, healthcare facilities often fail to ensure that staff are getting adequate rest. Facilities often suggest that staff should take breaks, but fail to implement organizational policies to ensure that such breaks become a reality. As one of the interviewees explained, the organizational procedures surrounding breaks in a non-regulated environment can reduce the opportunities that nurses have for rest to a minimum:

> *For me to take a break, there has to be a floating nurse that will cover me. And that nurse has to come find me for my break, and then I have to report to him or her what's happening with my patient load. So by the time I get to take a break, you are looking at basically about half an hour of time, and sometimes that's not even worth it. After I've reported off to that nurse [about] what's going on with my patients, I get to go to take a break, and then I come back and she has to report off to me what happened . . . . If I leave the unit to go to some outdoor*

space and it takes me ten minutes to get there . . . well, I can't even do it. (Nurse 3)

4.5.3. Restorative Napping Programs

When exploring the topic of restorative naps, the interviewees pointed out that employee breaks in U.S. healthcare facilities are generally too short to facilitate napping. Quick restorative naps were viewed as more typical of unionized work environments in other countries. The nurses noted, however, that issues of sleep deprivation and fatigue were a serious problem in the current U.S. healthcare industry, and that these issues have negative effects on patient outcomes and safety. One of the interviewees mentioned that the U.S. Veterans Health Administration has recently explored a "strategic napping" program for nursing staff, and is developing break spaces that can accommodate these types of activities (Howard & Schuldheis, 2008). The same nurse emphasized that napping is more critical for inpatient staff who work night shifts and extended hours: "it's exhausting working those night shifts . . . they'll often combine their break times together so instead of two 15-minute breaks, they'll take one 30-minute nap" (Nurse 4). In a similar fashion, another interviewee suggested that have spaces available for napping could benefit certain employees at certain times, even if they are not regularly used by all staff members:

A lot of staff will say it's not important to have a place to lay down or nap because the time period is too short, and there's a lot of controversy about that as you know . . . [but] I do worry about nightshift workers having a place just for that 20-minute power nap. I think having places like that available and convenient to the units is important. (Nurse 10)

4.5.4. Facility Outlooks on High-Quality Staff Break Areas

Towards the end of the interviews, the participants were asked how important they considered high-quality staff break areas to be for their overall job satisfaction, performance, and quality of patient care. Six out of the ten nurses mentioned that when facility managers provided high-quality staff break areas, it conveyed a sense of respect and appreciation for employees. They felt that the quality of break areas was a direct indication of the value that institutional leaders placed on staff, and that improvements in these spaces would lead nurses to become happier and more satisfied with their work. The interviewees also mentioned that well-designed and well-equipped break areas can serve as symbols of cultural change within healthcare facilities, encouraging nurses to approach their jobs differently and to take more restorative breaks. Overall, the presence of high-quality staff break areas was viewed as an important barometer of the facility's commitment to nurses' well-being:

> *By creating areas for a break room or a break room that has a lot of healing environmental amenities and positive distractions . . . staff will feel valued by the organizational leadership of that facility. And that alone—when staff feel appreciated and they feel they are being recognized—I know that increases their satisfaction with their job. So I believe in that strongly and I have seen that over and over again.* (Nurse 4)

4.5.5. Technology

The interviewees pointed out that healthcare institutions can improve their technological resources as a way of facilitating staff breaks. Communication and monitoring tools can allow nurses to set their minds at ease about stepping away from their patients in order to rest. Easier and faster means of accessing patient information not only allows nurses to improve their quality of care, but also helps to minimize the intensity of their jobs. This technology is particularly useful in allowing nurses to take solitary and outdoor breaks, without feeling entirely disconnected from their patients:

> *We need to start leveraging technology and to have people trust technology, that the technology will give them the information they need, because typically nurses are very kinesthetic as well as visual. . . . Technology doesn't always give you that immediate visual management. So, if you say well you have Vocera*

[voice messaging software], but with Vocera, you still don't know who you're talking to. FaceTime [video software] is always better than texting. (Nurse 2)

In addition, the interview participants expressed a desire for a higher level of technological amenities in staff break areas, such as computers and Internet access, in order to check their e-mail, to search and read about different topics, and to complete continuing-education training during their break times.

4.5.6. Smoking

Smoking was described by the interviewees as a distinguishing feature between nurses who take regular short breaks and those who do not. Several of the participants commented on this, for example noting that "nurses who smoke will always take their breaks" (Nurse 10). These participants also expressed a concern that outdoor break areas were commonly frequented by smokers, greatly reducing their appeal to non-smoking staff members. The interviewees reported that rigorous non-smoking policies have helped to reduce these issues in some locations, but that more needs to be done to ensure that outside break areas remain pleasant and inviting spaces for all nurses.

4.6. Interview Theme III: Physical Environments

Ideas about the role of physical environments in facilitating restorative breaks were common in the interviews. These issues emerged when interviewees were asked about

the places they most liked to take their breaks, the environmental amenities they would like to have in indoor and outdoor break areas, the value that they placed on outdoor greenery and direct outdoor access for stress relief, and the overall degree of importance that they attributed to high-quality staff break areas.

4.6.1. The Priority of Break Areas in Space-Allocation and Design

The study participants endorsed the value of environmental design in shaping human experience and ultimately supporting a healthier way of living. Discussing the issue of fatigue and burnout, one of the nurses noted, “I don’t think we're going to solve a lot of these pernicious problems until we more fully understand the built environment, because literally the built environment shapes every single healthcare experience and the team who's caring for those patients” (Nurse 5). The interviewees also indicated that facility managers tend to place a much greater emphasis on the environmental design of patient and family spaces than they do on staff areas, even though the managers are aware that better design can reduce staff stress and enhance wellbeing. As one of the nurses stated, “one of the issues that I find, [is that] we’ve created these great spaces for patients and families and sometimes it is to the detriment of the spaces that we give staff” (Nurse 3). Other participants likewise indicated that break rooms/areas in healthcare facilities are typically minimal spaces with minimal amenities and no outdoor access—“small little cramped rooms, converted patient rooms, and converted offices” (Nurse 2). However, some interviewees expressed optimism that

these conditions were beginning to change, as newer facilities tended to have better-designed break areas that were larger, incorporated more outdoor views and daylight, and were equipped with amenities such as computers and modern appliances.

Several of the interviewees addressed the question of the relative importance given to staff break areas vs. patient-care areas in healthcare facility design. Although they believed staff break areas to be important, the participants expressed a bit of ambivalence on this topic and indicated that more evidence was needed to demonstrate the advantages of high-quality break rooms:

> *If we put it on a scale of 1 to 10 in terms of what's the most important: the work space around the patient, the work space at the workstation, the work space in the med room—or the break-room space. Break room I think would certainly be important . . . it ranks right up there with patient care space. But, if someone said what are going to fix first, I mean they'd probably fix the space around the patient or the med room or something else. So, from that priority perspective, it's not, you know, top priority.* (Nurse 2)

In a similar fashion another of the nurses noted: "I think it's unfortunate when you program space for the lounge, but as it is actually getting built, a lot of times, it is less [space], because other priorities happen and it starts to impinge on the original concept

of giving enough space to the staff to have respite." This same participant also noted: "we're always looking for obvious evidence and findings . . . as we try to protect that phase that we program in for our respite spaces" (Nurse 7). Overall, the interviews indicated that the healthcare community needs stronger evidence and incentives to protect the right of staff to have appropriate break areas and to prioritize these areas in space-allocation and design.

4.6.2. Proximity of Break Areas to Work Areas

The interviewees repeatedly addressed the issue of where indoor and outdoor break areas should be located in relation to patient-care spaces. In recent years there has been a healthcare design trend of centralizing staff lounges and locker rooms in newer facilities, with the result that these break areas are often located at a significant distance from the working units. Six out of the ten interviewees cited this as a major challenge preventing nurses from taking regular rest breaks. For example, one of the nurses noted, "if they're not able to have immediate access back to the unit, like if the break room is not on the unit, then often times they won't take breaks" (Nurse 4). Another participant indicated, "a lot of us don't go downstairs to the cafeteria . . . by the time you go down and get your food in the cafeteria line and stuff, you know, your lunch [break] is almost over" (Nurse 6).

The interviews revealed that the proximity of break areas to work areas is a matter of delicate balance. Break spaces need to give staff the sense of being away from their work. At the same time, however, they cannot be too far away, or else nurses feel cut off from their patients and unable to relax. The ideal solution to this dilemma is to create break spaces that are located physically near to work areas, but that are perceived as being mentally/psychologically distant. One of the study participants expressed this idea succinctly:

> *You need to get away from the unit, at least behind a door so that the noise is not crazy and you're not hearing everything. But that being said, you also can't go very far away because your patients are sick and if you're their nurse, it's really difficult to not be right there.* (Nurse 3)

Staff break rooms situated within the medical unit were indicated by all of the interviewees to be their first choice of location for both meal and non-meal breaks. Employee cafeterias were indicated as a second choice by six out of the ten nurses. Other locations that were mentioned for taking breaks included conference rooms, public lounges near work areas, and facility coffee shops.

Desirable locations for outdoor break areas followed the same pattern as that of the indoor areas, with the primary concern being that they should allow nurses to have

rapid access back to their patients. Some of the examples offered by participants included a rooftop garden directly accessible from the nursing unit, and a patio garden with direct access to the cafeteria and staff break rooms. Several of the interviewees explained that nursing staff rarely used the well-designed centralized healing gardens available in their new healthcare facilities, simply because they were too far away from the nurses' work areas.

The interviewees also repeatedly brought up the most desirable locations for locker rooms and bathrooms in relationship to staff break areas. All the comments on this issue suggested that the ideal situation was for locker rooms and bathrooms to be located separately from, but in reasonable proximity to, the break area. The nurses preferred to have locker rooms combined with bathrooms, but slightly separated from the locations where they would eat and relax. One typical comment on this matter was, "I like having a separate locker room from the break room, because then you just have less accumulation of everyone's stuff. And then the other one I always hate is when the bathroom opens right into the break room" (Nurse 3).

4.6.3. Privacy and Tranquility

The interviews indicated that nurses need opportunities for privacy and serenity in their break areas. Participants constantly highlighted the need for personal space, separated from patients and families. They suggested that break areas should be

configured in such a manner as to allow for completely private individual time, as well as for opportunities to socialize with other staff if desired. For the latter purpose, being able to sit and eat in small groups was highly valued. One of the nurses commented on this issue as follows:

> *I think they need complete privacy because it is part of your decompression time where you're mulling over—one could be mulling over your life, day to day, making phone calls about your own personal life with your kids or whatever. But it's also a place where they need to decompress with what's going on with their patients. They might need to process through it [with other nurses] in terms of what's wrong with this patient, what's going on with this family . . . So, they need a lot of privacy because it is patient information shared.* (Nurse 2)

Several of the participants indicated that private, one-person respite rooms can be valuable for accommodating nurses who want to briefly get away from both the public and their co-workers in order to spend some time alone. A combination of private rooms and more traditional group break areas can be a good way to adhere to the principal of respecting nurses' individual needs. One of the interviewees described a private break-room, indicating that "it was perfect because they could have a sink and could wash up or refresh; we put a recliner in there, they could take calls in there that were private or they could just de-stress on their own" (Nurse 4).

Privacy and tranquility were also cited as reasons for separating break areas from bathrooms and locker rooms, as well as from other support spaces such as conference areas or meeting rooms. The needed privacy and quiet for restorative breaks can be easily thwarted by intrusive noises or traffic from other nearby areas. Several participants commented on this topic, for example saying, “most clinicians would like to have a separation between break rooms and any kind of conference or educational activity—those functions should not be shared” (Nurse 2).

The opportunity to find privacy and tranquility was cited as an equally important concern for outdoor break areas. In particular, the interviewees pointed out that outdoor staff break areas should not be open to patients and families, a form of exposure that is counterproductive to staff achieving restful psychological distance from their work. One participant stated, “if you’re going to have outdoor access, then I think it does need to be a quiet environment; again, private—it would be a private garden, not a garden like with families and kids running around” (Nurse 2). Another indicated a similar concern: “it has to be segregated because if families see staff members sitting outside . . . the family members are going to find them” (Nurse 3).

4.6.4. Visual and Physical Access to the Outdoors

As was noted earlier in this chapter, the interviewees characterized the experience of working as a nurse, particularly in inpatient settings, as requiring a great deal of focus

and intensity. The nurses often felt like they were living and working “in a bubble” (Nurse 3) without any connections to the outside world. To help prevent fatigue and burnout, breaks should allow nurses to temporarily detach from this bubble-world and to reconnect with everything that is going on beyond their work environments—to perceive external life, track changes in the time of day, observe weather conditions, and experience seasonal changes. The interviewees frequently noted that access to the outdoors can play a critical role in obtaining mental reprieve. One of the interviewees stated, “when I had a window it made all the difference in the quality of my day, being able to look at out and see what was going on” (Nurse 5). Another mentioned, “I think the access to a view or to daylight and to the changing of the time of the day and the seasons is critical to the mental health and well-being of the staff” (Nurse 4).

In existing healthcare facilities it is relatively rare for staff break areas to have windows, balconies, or any type of connection to the outside environment. This situation may be starting to change, however, as healthcare designers give a greater overall priority to outdoor access and natural lighting. The interviewees in this study were very clear that they regarded outdoor access as a priority—eight of the ten participants cited outdoor views and daylight as one of the key environmental amenities that nurses would like to have in their break areas. Furthermore, the participants indicated a marked preference for actual physical access to the outdoors (as opposed to just window views). They noted the rejuvenating effects of being able to sit outside, to take a short walk in a

garden, or to smell fresh air during their breaks. For example, one nurse stated, “to actually have some access to fresh air, to actually be within a different environment, it would be very nice to step outside” (Nurse 4). Others took a similar view:

> *I think that the connection to the outdoors is really key. And even if . . . they're working in a room that has large windows, there’s something about being able to sit and look outdoors. I think that it brings a sense of relaxation and brings more connectivity to what’s going on in the world*. (Nurse 2)

> *It gives them an opportunity to step away from what they’re doing and to be able to see that there’s life going on outside. It’s that mental shift—I’m not just sitting here with four walls around me and I’m worrying about my patients and I’m worrying about my family like at home something might be going on. But really the ability to sort of use that [access to nature] as a positive distraction, and we all know how important that is.* (Nurse 4)

Seven of the ten interviewees reported that they took outdoor breaks when they had the opportunity to do so in healthcare settings, and that they valued physical access to the outdoors as a means of relieving their stress and helping them to feel more refreshed. However, these nurses also mentioned challenges that limited their opportunities to step outside, such as the short duration of breaks, concerns about

safety, inhospitable weather/climate, difficulty of access, and lack of proximity of outdoor areas to their work units. Typically, the nurses made use of outdoor areas during good weather and during their longer breaks (i.e., meal breaks). Several of the interviewees mentioned climate as a limiting factor, stating for example that "people find outdoor spaces very different in California than they do in Michigan" (Nurse 3). Even in less hospitable climates, however, the nurses believed that suitably designed outdoor spaces with the proper amenities could remain valuable throughout much of the year.

The most critical limiting factor cited by the study participants was simply a lack of access to restorative outdoor areas located near to their patients. One of the nurses explained: "I think they want as easy access as possible [to the outdoors]. If it could be out of the break room, I think that would be great" (Nurse 2). Another commented about an ideal situation: "that team uses an outdoor patio that is part of their lounge . . . that's an example where it's very convenient, [because] it's contiguous with their lounge. Obviously it's on the ground floor—they can just walk out there" (Nurse 7).

4.6.5. Access to Nature and Natural Light

All the interviewees mentioned access to nature and natural light as preferred environmental amenities in their break rooms/areas. Many discussed the well-documented benefits of nature contact and daylight in relieving stress. They stipulated

that they could appreciate a wide range of different forms of contact with nature—ranging from indirect exposure via nature-related artwork, to the inclusion of indoor plants within their break areas, to a nice window view of mountains, gardens, and landscapes. However, the participants reported that direct access to the outdoors was the most powerful stress reliever, due to affordances such as the opportunity to walk in a garden, to be around diverse plants and flowers, to listen to the sound of water, and to receive direct sunlight. For example, one participant described a high-quality staff break area, saying, "they had a beautiful staff lounge and it had a door that opens to a balcony, an outside balcony . . . just the ability to get fresh air, I think they would just love that" (Nurse 10). Another of the interviewees referred to studies on the benefits of nature and natural light: "I know there has been research that shows the positive impact of natural life and light for healthcare workers in addition to patients. How much nurses worry about that, I don't know, but we do know that it does have a positive impact on their wellbeing." (Nurse 4).

4.6.6. Additional Amenities for Indoor and Outdoor Break Areas

Beyond the central issues of break areas' proximity to patient-care areas, high levels of privacy and tranquility, and access to nature, natural light, and fresh air, the study participants cited a variety of amenities that they would appreciate for enhancing their opportunities to rest. In regard to indoor break areas, the nurses repeatedly mentioned the value of comfortable furniture, appropriate appliances, and access to a computers

and Internet services. They frequently talked about nurses' need to "put their feet up" as a means of physical reprieve from long hours of standing and walking. They expressed a preference for comfortable furniture that is easily rearranged for individual and group activities. Furthermore, they indicated that break-room appliances, especially refrigerators, were often too small to accommodate all of the nurses who used a particular area. One of the participants noted that countertop spaces with convenient electrical outlets were highly valued in indoor break rooms, because nurses working long shifts often enjoy organizing potluck food-sharing activities.

For outdoor break areas, the three most commonly requested amenities were comfortable seating, covered patios, and a rich natural environment. As with the indoor areas, nurses wanted comfortable outdoor furniture that would allow them to "put their feet up." Covered patio spaces offered a degree of protection from the elements and enhanced the utility of outdoor break areas in hot or rainy climates. Most importantly, the nurses cited an abundance of plants and flowers, the sounds of birds and running water, and the availability of direct sunshine as important outdoor amenities. One of the participants explained, "in my perfect world, there would be plants—not anything too crazy that requires a lot of maintenance. There would be a water feature that just gave that noise, that waterfall noise, and then benches to sit on. It doesn't have to be a big walking path because I just don't have time" (Nurse 3). Another requested, "trees, bushes, or flowers that have aroma to them; perhaps access

to nature sounds [such as] running water or birds. I mean all of those elements of nature that we know nourish us as individuals" (Nurse 4).

4.7. Summary

The focused interviews that were analyzed in this chapter indicated that nurses' ability to take restorative breaks can be best enhanced by improving healthcare facility polices and by the construction of well-designed break areas. Adequate staffing strategies, formal break regulations, and improved technology are among the most effective ways for healthcare leaders to change the existing industry culture, encouraging nursing staff to get the rest they need in order to provide the best possible patient care. Healthcare designers and facility planners can also play an important role in accommodating rest breaks by prioritizing break areas during space-allocation. Designers need to find the appropriate balance in designing break areas that are physically located near to work areas, but that are perceived as being mentally/psychologically distant from patients. These break spaces should help to ensure adequate levels of privacy and tranquility, while providing the best possible access to nature, natural light, and fresh air. In the following chapter, the results of the quantitative phases of the study are reported and analyzed. These written surveys and visual assessments were focused specifically on the levels of rest and satisfaction associated with access to nature and natural light in staff break areas, providing greater empirical support for these conclusions.

CHAPTER V

RESULTS AND ANALYSIS FOR SURVEY AND VISUAL ASSESSMENT

5.1. Introduction

The written survey and visual assessment parts of this study were conducted using the Qualtrics Online Survey software package. The Academy of Medical-Surgical Nurses provided their dedicated support by including the survey link in their website and electronic newsletter, as well as disseminating information about the survey through an e-mail to their entire membership base. The data from the written survey and visual assessment were analyzed using descriptive statistics as well as correlation, analysis of variance (ANOVA), and hierarchical multiple regression analyses. All the analyses were conducted using the SPSS Statistics software package, v. 20.

5.2. Survey Procedure and Response Rate

The link for the online survey and visual assessment was sent to 10,866 members of the Academy of Medical-Surgical Nurses (AMSN). A recruitment letter was prepared and formatted in collaboration with the AMSN before being sent to the organization's entire membership base (the recruitment letter is provided in Appendix D). As a token of appreciation, survey participants were asked if they would like to be entered into a drawing to win one of three $100 gift cards. On the first day after sending the letter of

recruitment, 341 responses were received, with an additional 283 responses over the following two weeks. The AMSN then sent a reminder e-mail to their members, mentioning the survey closing date. During the second two-week period, an additional 369 responses were received. The survey was open for a total of one month, with a total of 993 responses received. It is not possible to determine the exact number of nurses who received the survey link, as some e-mail addresses of AMSN members may not have been current, and some members may not have accessed the Internet during the survey period. However, using the total membership base of 10,866 nurses, a conservative (low-end) estimate of the survey response rate can be calculated. The total number of nurses who clicked on the survey link was 993, which is a 9.14% estimated overall response rate. The number of nurses who went on to complete and submit the survey was 791, which is a 7.28% estimated effective response rate. The percentage of respondents who began the survey but did not finish and submit it was 202 out of 993, or 20.3%.

On average, the participants spent 8 minutes and 42 seconds to complete the survey. The majority spent less than 20 minutes (see Figure 5.1). Although 48 out of the 50 survey questions were not mandatory to answer, the average completion rate was 69% of the questions (see Figure 5.2). Out of the 993 total responses, 749 (75.5%) were accessed during the daytime (7am–7pm), while 244 (24.5%) were accessed in the evening or night (7pm–7am). For the purpose of analysis, a total of 35 submitted

surveys (31 without any responses and 4 completed by nurses outside of the United States), were deleted and excluded from the dataset.

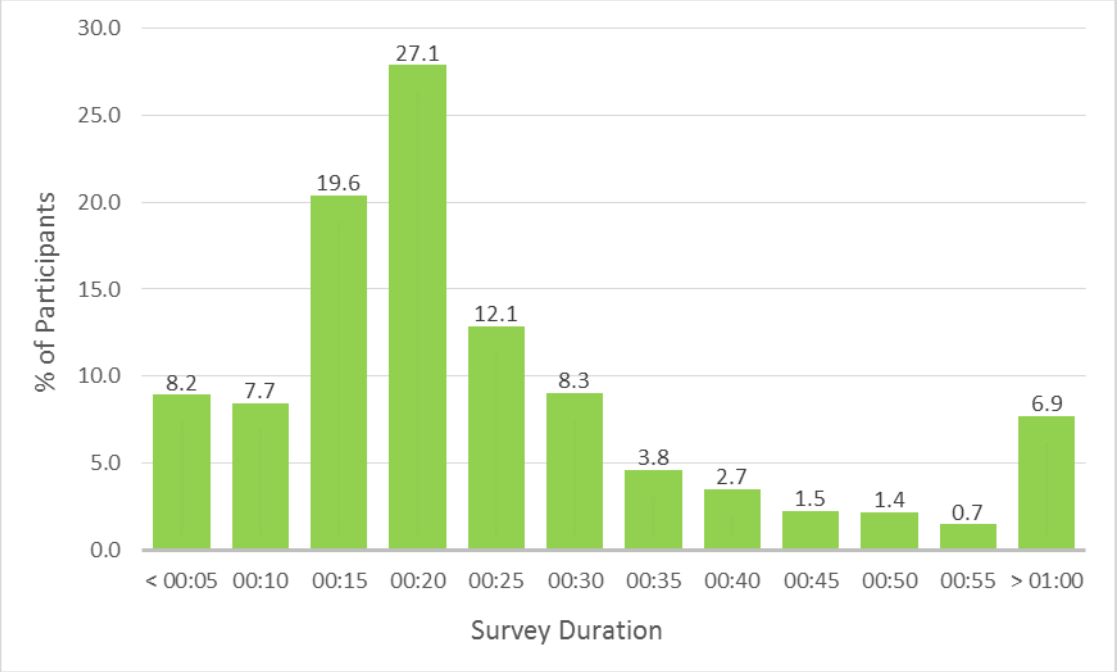


Figure 5.1. Survey Duration (Amount of Time Participants Spent Completing the Survey)

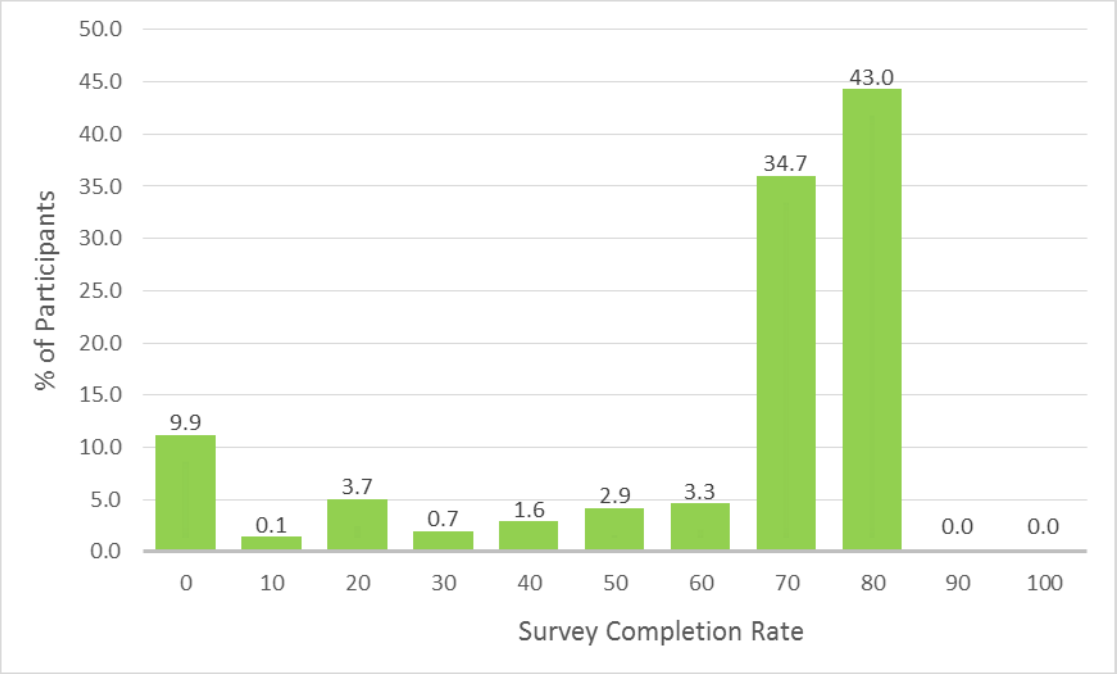


Figure 5.2. Survey Completion Rate (Percentage of Survey Questions Answered by Percentage of Participants)

5.3. Content of Written Survey and Visual Assessment

The written survey included a total of 50 items, including 36 closed-end questions, 7 short open-ended questions, and 7 narrative questions. The first section of the survey collected demographic information. Sections 2 and 3 were designed to address participants' work experience, their current work environment, and their break patterns, including primary break spaces and break-time activities. Section 4 collected detailed information about the participants' indoor and outdoor break areas, as well as their level of satisfaction with these different spaces. Section 5 included questions about the participants' ideal break room/area, as well as the degree of importance that

they placed on the quality of these areas. The two visual assessment questions were included in this section. In the visual assessments the participants were asked to evaluate each portrayed break room on a scale of 0 (low-quality) to 10 (high-quality), stating how effective they though the portrayed environment would be in relieving stress and helping them to feel more refreshed. In the final two sections of the survey, participants were asked for their opinion on dedicated spaces for quick restorative naps, and any additional feedback that they might wish to share (the full survey questionnaire is provided in Appendix H).

5.4. Survey Results and Descriptive Analysis

In this section the results of the survey will be presented and analyzed using descriptive statistics. Categorical variables will be described as frequencies and percentages using tables and graphs, while continuous variables will be described using statistics such as minimum and maximum values, mean, and standard deviation. Content analysis of the qualitative data from the survey's narrative questions will also be presented, using tables, figures, and word clouds (a word cloud is an illustration composed of words, in which the size of each word shows its relative frequency or importance).

5.4.1. Demographic Information

Participants' demographic information was collected, and it was compared against the overall AMSN membership profile summary in order to determine how representative

the study sample was compared to the study population. The study sample included 893 female nurses (94.3%) and 54 male nurses (5.7%). This was very similar to the overall AMSN membership profile, which is 93.6% female and 6.4% male. In regard to the participants' ages, the data collected in this study was categorical, so it was not possible to directly compare the study averages against the overall AMSN age data, which was continuous. However, the age data for the study sample shows a reasonable distribution in relation to the mean age of the AMSN population, which was 44.84 years (see Figure 5.3). Information about ethnicity was not available through AMSN, but in the study sample the majority of participants were White/Caucasian (82.9%), with a smaller representation of Asian / Asian Americans (7.5%), black / African Americans (6.4%), and other ethnicities (see Figure 5.4). The study participants were also asked about their level of education, with the results showing that the 52.5% held baccalaureate degrees, 23.5% master's degrees, 16.6% associate degrees, 4.8% nursing diplomas, and 3.0% doctoral degrees. This educational profile was very comparable to the overall demographics of AMSN members, 52.7% of which held baccalaureate degrees (see Figure 5.5).

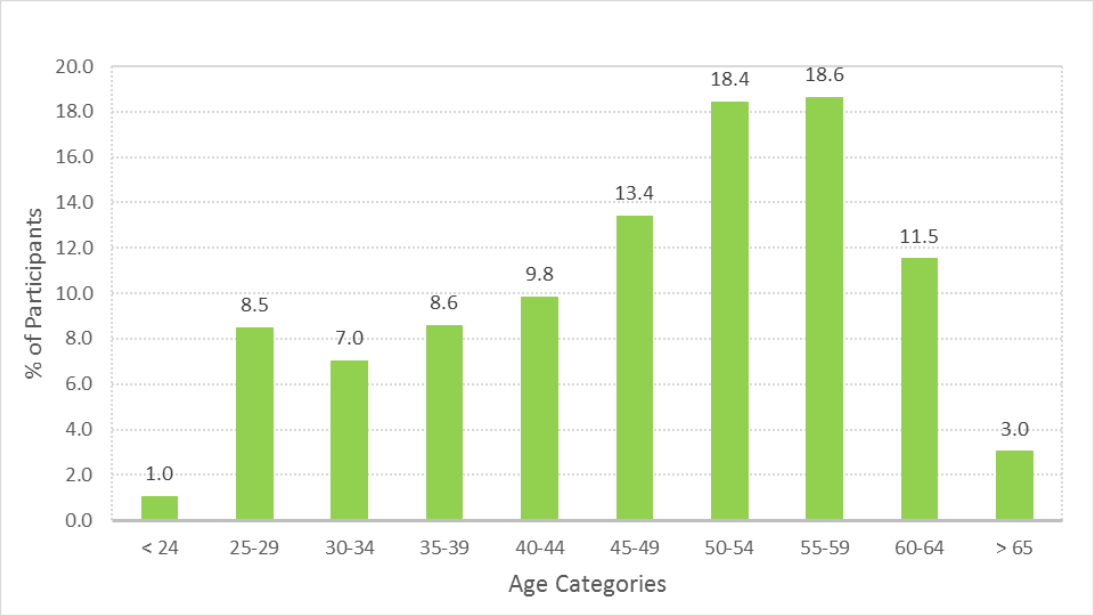


Figure 5.3. Age of Study Participants

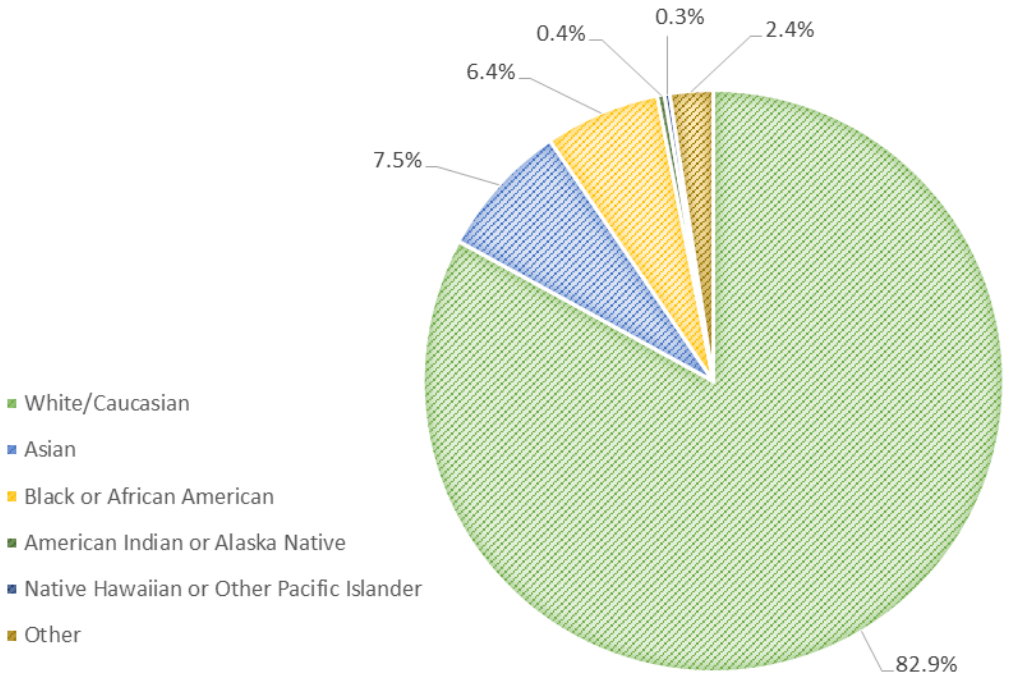


Figure 5.4. Ethnicity of Study Participants

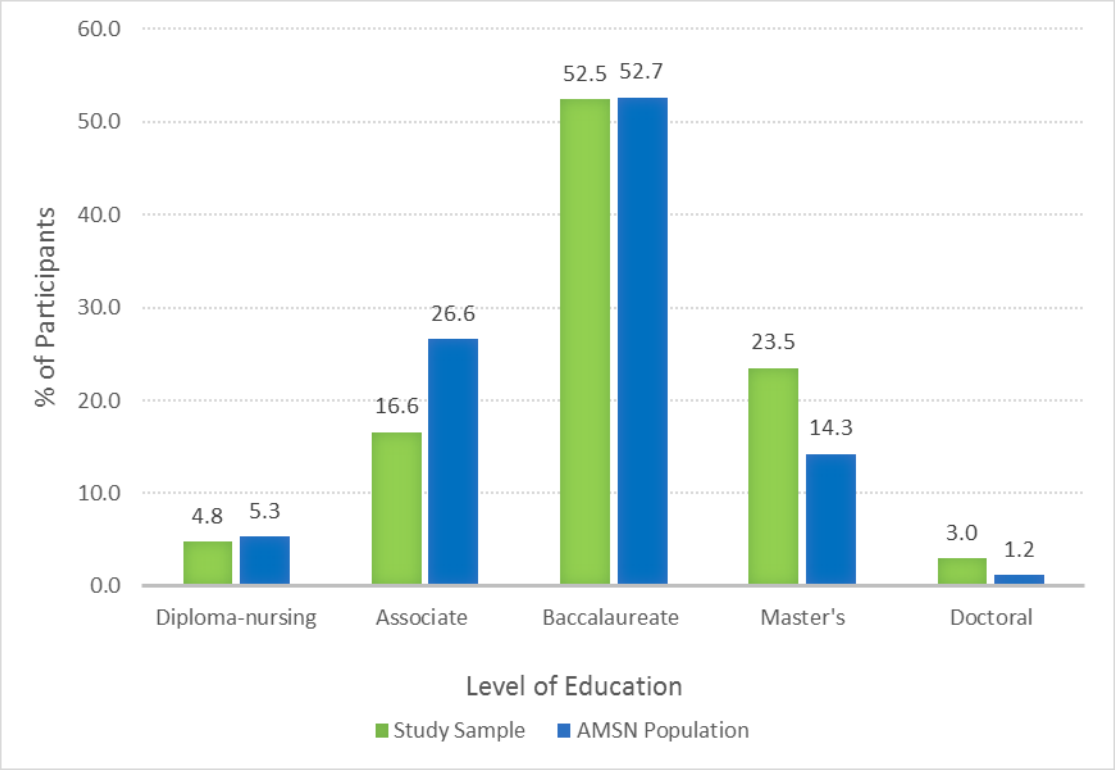


Figure 5.5. Level of Education for Study Sample vs. Overall AMSN Population

5.4.2. Work Environment and Experience

In the second section of the survey, nurses were asked about their work experience, current workplace environment, current position and specialty areas, and typical working shifts. At the end of this section a general narrative question was asked to explore what the participants typically do in their work environment in order to relieve stress (prior to any specific discussion of break areas).

A U.S. climate-regions map (Karl & Koss, 1984) was used to categorize the data from participants' facility locations (see Figure 5.6). The results show that the highest concentration of respondents was in the Ohio Valley / Central region (21.4%) and the Northeast region (19.2%). Considerable numbers of participants were located in the Southeast (14.6%) and in the South (13.3%). The Northern Rockies region had the lowest percentage of participants (0.7%).

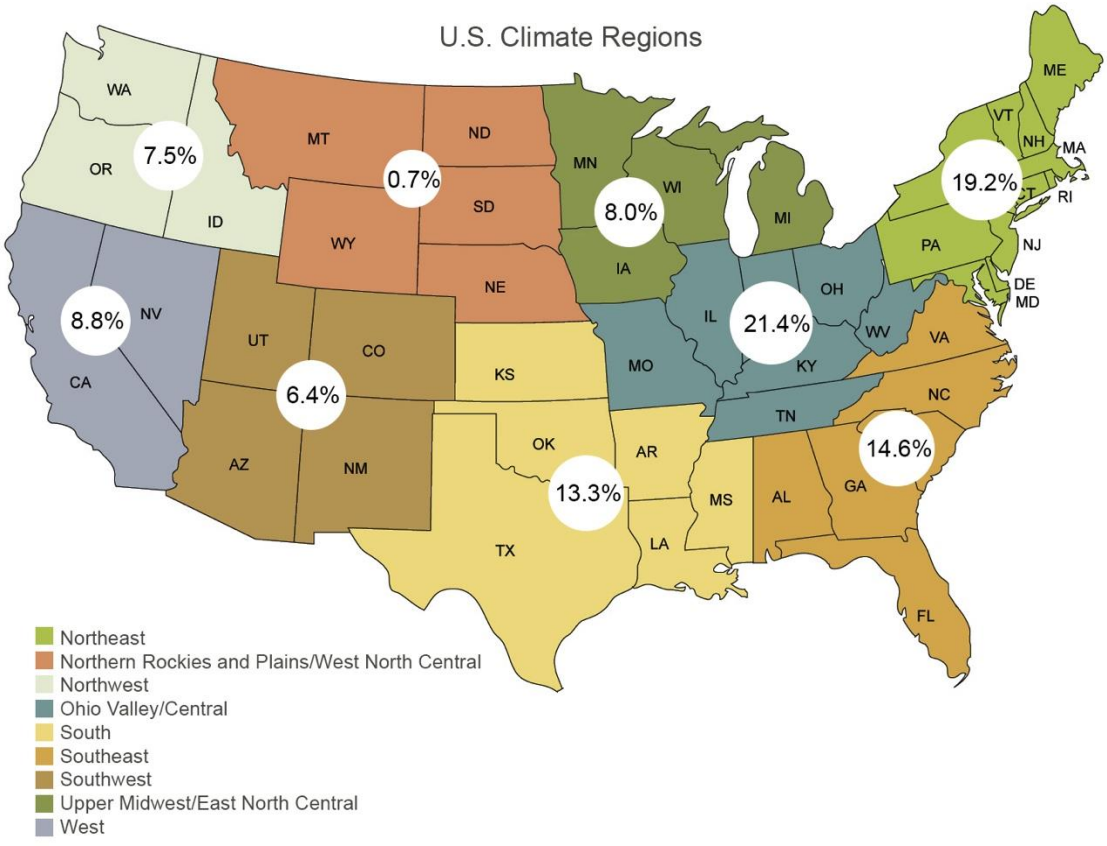


Figure 5.6. Map of Healthcare Facility Locations Where Participants Were Working

The survey and visual assessment were focused on the experience of nurses working in inpatient healthcare settings, and the membership of the Academy of Medical-Surgical Nurses was ideal for targeting this demographic. The survey data indicated that 84.7% of the respondents were working in inpatient environments (which is comparable to the overall AMSN membership profile of 90.2% inpatient nurses). A smaller portion of the study respondents worked in outpatient care (4.2%), academic medical centers (3.4%), and other settings (see Figure 5.7).

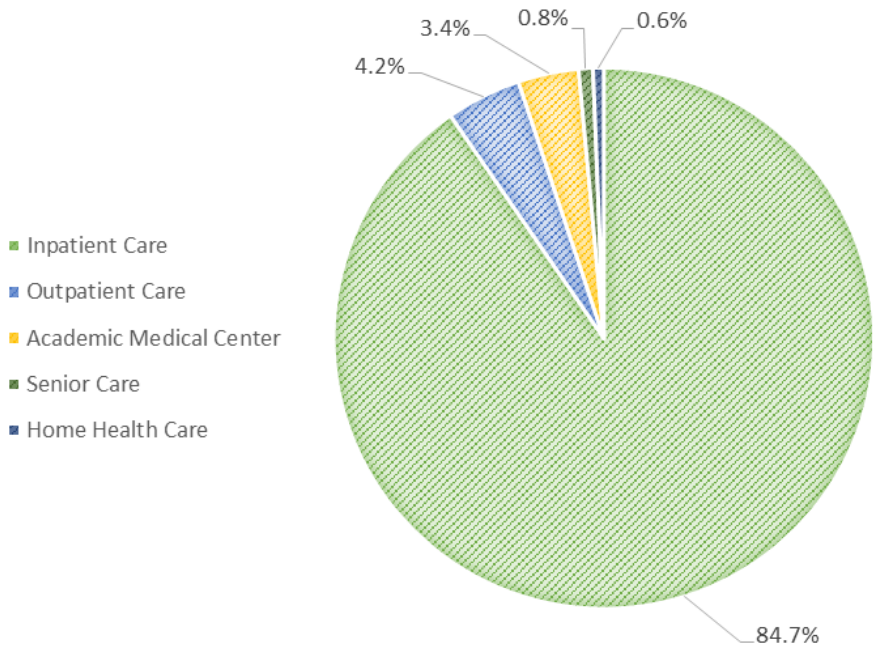


Figure 5.7. Healthcare Settings Where the Study Participants Worked

The vast majority of the survey participants were registered nurses (97.9%). In terms of the work positions that they held at the time of the survey, 63.6% were staff nurses, 12.3% were head nurses or unit managers, and 9.4% were educators. A smaller percentage held other diverse positions within the healthcare industry (see Figure 5.8). Participants were also asked about the length of their work experience in various areas. The majority had more than 10 years of experience in nursing (69.3%), as a registered nurse (64.7%), and as a medical-surgical nurse (60.0%) (see Figure 5.9).

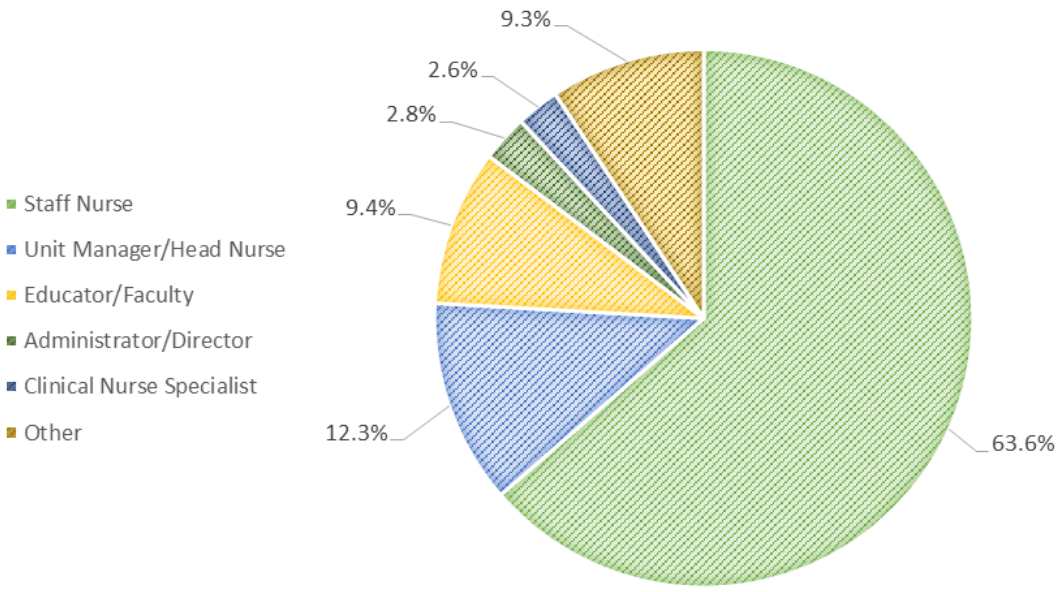
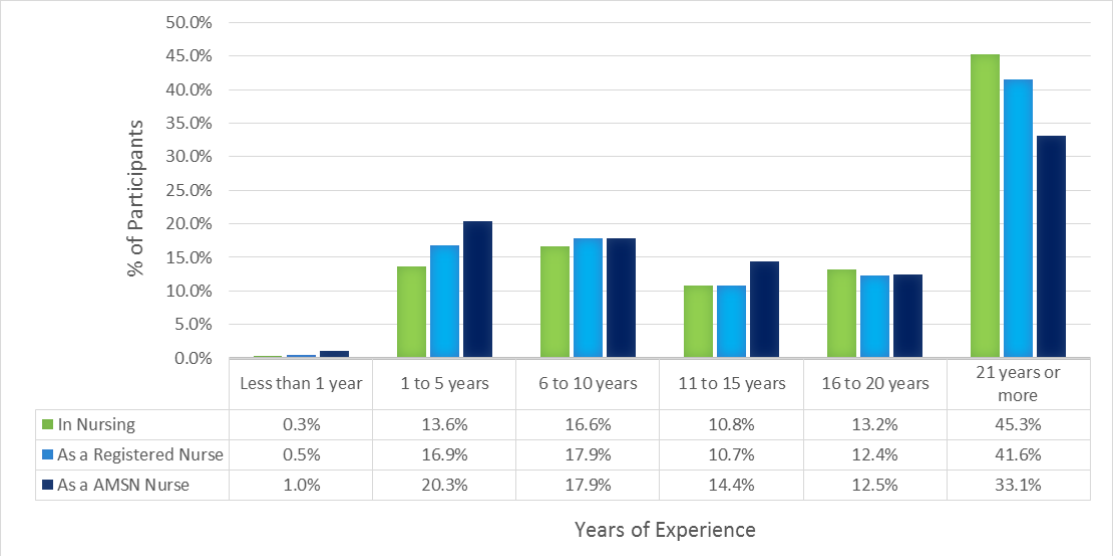


Figure 5.8. Participants' Work Positions



	Less than 1 year	1 to 5 years	6 to 10 years	11 to 15 years	16 to 20 years	21 years or more
In Nursing	0.3%	13.6%	16.6%	10.8%	13.2%	45.3%
As a Registered Nurse	0.5%	16.9%	17.9%	10.7%	12.4%	41.6%
As a AMSN Nurse	1.0%	20.3%	17.9%	14.4%	12.5%	33.1%

Figure 5.9. Participants' Years of Experience in Nursing, as a Registered Nurse, and as a Medical-Surgical Nurse

The participants were asked about their specialties / work areas, and the results indicated that the majority (57.7%) were employed in medical, surgical, or medical-surgical units (see Figure 5.10). Other specialties with a significant representation were oncology, telemetry, intensive care, and rehabilitation. A significant number of the participants (20.2%) reported that they did not work in any specific area, or that they frequently moved between different units. In regard to their length of work experience in various settings, the majority (62%) had worked for more than 10 years in inpatient settings. A large percentage had more than 10 years of experience in their current specialties (43.8%) and in their current healthcare facilities (44.2%) (see Figure 5.11).

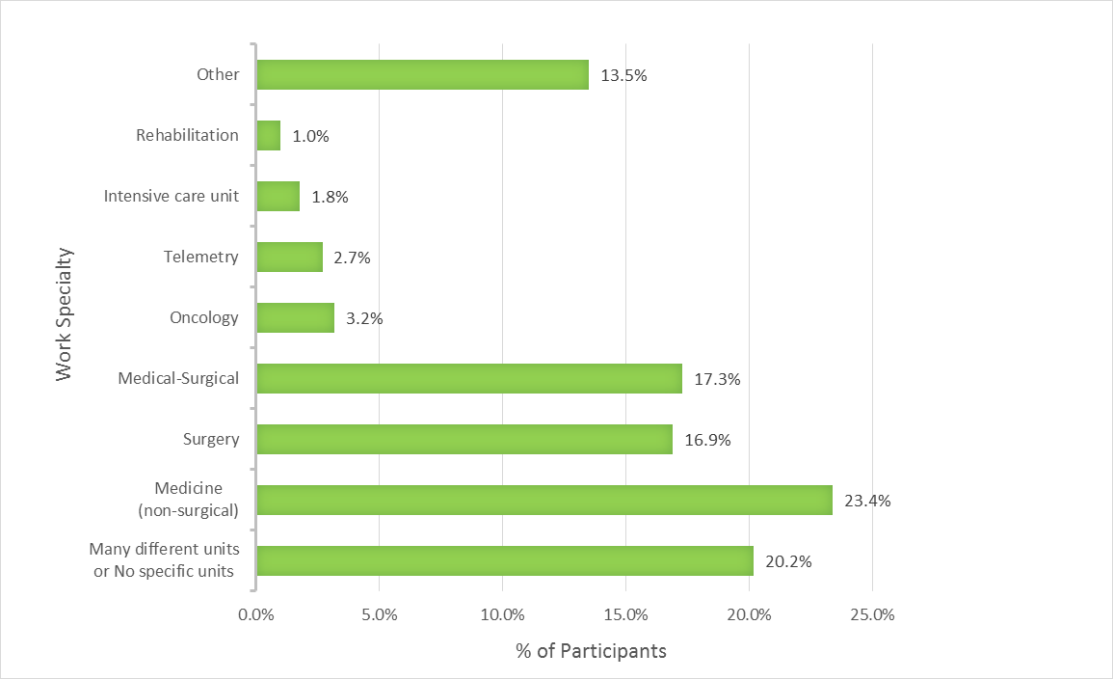
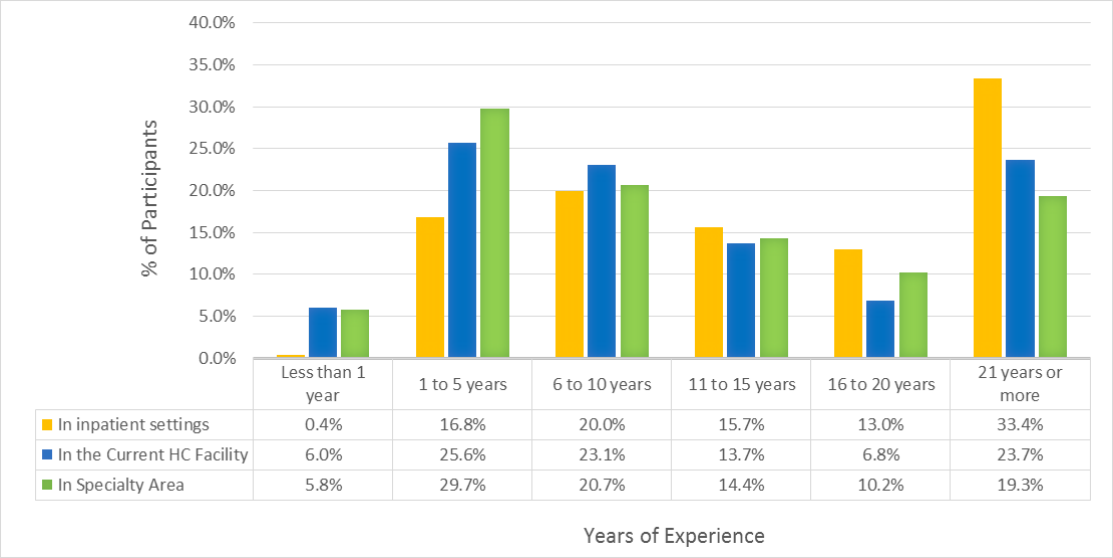


Figure 5.10. Participants' Work Specialties



	Less than 1 year	1 to 5 years	6 to 10 years	11 to 15 years	16 to 20 years	21 years or more
In inpatient settings	0.4%	16.8%	20.0%	15.7%	13.0%	33.4%
In the Current HC Facility	6.0%	25.6%	23.1%	13.7%	6.8%	23.7%
In Specialty Area	5.8%	29.7%	20.7%	14.4%	10.2%	19.3%

Figure 5.11. Participants' Years of Experience in Inpatient Settings, in Their Current Specialty, and in Their Current Healthcare Facility

The participants were asked about their typical working shift (type and duration), the number of hours they worked each week, and the extent of their direct patient contact. The majority worked day shifts only (63.3%), with a smaller but significant percentage working night shifts only (29.9%). A few of the participants worked a combination of day and night shifts (6.8%) (see Figure 5.12). The average duration of their working shifts was 10.7 hours (SD=1.80), with a minimum duration of 4 hours and a maximum duration of 16 hours. The participants worked an average of 37.6 hours per week (SD=9.23) and had direct patient contact during 59.9% of their working hours (SD=34.6).

Figure 5.12. Participants' Work Shifts

The participants were asked to describe the level of stress in their work environments on a scale of 0 (low) to 10 (high). The average perceived stress level was 7.07 (SD=2.00). The majority (68.1%) rated their stress 7 or higher, with a smaller percentage rating it lower than 5 (see Figure 5.13). At the end of this section of the survey (and prior to any specific discussion of break areas), an open-ended question was asked regarding what participants did within their work environment to relieve stress. The responses were examined using word-frequency analysis, revealing that the word "break" was the most commonly reported (295 occurrences). Other frequently-occurring words were "walk" (153), "talk" (115), "breathe" (81), "lunch" (81), and "outside" (63) (see Figure 5.14).

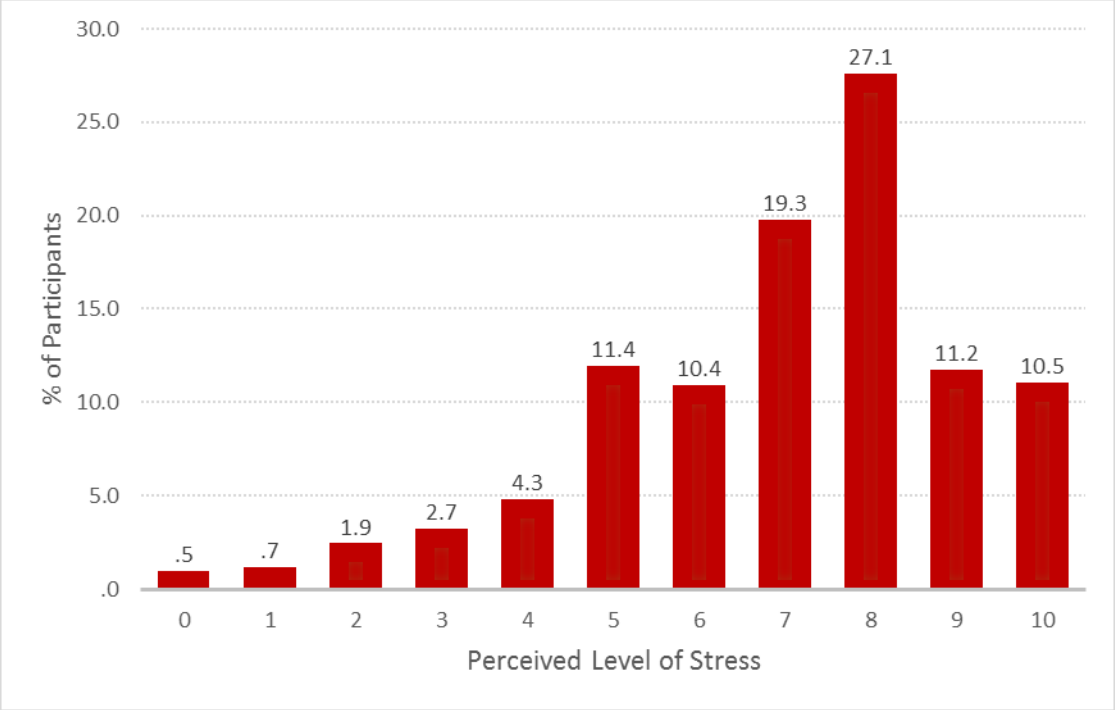


Figure 5.13. Perceived Level of Stress in Participants' Work Environments

Figure 5.14. Word Cloud for Responses to “Activities to Relieve Stress”

5.4.3. Rest-Break Patterns

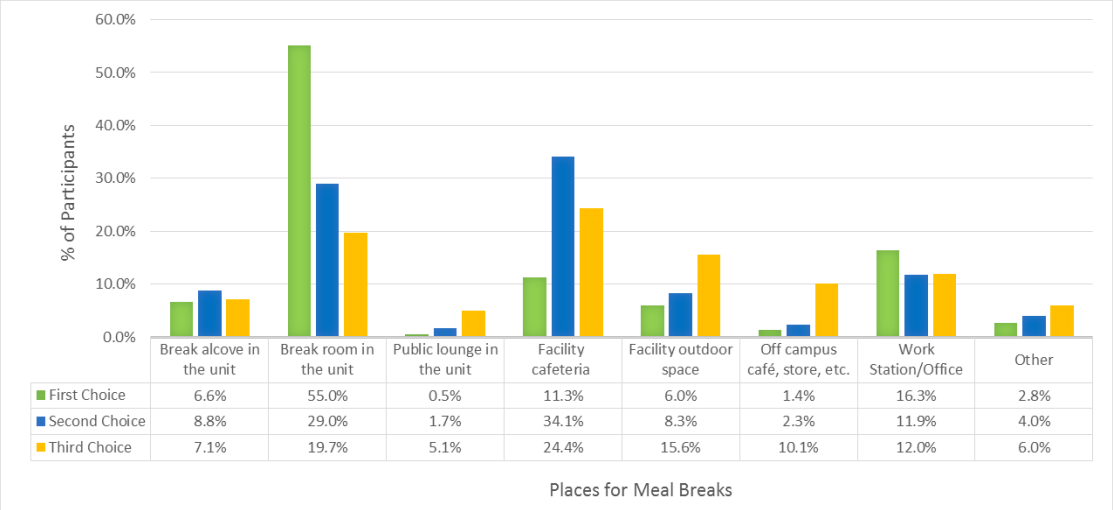
In the third section of the survey, participants were asked about the frequency and duration of their rest breaks, where they went to take their meal and non-meal breaks, and what they did during these break times. The average time allocated for a meal break was 27.70 minutes (SD=10.90), and the average time for a non-meal break was 7.06 minutes (SD=6.55). The overall frequency of non-meal breaks was only 0.66 times per shift (SD=0.76); more than 50% of the participants reported taking no non-meal breaks at all. A similar result was found regarding breaks in outdoor areas—83.6% of the participants took no outdoor breaks at all, and the overall frequency of outdoor

breaks was only 0.20 times per shift (SD=0.51). The total duration of rest breaks per shift averaged 34.83 minutes (SD=16.07) (see Table. 5.1).

Table 5.1. Length and Type of Breaks

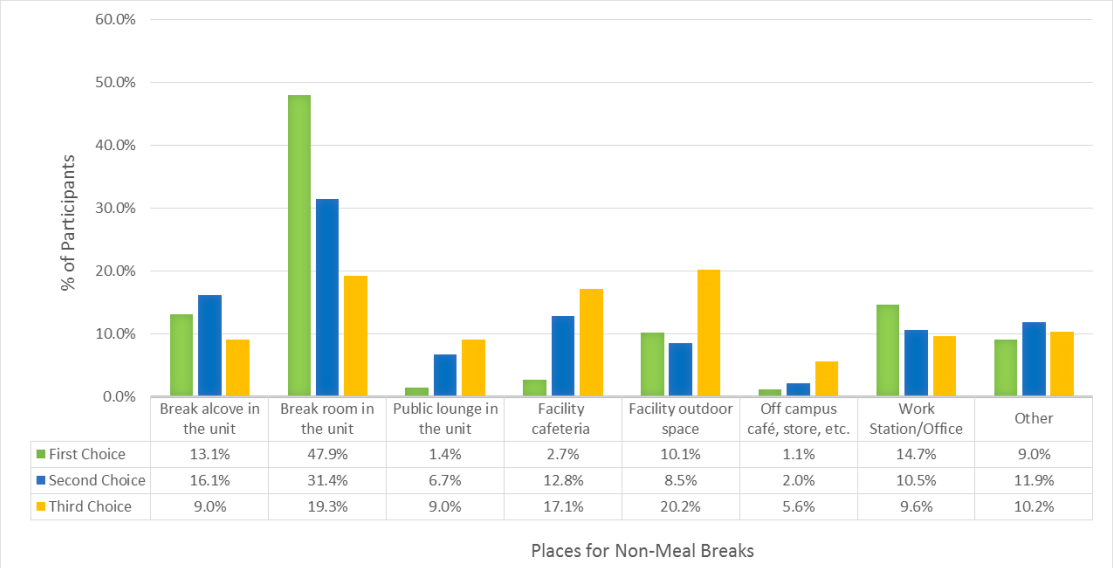
	Responses	Minimum	Maximum	Mean	SD
Meal Break Duration	832	0.0	60.0	27.70	10.90
Non-meal Break Duration	713	0.0	15.0	7.60	6.55
Total Duration of Breaks	790	0.0	105.0	34.83	16.07
Non-meal Break (freq. per shift)	846	0.0	4.0	0.66	0.79
Outdoor Break (freq. per shift)	836	0.0	5.0	0.20	0.51

In regard to where the survey participants preferred to take their breaks, the results indicated that staff break rooms located within the working unit were by far the most frequently selected locations. The nurses prioritized these rooms as their first choice for both meal breaks (55.0%) and non-meal breaks (47.9%). The cafeteria and work stations/offices were the next-most-popular locations for meals. Interestingly, outdoor spaces were given a relatively high priority as locations for short, non-meal breaks, more so than for longer meal breaks (see Figures 5.15 and 5.16).



	Break alcove in the unit	Break room in the unit	Public lounge in the unit	Facility cafeteria	Facility outdoor space	Off campus café, store, etc.	Work Station/Office	Other
First Choice	6.6%	55.0%	0.5%	11.3%	6.0%	1.4%	16.3%	2.8%
Second Choice	8.8%	29.0%	1.7%	34.1%	8.3%	2.3%	11.9%	4.0%
Third Choice	7.1%	19.7%	5.1%	24.4%	15.6%	10.1%	12.0%	6.0%

Figure 5.15. Top Choices for Locations to Take Meal Breaks

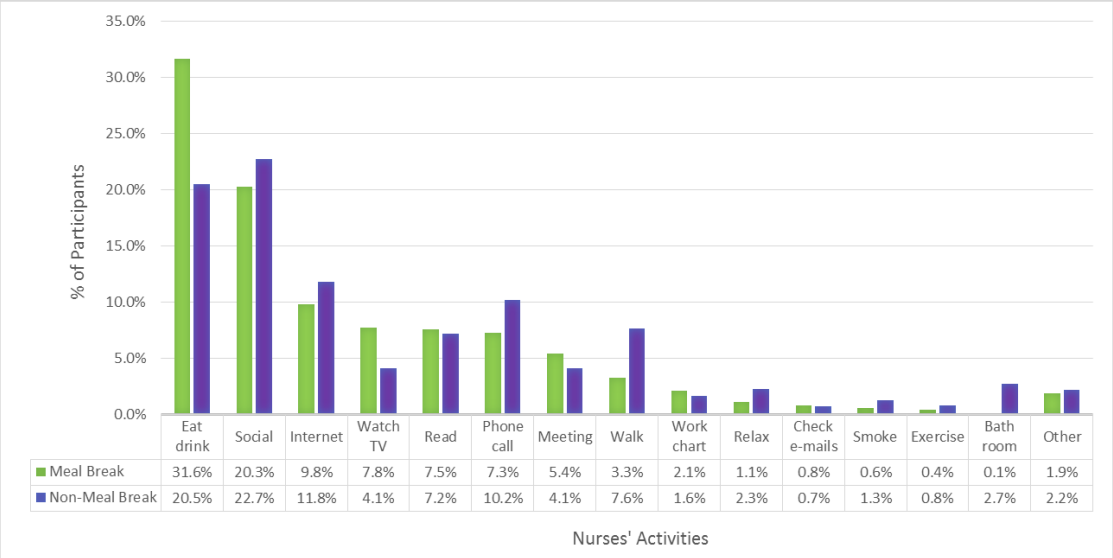


	Break alcove in the unit	Break room in the unit	Public lounge in the unit	Facility cafeteria	Facility outdoor space	Off campus café, store, etc.	Work Station/Office	Other
First Choice	13.1%	47.9%	1.4%	2.7%	10.1%	1.1%	14.7%	9.0%
Second Choice	16.1%	31.4%	6.7%	12.8%	8.5%	2.0%	10.5%	11.9%
Third Choice	9.0%	19.3%	9.0%	17.1%	20.2%	5.6%	9.6%	10.2%

Figure 5.16. Top Choices for Locations to Take Non-Meal Breaks

In regard to what the nurses preferred to do during their break times, the survey results indicated that eating and drinking were the most common activities (especially

during meal breaks, as would be expected). Socializing with co-workers was also frequently reported. The results indicated that during short breaks (as compared to longer meal breaks) a higher priority was placed on engaged activities such as socializing, making phone calls, and taking walks (see Figure 5.17).



	Eat drink	Social	Internet	Watch TV	Read	Phone call	Meeting	Walk	Work chart	Relax	Check e-mails	Smoke	Exercise	Bath room	Other
Meal Break	31.6%	20.3%	9.8%	7.8%	7.5%	7.3%	5.4%	3.3%	2.1%	1.1%	0.8%	0.6%	0.4%	0.1%	1.9%
Non-Meal Break	20.5%	22.7%	11.8%	4.1%	7.2%	10.2%	4.1%	7.6%	1.6%	2.3%	0.7%	1.3%	0.8%	2.7%	2.2%

Figure 5.17. Nurses' Activities during Meal and Non-Meal Breaks

5.4.4. Quality of Staff Break Areas

The fourth section of the survey was designed to collect detailed information about the participants' indoor and outdoor break areas, as well as their level of satisfaction with these spaces. For indoor break areas the participants were asked to report amenities and environmental features; for outdoor break areas, if available, they were asked to report amenities, level of privacy, and space configuration. The participants were also

asked to identify any additional amenities that they would prefer to see added to these indoor and outdoor spaces.

5.4.4.1. Indoor Break Areas

The vast majority of respondents (96.7%) had indoor break areas available for use within their healthcare facilities. Figure 5.18 shows the frequency with which various amenities were present in these break areas. Refrigerators and microwaves were very common, and the majority of the areas had standard office furniture, lockers, televisions, and restrooms. Computers were much less common, and very few of the break areas had comfortable furniture such as sofas or daybeds.

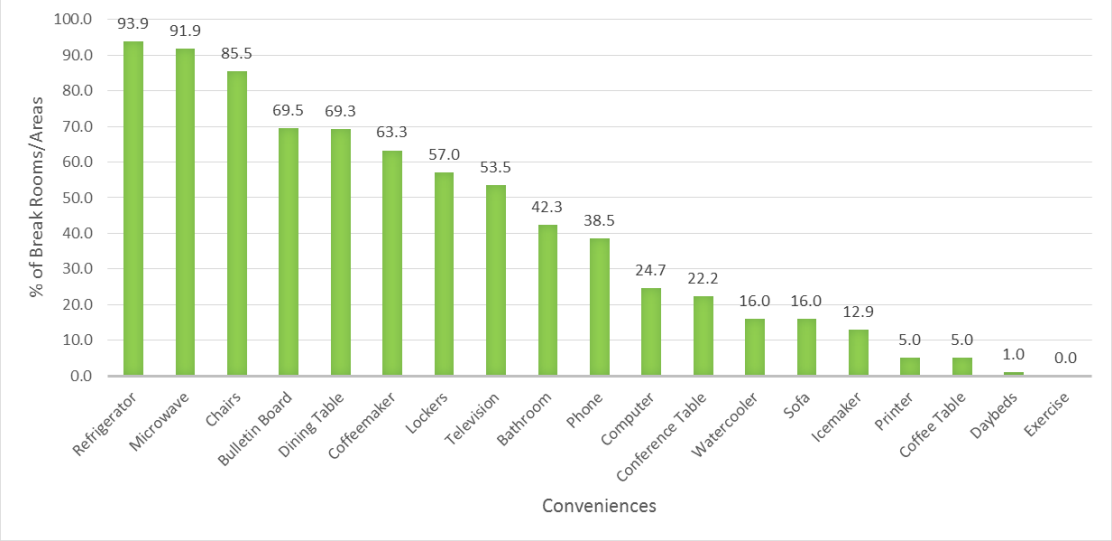


Figure 5.18. Break Area Conveniences/Amenities

The participants reported a significant lack of environmental features in their indoor break areas. Only 40.2% had windows, only 10.9% had any kind of artwork, and only a miniscule portion of these break areas had plants, music, or access to the outdoors (see Figure 5.19). Where windows did exist, the views most often consisted of buildings, signs, and traffic (see Figure 5.20). When asked what views they would prefer to have from their break rooms, however, the nurses indicated elements such as trees, sky, flowers, and parks, with almost no preference expressed for buildings or automobiles (see Figure 5.21).

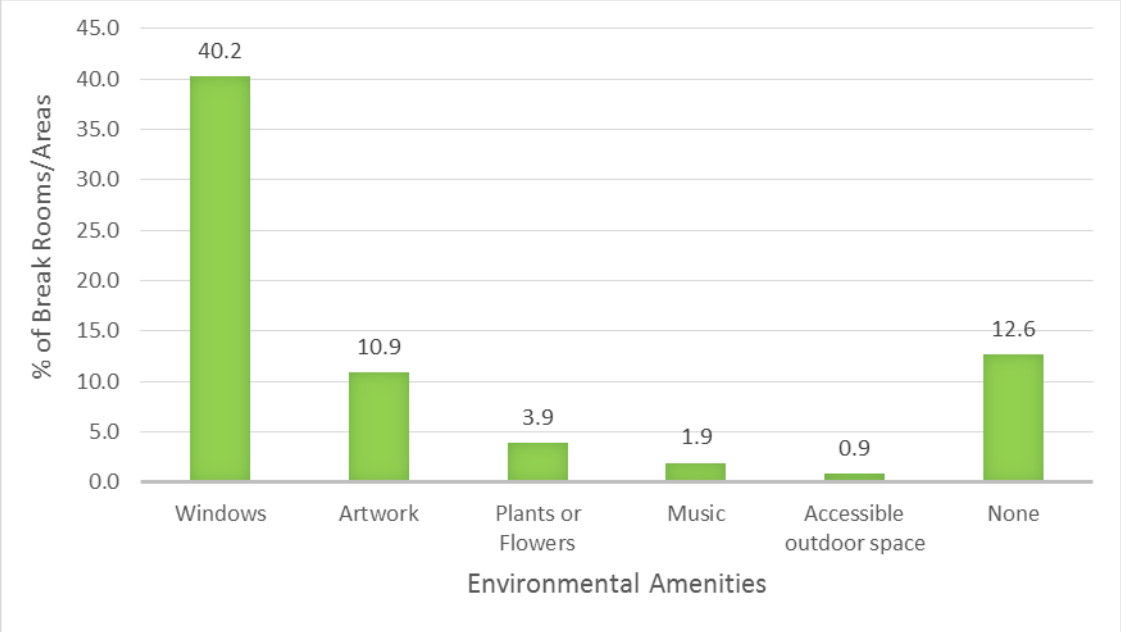


Figure 5.19. Break Area Environmental Features

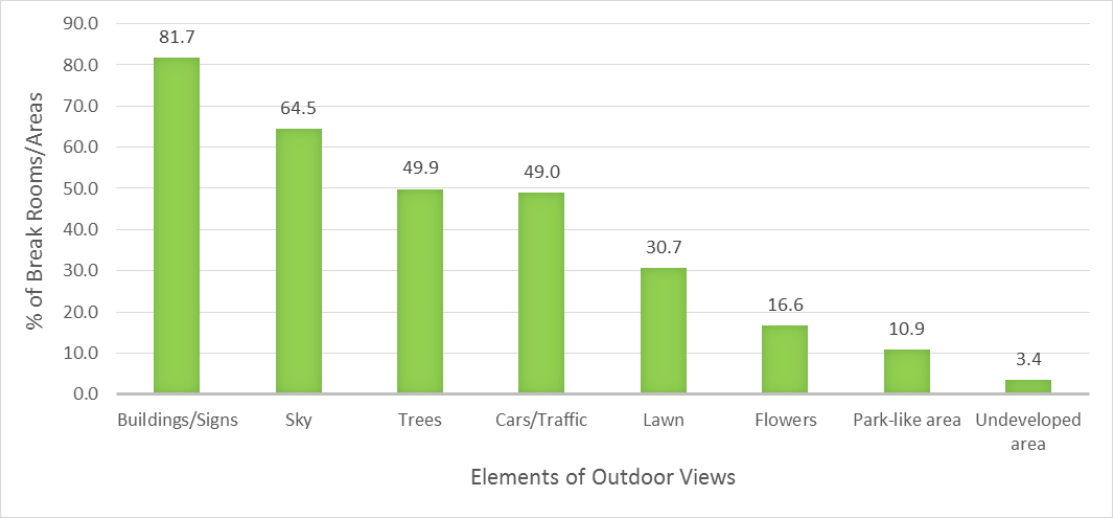


Figure 5.20. Views from Break Areas That Have Windows

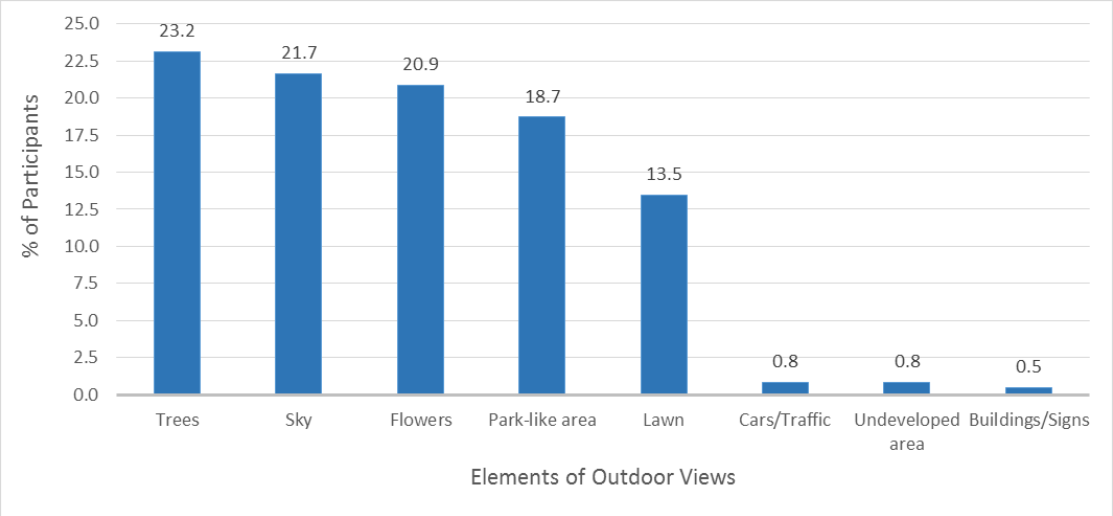


Figure 5.21. Preferred Views

Finally, the participants were asked about additional amenities that they would like to see added to their indoor break spaces. The responses were examined using word-

frequency analysis, revealing that the words “window” (79), “comfortable” (57), “music” (52), and “TV” (45) had the highest frequency of occurrence (see Figure 5.22). A total of 129 words were related to the addition of more comfortable furniture, including frequent mentions of “sofas” (29), “couches” (31), and “recliners” (35).

Figure 5.22. Word Cloud for Responses to “Additional Amenities for Break Spaces”

5.4.4.2. Outdoor Break Areas

Only a small percentage of the respondents (22.9%) had any kind of outdoor break areas available for use at their healthcare facilities. Furthermore, of the existing outdoor break areas, a full 87.4% were open to the public. The respondents expressed

dissatisfaction with this state of affairs, indicating a strong preference for separate, staff-only outdoor areas to provide adequate privacy away from patients and families (see Figure 5.23). The existing outdoor spaces available for staff breaks were mostly patios and porches (40.6%), courtyards (30.4%), and gardens (19.1%). A very small number of facilities had roof terraces, balconies, and atriums. When expressing their preferences for future outdoor spaces, the respondents tended to emphasize more private and sheltered areas, such as courtyards, roof terraces, and screened/covered porches (see Figure 5.24). The results also indicated that preferences for shade, tables, flowers, and water features outstripped the prevalence of those features in existing facilities (see Figure 5.25).

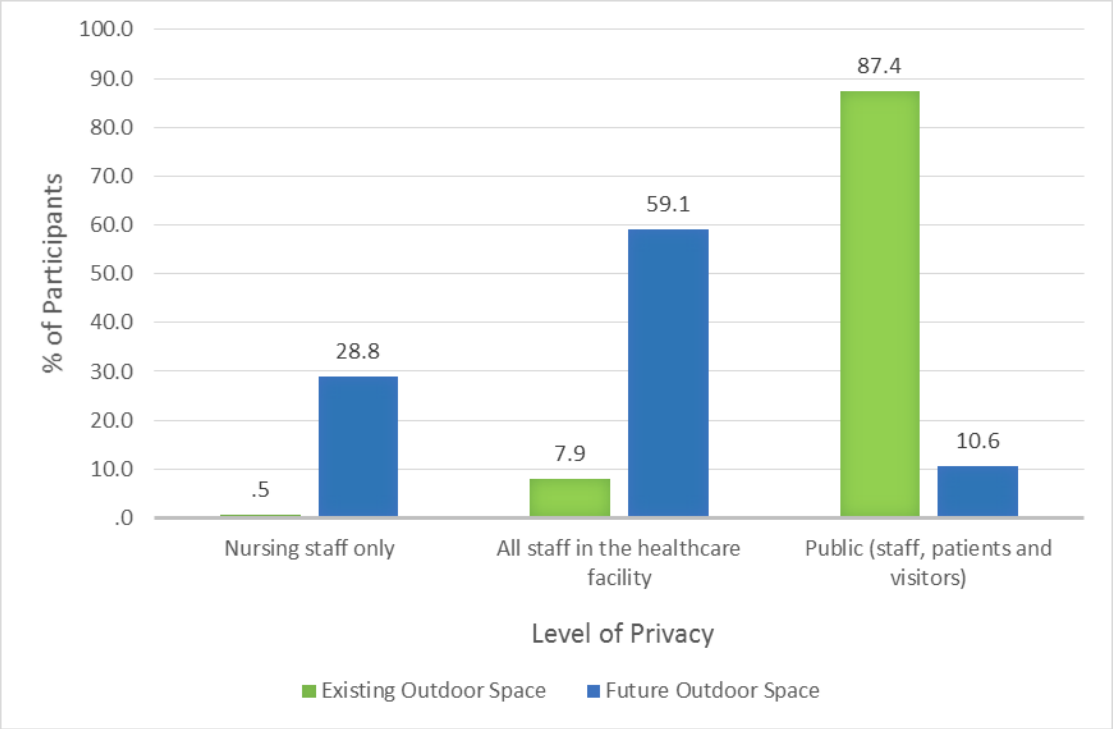


Figure 5.23. Privacy for Existing vs. Desired Outdoor Break Spaces

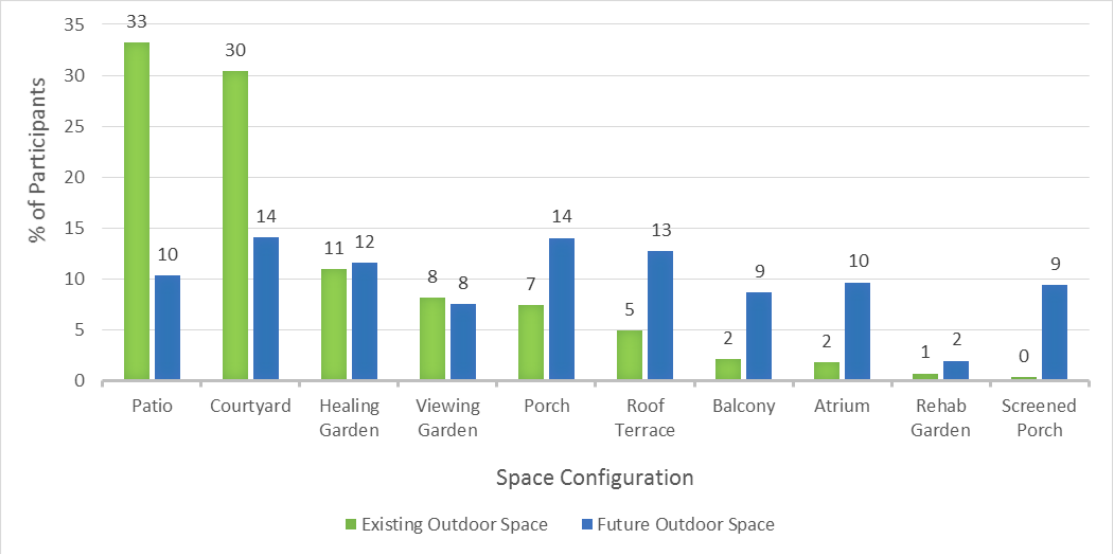


Figure 5.24. Space Configuration for Existing vs. Desired Outdoor Break Spaces

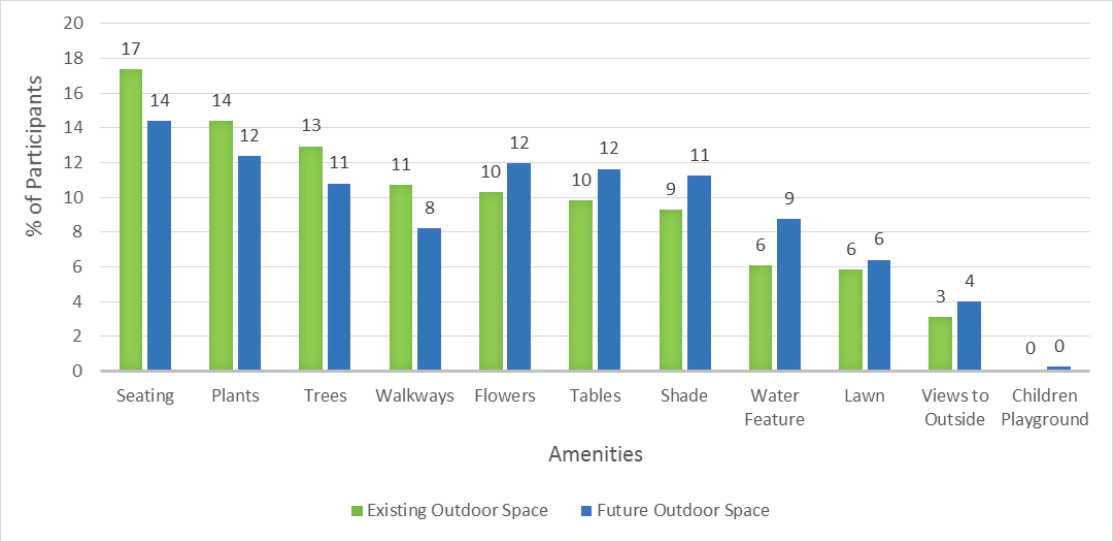


Figure 5.25. Amenities for Existing vs. Desired Outdoor Break Spaces

5.4.4.3. Satisfaction with Indoor and Outdoor Break Areas

When asked to report their overall level of satisfaction with their current break areas, the majority of the study participants expressed a distinct lack of enthusiasm. The majority were either unsatisfied or neutral in regard to both their indoor break areas (61.1%) and their outdoor break areas (53.3%). The indoor areas received consistently poorer ratings than did the outdoor spaces (see Figure 5.26).

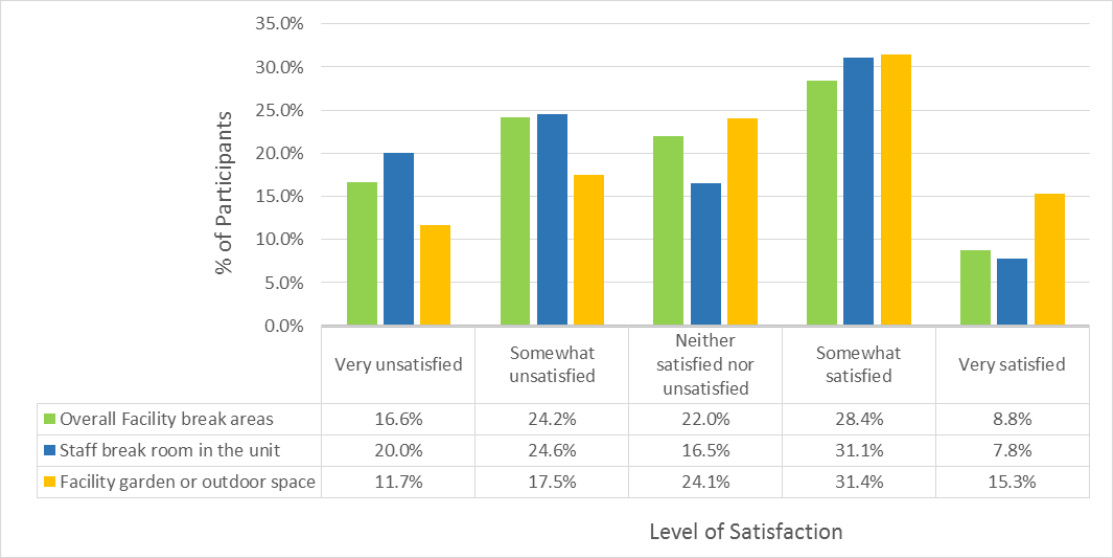


Figure 5.26. Satisfaction with Current Indoor and Outdoor Break Spaces

5.4.5. Future Staff Break Areas

In the fifth section of the survey, participants were asked to describe their ideal break spaces, and to report on how important they considered those spaces to be in terms of staff satisfaction and the quality of patient care. The descriptions of ideal break spaces were examined using word-frequency analysis, revealing that the central concerns of nursing staff included access to “quiet” (81), “comfortable” (71), “relaxing” (57), and “outdoor” (56) spaces (see Figure 5.27). Many of the respondents were quite eloquent in describing their perception of the ideal restorative environment:

Peaceful . . . a place to go to actually get a break away from work. Relaxing music, running water, bringing in the outdoors. Enough space to move about freely.

Quiet. Comfortable, with a sofa or cushioned chairs. A table to eat at. Private bathrooms (not stalls) offset from the main area, so when you're eating you are not facing people coming in and out of the bathroom. An outdoor area with indoor access only, and lighted landscaping would be nice for the night shift.

Something that was specifically designed for taking a break. Some sort of outdoor access whether it be a porch area or a unit break room with a window. There are days that go by and I do not see the outside light. Break areas always seem to be a last thought of the use of space on a nursing unit. This does not make nurses feel valued.

Figure 5.27. Word Cloud for Responses to “Description of an Ideal Break Space”

The survey respondents viewed the quality of break areas as an important factor for nurses’ personal health and job satisfaction, and for staff retention rates in healthcare facilities. The strongest perceived effects were on staff health and satisfaction, with retention lagging only slightly behind (see Figures 5.28 and 5.29). In addition, the majority of participants reported that high-quality break spaces were “fairly” or “very” important for increasing nurses’ job performance and the quality of patient care (see Figure 5.30).

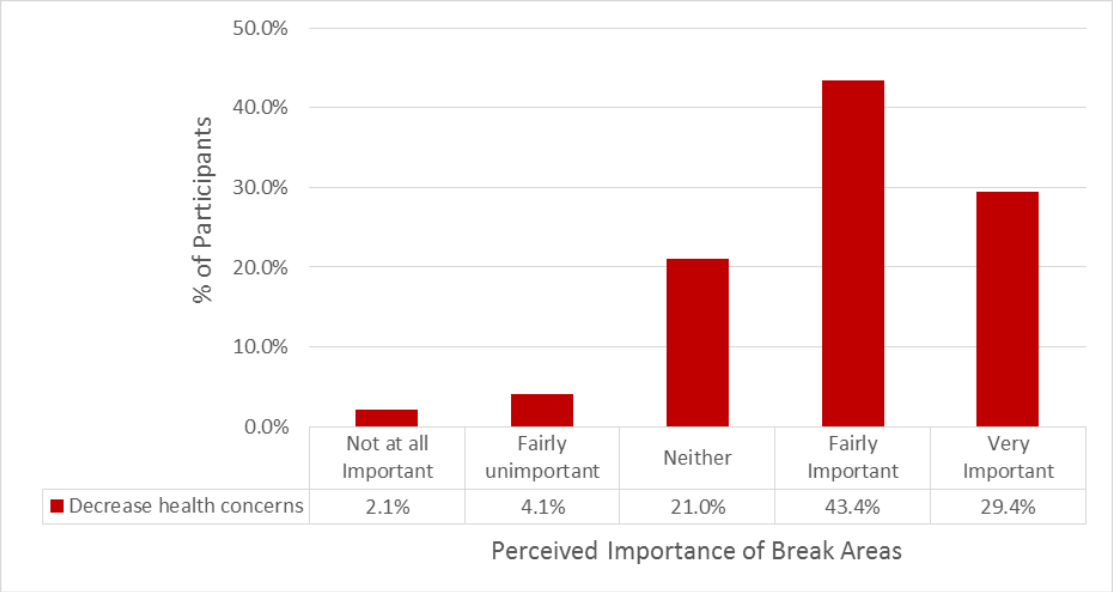


Figure 5.28. Perceived Importance of Break Areas for Job-related Health Concerns

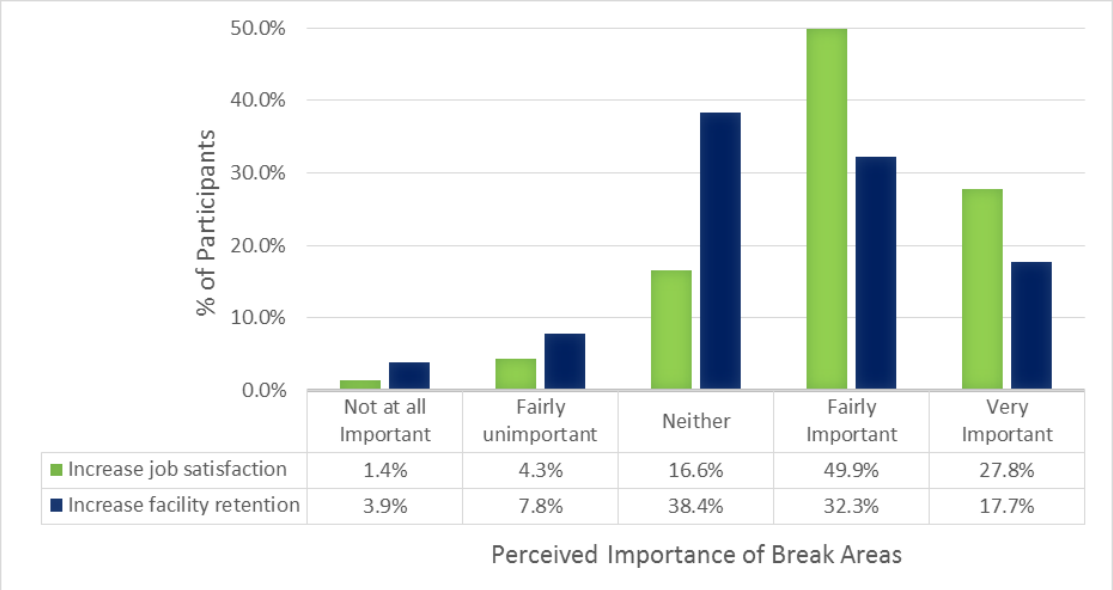


Figure 5.29. Perceived Importance of Break Areas for Staff Satisfaction and Retention

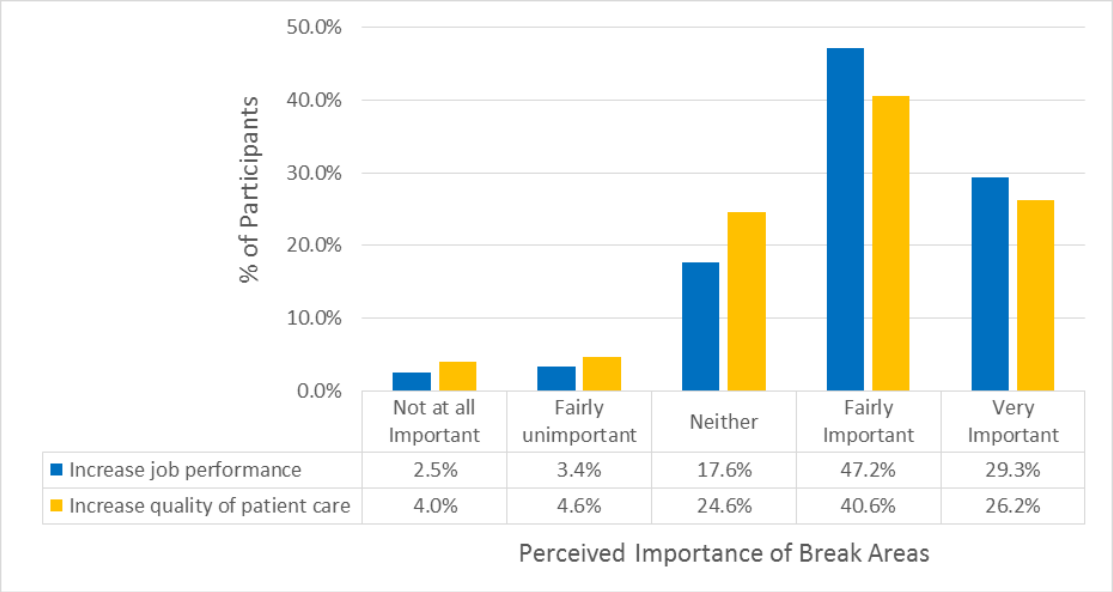


Figure 5.30. Perceived Importance of Break Areas for Job Performance and Quality of Patient Care

5.4.6. Dedicated Space for Quick Restorative Naps

In the sixth section of the survey, participants were asked to share their views about dedicated spaces for nurses to take quick restorative naps. Only 7.5% of the respondents already had such spaces available in their healthcare facilities. However, 48.1% believed it would be worthwhile to have a napping room in their nursing units. The vast majority (92.3%) said that if healthcare facilities did add a napping room, then it should be located separately from the conventional staff break areas. The majority (52.2%) indicated that they would not want to share a napping room with other co-workers, while a smaller percentage felt comfortable with a 2-person napping room or larger (see Figure 5.31).

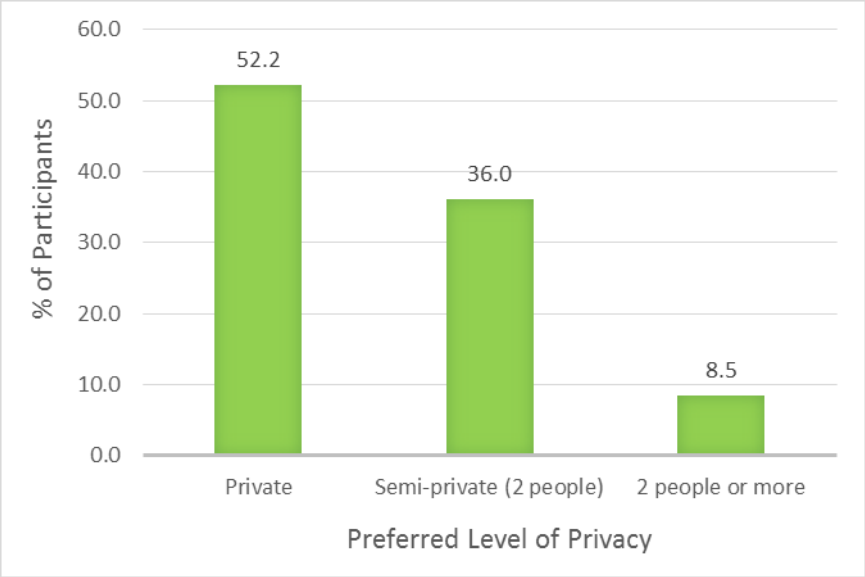


Figure 5.31. Privacy of Napping Rooms

As was the case with break areas, the respondents indicated a preference for napping rooms to be located close to patients (within approximately one minute of travel time from the nurses' primary work-stations). They suggested that restrooms, break areas, and locker rooms should be somewhat near, but not immediately adjacent to, the napping area. In addition to a comfortable bed, couch, or recliner for sleeping, the respondents indicated that desired amenities in a napping room would include clean linens, sound-insulating headphones, disposable eye masks, an emergency intercom/alarm, and storage space for belongings (see Figure 5.32).

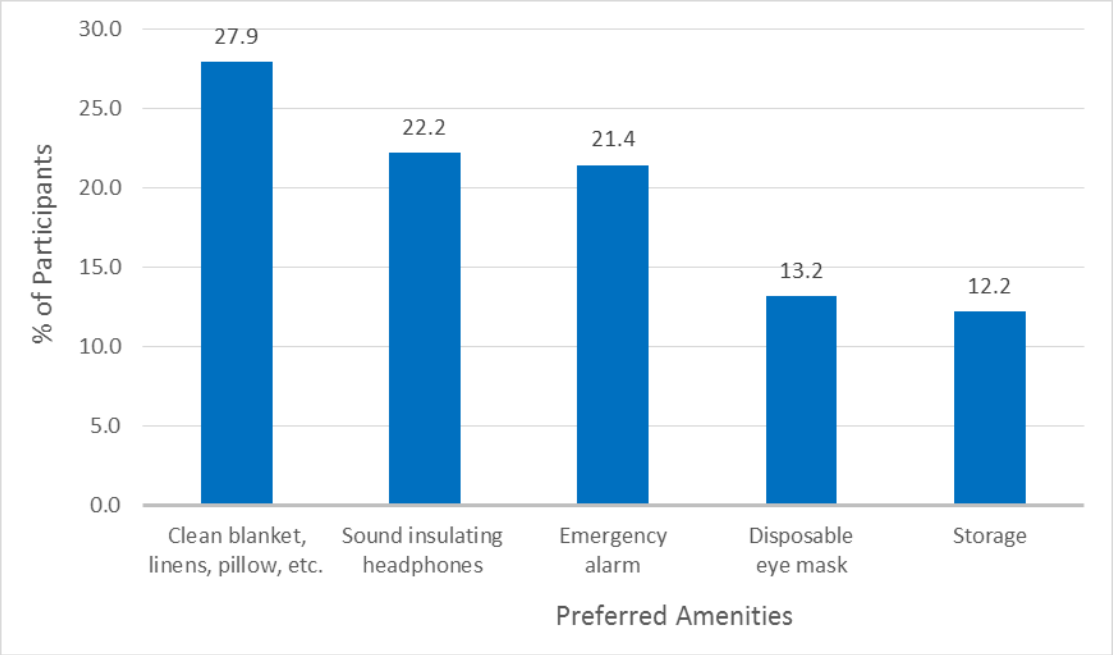


Figure 5.32. Napping Room Amenities

5.5. Analysis of Variance (ANOVA) for Visual Assessments

The participants were asked to evaluate two sets of visual images, in which the environmental features of an original photograph were manipulated using digital editing software (see Figures 5.33 and 5.34). These visual assessments were designed to evaluate the restorative qualities of (a) having physical access to the outdoors by way of a balcony vs. an outdoor view through a window, (b) having an outdoor view through a window vs. the presence of a nature painting, and (c) the presence of a nature paintings vs. the presence of an indoor plant. The participants were asked to assess each image on a scale of 0 (low-quality) to 10 (high-quality), stating how effective they thought the portrayed environment would be in relieving stress and

helping them to feel more refreshed. The order in which the images appeared was randomized for each respondent.

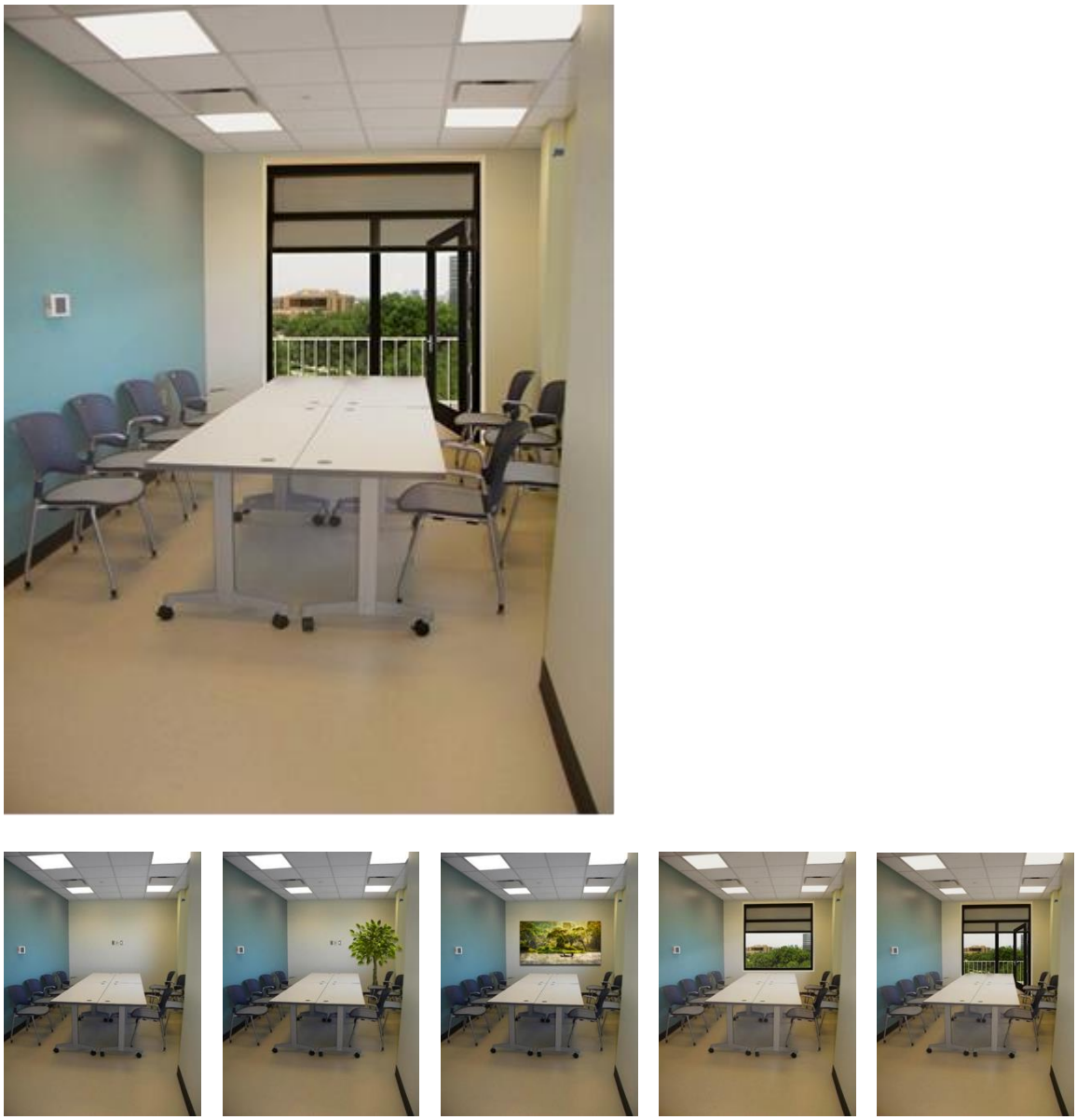


Figure 5.33. Visual Assessment Set 1, with Enlarged Example

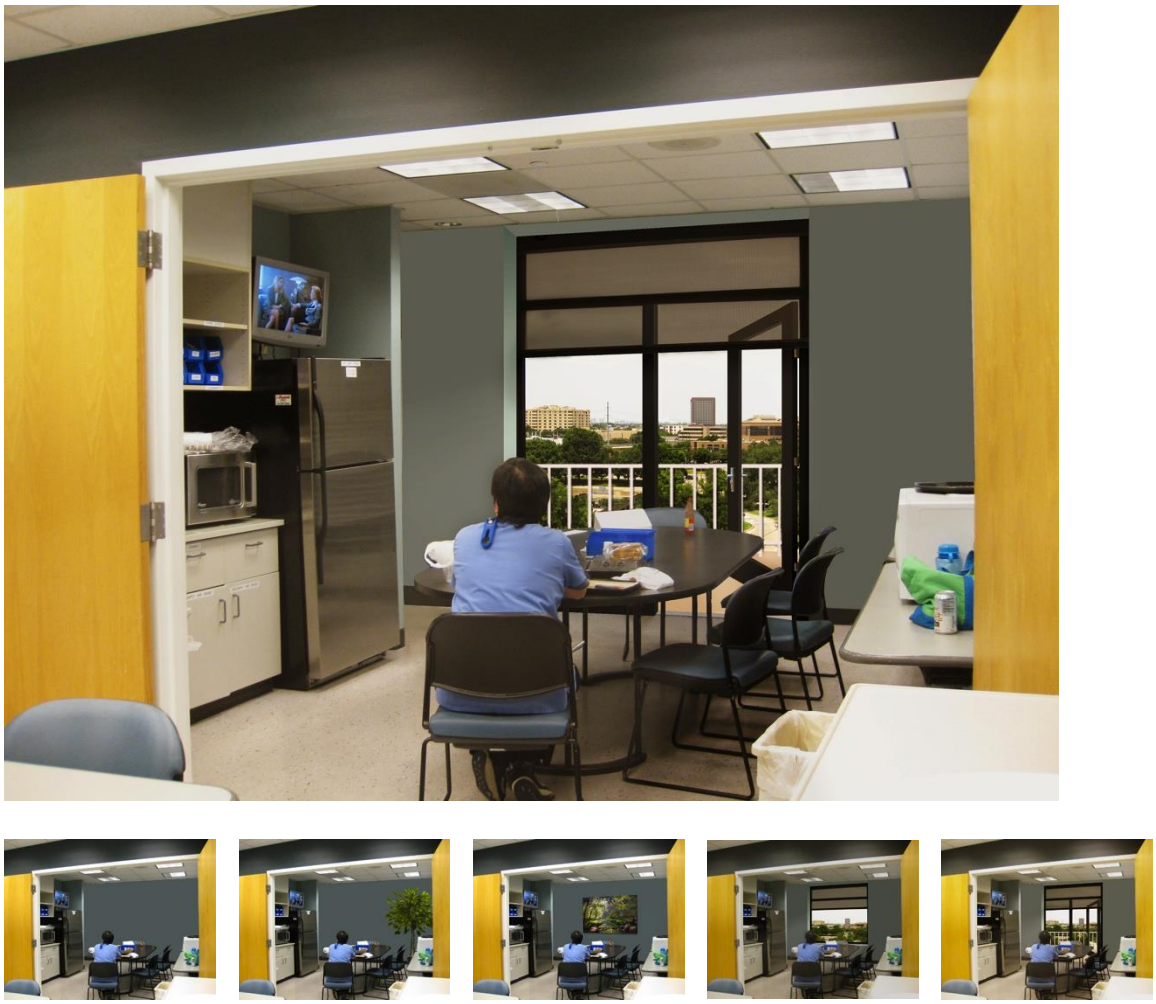


Figure 5.34. Visual Assessment Set 2, with Enlarged Example

Tables 5.2 and 5.3 indicate the number of responses, means, and standard deviations for the perceived restorative qualities of each visual design intervention. The average ratings are shown graphically in Figure 5.35. Rooms with physical access to the outdoors (balconies) were given the highest ratings for restorative qualities (the average rating for balconies was 7.81 in Set 1, and 8.12 in Set 2). The original break rooms, without any added amenities, were given the lowest ratings (1.45 in Set 1, and

2.64 in Set 2). The average room ratings increased systematically, from no added amenities, to indoor plants, to nature artwork, to window views, to balconies. In addition, ratings for Set 2 images were consistently higher than those for the corresponding Set 1 images.

Table 5.2. Descriptive Results for Visual Assessment Set 1

	Responses	Mean	SD	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
Original	775	1.45	1.65	0.06	1.34	1.57	0	10
Plant	766	2.93	1.91	0.07	2.80	3.07	0	10
Painting	782	4.19	2.09	0.07	4.04	4.34	0	10
Window	779	5.90	2.20	0.08	5.74	6.05	0	10
Balcony	780	7.81	2.28	0.08	7.65	7.97	0	10
Total	3882	4.47	3.02	0.05	4.37	4.56	0	10

Table 5.3. Descriptive Results for Visual Assessment Set 2

	Responses	Mean	SD	Std. Error	95% Confidence Interval for Mean		Min	Max
					Lower Bound	Upper Bound		
Original	740	2.64	1.97	0.07	2.50	2.78	0.00	10.0
Plant	733	3.65	1.94	0.07	3.51	3.80	0.00	10.0
Painting	733	4.58	2.02	0.07	4.44	4.73	0.00	10.0
Window	745	6.49	2.01	0.07	6.35	6.64	0.00	10.0
Balcony	742	8.12	2.10	0.08	7.97	8.27	0.00	10.0
Total	3693	5.10	2.82	0.05	5.01	5.19	0.00	10.0

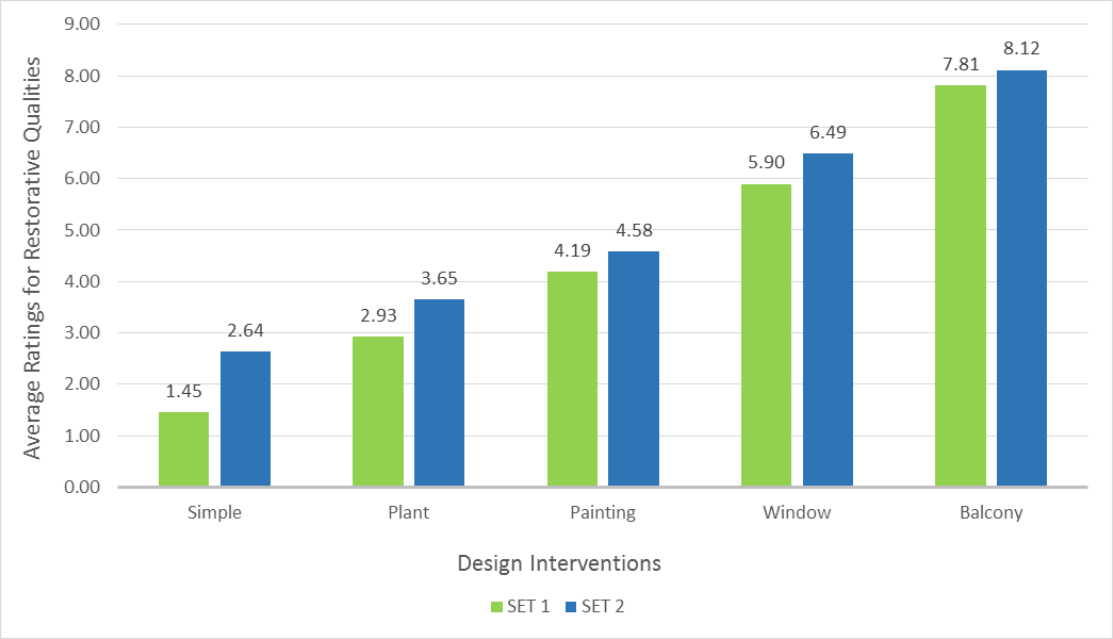


Figure 5.35. Comparison of Visual Assessment Sets 1 and 2

A one-way analysis of variance (ANOVA) was conducted for each image set to compare participants' ratings for various design interventions. The assumptions of approximate normal distributions and equal variances were tested and satisfied using the Shapiro-Wilk test of normality and Levene's test for homogeneity of variances. Tukey's Honestly Significant Difference (HSD) test was applied to determine where the differences occurred (i.e., which design interventions were perceived to have significantly different restorative qualities). The results from the ANOVA tests indicated that in both sets, each design intervention had a significant effect on the perceived restorative qualities of the break room (Set 1: [$F(4, 3877) = 1158.39$, $p = 0.000$], Set 2: [$F(4, 3688) = 892.54$, $p = 0.000$]). In addition, post-hoc comparisons using Tukey's HSD test indicated that the

mean scores among all of the design interventions were significantly different in both image sets.

Tables 5.4 and 5.5 show the mean differences between each pair of design interventions, as well as the levels of significance and 95% confidence intervals. The smallest difference in perceived restorative qualities in both sets was between the presence of an indoor plant and the presence of a nature painting (Set 1 = 1.26, p = 0.000; Set 2 = 0.96, p = 0.000). The largest difference was between the original break areas and the presence of a balcony (Set 1 = 6.36, p = 0.000; Set 2 = 5.48, p = 0.000).

Table 5.4. Tukey's HSD Test Results for Set 1

(I) Set 1	(J) Set 1	Mean Difference (I–J) (p < .01 for all)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Plant	Original	1.48	0.104	.000	1.19	1.76
	Painting	-1.26	0.104	.000	-1.54	-0.98
	Window	-2.97	0.104	.000	-3.25	-2.68
	Balcony	-4.88	0.104	.000	-5.17	-4.60
Painting	Original	2.74	0.103	.000	2.45	3.02
	Plant	1.26	0.104	.000	0.98	1.54
	Window	-1.71	0.103	.000	-1.99	-1.43
	Balcony	-3.62	0.103	.000	-3.91	-3.34
Window	Original	4.44	0.103	.000	4.16	4.73
	Plant	2.97	0.104	.000	2.68	3.25
	Painting	1.71	0.103	.000	1.43	1.99
	Balcony	-1.92	0.103	.000	-2.20	-1.63
Balcony	Original	6.36	0.103	.000	6.08	6.64
	Plant	4.88	0.104	.000	4.60	5.17
	Painting	3.62	0.103	.000	3.34	3.91
	Window	1.92	0.103	.000	1.63	2.20

Table 5.5. Tukey's HSD Test Results for Set 2

(I) Set 2	(J) Set 2	Mean Difference (I–J) (p < .01 for all)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Plant	Original	1.02	0.105	.000	0.73	1.30
	Painting	-0.93	0.105	.000	-1.21	-0.64
	Window	-2.84	0.105	.000	-3.12	-2.55
	Balcony	-4.46	0.105	.000	-4.75	-4.18
Painting	Original	1.94	0.105	.000	1.66	2.23
	Plant	0.93	0.105	.000	0.64	1.21
	Window	-1.91	0.105	.000	-2.19	-1.62
	Balcony	-3.53	0.105	.000	-3.82	-3.25
Window	Original	3.85	0.104	.000	3.57	4.14
	Plant	2.84	0.105	.000	2.55	3.12
	Painting	1.91	0.105	.000	1.62	2.19
	Balcony	-1.63	0.104	.000	-1.91	-1.34
Balcony	Original	5.48	0.104	.000	5.19	5.76
	Plant	4.46	0.105	.000	4.18	4.75
	Painting	3.53	0.105	.000	3.25	3.82
	Window	1.63	0.104	.000	1.34	1.91

Overall, these results indicate that each subsequent design intervention significantly increased the perceived restorative qualities of the break rooms in the visual images, in a stepwise pattern from the original images, to the images with an indoor plant, to the images with nature artwork, to the images with a window, to the images with a balcony. This evidence supports the argument that higher levels of access to nature, natural light, and outdoor environments have a significant effect on the restorative qualities of staff break spaces.

5.6. Hierarchical Multiple Regression Analyses

Multiple regression analyses were conducted on the survey data in order to evaluate potential predictors for main criterion variables. The criterion variables included perceived stress in the work environment, break minutes per shift, satisfaction with break areas, and the importance attributed to break areas for staff retention and quality of care. First, bivariate correlation analyses were conducted to test associations between each criterion variable and potentially relevant predictor variables. Identified correlations (below the .05 alpha level) were considered for further exploration. Then, multiple regression analyses were implemented to determine if the criterion variables could be predicted from these identified predictor variables. Multiple regression analysis is a powerful statistical approach since it controls for potential fallacious effects when examining the impact of a predictor variable on a criterion variable (Cohen & Cohen, 1983).

5.6.1. Perceived Stress in the Work Environment

A four-stage hierarchical multiple regression was conducted with perceived stress in the work environment as the criterion variable. The four predictor increments included demographic factors, work-related factors, rest breaks, and satisfaction with the break areas. The demographic variables of age, gender, ethnicity, and level of education were entered together as the first increment of this hierarchical model. Work-related variables such as work setting, employment position, extent of direct patient contact,

and shift duration were entered together in the second step. Total break minutes per shift was entered as the third increment, and nurses' satisfaction with their break areas was entered as the fourth increment (see Table 5.6).

In the first stage of the analysis, demographic factors were shown to contribute significantly to the regression model ($F[5, 652] = 3.06$, $p = .010$) and to account for 2.3% of the variation in perceived stress in the work environment. Among demographic variables, gender (beta = .099, $p = .011$) and level of education (beta = -.111, $p = .004$) were significant individual predictors for perceived stress. The second stage of the analysis indicated that work-related factors explained an additional 7.5% of the variation in perceived stress level, and that this R^2 change was significant ($F[4, 648] = 13.49$, $p = .000$). Specifically, healthcare settings (beta = .067, $p = .082$), direct patient contact (beta = .106, $p = .031$), and shift duration (beta = .208, $p = .000$) were significant individual predictors of perceived stress. In the final two stages of the analysis the number of break minutes per shift ($F[1, 647] = 20.85$, $p = .000$) and nurses' satisfaction with their break areas ($F[1, 646] = 20.77$, $p = .000$) were also shown to be significant and to explain a portion of the variance in perceived stress (2.8% and 2.7%, respectively). Together the variables considered in this analysis significantly accounted for 15.3% of the variance in perceived stress in the work environment.

Table 5.6. Hierarchical Multiple Regression Analyses of Perceived Stress in the Work Environment

Predictive Variables	**Standardized Coefficients Beta**	**P-Value**
Increment 1		
Gender	.099**	.011
Age	.014	.718
Ethnicity	-.035	.381
Race	-.021	.600
Level of education	-.111***	.004
R^2	**.023*** **	**.010**
Increment 2		
Healthcare Setting - Inpatient vs. Other	.067*	.082
Position - Staff Nurse vs. Other	.027	.593
Direct Patient Contact	.106**	.031
Shift Duration	.208***	.000
R^2 Change	**.075*** **	**.000**
Increment 3		
Break Minutes per Shift	-.173***	.000
R^2 Change	**.028*** **	**.000**
Increment 4		
Satisfaction with Break Rooms/Areas in the Unit	-.168***	.000
R^2 Change	**.027*** **	**.000**
Multiple R	**.392*** **	**.000**
Cumulative R^2	**.153*** **	**.000**

Number of participants = 658
* p < .10, ** p < .05, ***p < .01

5.6.2. Break Minutes per Shift

A three-stage hierarchical multiple regression was conducted with break minutes per shift as the criterion variable. The demographic variables of age, gender, ethnicity, and level of education were entered together as potential predictors in the first increment of this hierarchical model. Perceived stress in the work environment and types of working shifts (day vs. night shifts) were entered together as the second step. Variables

related to the configuration of indoor and outdoor break areas, the amenities available in these areas, and staff satisfaction with these areas were entered together as the third increment (see Table 5.7).

In the first stage of the analysis, demographic factors were shown to contribute significantly to the regression model ($F[5, 266] = 2.93$, $p = .013$) and to account for 5.2% of the variation in total break minutes per shift. In the second stage, work-related factors were shown to explain an additional 6.9% of the variation in break minutes per shift, and this R^2 change was shown to be significant ($F[2, 264] = 10.39$, $p = .000$). In the third stage, the analysis indicated that environmental qualities of break spaces also contributed significantly to the regression model ($F[15, 249] = 2.19$, $p = .007$) and accounted for 10.3% of the variance in total break minutes per shift. More specifically, close proximity of non-meal break spaces (beta = .161, $p = .007$), having an outdoor space adjacent to break rooms/areas (beta = .237, $p = .031$), and staff satisfaction with their indoor break areas (beta = .232, $p = .021$) were among the significant predictor variables in this increment. Together the variables considered in this analysis significantly accounted for 22.4% of the variance in total break minutes per shift.

Table 5.7. Hierarchical Multiple Regression Analyses of Break Minutes per Shift

Predictive Variables	**Standardized Coefficients Beta**	**P-Value**
Increment 1		
Gender	-.091	.137
Age	.001	.988
Ethnicity	-.096	.123
Race	-.144**	.021
Level of education	.024	.691
R^2	**.052****	**.013**
Increment 2		
Perceived Stress in the Work Environment	-.244***	.000
Type of Shift – Days vs. Nights	.112*	.064
R^2 Change	**.069*****	**.000**
Increment 3		
Choice 1 Proximity for Non-Meal Breaks	.161***	.007
Music in Break Room/Area	.101*	.084
Artwork in Break Room/Area	.054	.365
Views to Trees in Break Room/Area	.023	.694
Adjacent Outdoor Space to Break Room/Area	.237**	.031
Patio Configuration	.091	.302
Roof Terrace Configuration	.165**	.012
Courtyard Configuration	.145*	.066
Tables in Outdoor Space	.046	.632
Shade in Outdoor Space	.051	.577
Trees in Outdoor Space	.058	.540
Views Beyond Boundaries in Outdoor Space	-.039	.551
Satisfaction with Overall Break Areas	.171*	.109
Satisfaction with Break Rooms/Areas in the Unit	.232**	.021
Satisfaction with Facility Garden or Outdoor Space	.036	.618
R^2 Change	**.103*****	**.007**
Multiple R	**.473*****	**.000**
Cumulative R^2	**.224*****	**.000**

Number of participants = 272

* p < .10, ** p < .05, ***p < .01

5.6.3. Satisfaction with Indoor Break Areas

A three-stage hierarchical multiple regression was conducted for the criterion variable of staff satisfaction with indoor break areas. Conveniences/amenities in the break area, including equipment, appliances, and furniture, were entered together as potential predictors in the first step of this hierarchical model. Environmental features such as indoor plants, artworks, windows, and access to outdoor spaces were entered together in the second step. Views to specific outdoor elements such as buildings, cars, trees, and lawns were entered as the third increment (see Table 5.8).

In the first stage of the analysis, conveniences/amenities were shown to contribute significantly to the regression model ($F[15, 750] = 9.19$, $p = .000$) and to account for 15.5% of the variation in break-room satisfaction levels. In stage two, the environmental features of the break room were shown to explain an additional 7.0% of the variation in satisfaction, and this R^2 change was shown to be significant ($F[5, 745] = 13.47$, $p = .000$). Specifically, artworks (beta = .159, $p = .000$), windows (beta = .236, $p = .001$), and access to outdoor spaces (beta = .104, $p = .002$) were significant predictor variables in this increment, while the presence of indoor plants was not. In the third stage, views to outdoor environments were shown to also contribute significantly to the regression model ($F[7, 738] = 4.84$, $p = .000$), accounting for 3.4% of the variance in nurses' satisfaction with their break spaces. Interestingly, a view of trees was found to be the most significant predictor variable in this increment (beta = .178, $p = .001$), while

views of lawns, flowers, and park-like areas were not shown to be significant predictors. Together the variables considered in this analysis significantly accounted for 25.9% of the variance in nurses' satisfaction with their indoor break areas.

Table 5.8. Hierarchical Multiple Regression Analyses of Nurses' Satisfaction with Indoor Break Areas

Predictive Variables	**Standardized Coefficients Beta**	**P-Value**
Increment 1		
Refrigerator	.084**	.022
Coffeemaker	.157***	.000
Icemaker	.024	.532
Water cooler	.133***	.001
Microwave	.011	.768
Television	.080**	.024
Computer	.034	.357
Printer	.033	.351
Phone	.026	.483
Bulletin board	-.006	.868
Restroom	.067*	.078
Lockers	.014	.718
Sofa	.149***	.000
Chairs	.079**	.027
Daybeds	.078**	.022
R^2	**.155****	**.000**
Increment 2		
Plants and flowers	.043	.213
Artworks	.159***	.000
Windows	.236***	.001
Access to Outdoor Spaces from Break Area	.104***	.002
R^2 Change	**.070*****	**.000**
Increment 3: Outdoor Views from Break Area		
Buildings and Signs	.122*	.053
Cars and Traffic	-.083*	.068
Sky	.116**	.024

Table 5.8. Continued

Predictive Variables	Standardized Coefficients Beta	P-Value
Increment 3: Outdoor Views from Break Area		
Trees	.178***	.001
Lawn	.017	.736
Flowers	.032	.436
Park-like Area	.011	.751
R^2 Change	**.034*** **	**.000**
Multiple R	**.509*** **	**.000**
Cumulative R^2	**.259*** **	**.000**

Number of participants = 766
* p < .10, ** p < .05, ***p < .01

5.6.4. Satisfaction with Outdoor Break Areas

A two-stage hierarchical multiple regression was conducted for the criterion variable of staff satisfaction with outdoor break areas. Space configurations such as patios, courtyards, and healing gardens were entered together as potential predictors in the first step of this hierarchical model. Environmental amenities such as greenery, walkways, seating, shade, and water features were entered together in the second step (see Table 5.9).

In the first stage of the analysis, space configurations were shown to contribute significantly to the regression model (F[5, 583] = 8.28, p = .000) and to account for 6.6% of the variation in nurses' satisfaction with outdoor break areas. The presence of courtyards (beta = .099, p = .034), viewing gardens (beta = .102, p = .016), and healing gardens (beta = .146, p = .001) were some of the significant predictor variables in this

increment. In the second stage the analysis indicated that environmental amenities explained an additional 5.0% of the variation in satisfaction, and that this R^2 change was significant (F[10, 573] = 3.22, p = .000). Walkways (beta = .139, p = .036) and water features (beta = .111, p = .032) were the two most significant individual predictor variables. Together the variables considered in this analysis significantly accounted for 11.6% of the variance in nurses' satisfaction with outdoor break areas.

Table 5.9. Hierarchical Multiple Regression Analyses of Nurses' Satisfaction with Outdoor Break Areas

Predictive Variables	**Standardized Coefficients Beta**	**P-Value**
Increment 1: Outdoor Space Configuration		
Patio	.001	.988
Roof Terrace	.079*	.055
Courtyard	.099**	.034
Viewing Garden	.102**	.016
Healing Garden	.146***	.001
R^2	**.066****	**.000**
Increment 2: Amenities in the Garden or Outdoor Space		
Walkways	.139**	.036
Chairs and Benches	-.039	.642
Tables	.044	.443
Shade	.021	.705
Trees	-.001	.988
Plants	.059	.465
Lawn	-.011	.824
Flowers	.071	.303
Water Feature	.111**	.032
Views Beyond Facility Boundaries	.032	.504
R^2 Change	**.050*****	**.000**
Multiple R	**.340*****	**.000**
Cumulative R^2	**.116*****	**.000**

Number of participants = 589
* p < .10, ** p < .05, ***p < .01

5.6.5. Perceived Importance of Break Areas for Overall Job Satisfaction

A four-stage hierarchical multiple regression was conducted with perceived importance of break areas for overall job satisfaction as the criterion variable. The demographic variables of age, gender, ethnicity, and level of education were entered together as potential predictors in the first increment. Stress level in the work environment and extent of direct patient contact were entered together in the second step. Total break minutes per shift comprised the third step. Various aspects of break-space configuration and amenities were entered as the fourth increment (see Table 5.10).

In the first stage of the analysis, demographic factors were determined not to be significant predictors of the criterion variable in this model. In stage two, the included work-related factors were shown to explain 2.0% of the variation in perceived importance, and this R^2 change was shown to be significant ($F[2, 547] = 5.62$, $p = .004$). In the third step, the variable of total break minutes per shift ($F[1, 647] = 20.85$, $p = .000$) was also shown to contribute significantly to the regression model, accounting for 1.9% of the variance in perceived importance of break areas for overall job satisfaction. In the fourth increment it was determined that configuration and amenity factors explained an additional 3.2% of the variation in perceived importance, and that this R^2 change was significant ($F[3, 543] = 3.17$, $p = .005$). In this fourth section the contributions of individual predictor variables could not be shown as significant.

Together the variables considered in this analysis significantly accounted for 8.6% of the variance in the perceived importance of break areas for overall job satisfaction.

Table 5.10. Hierarchical Multiple Regression Analyses of Perceived Importance of Break Areas for Overall Job Satisfaction

Predictive Variables	**Standardized Coefficients Beta**	**P-Value**
Increment 1		
Gender	.041	.331
Age	.001	.988
Ethnicity	-.041	.357
Race	-.099**	.025
Level of education	-.004	.920
R^2	**.015**	**.152**
Increment 2		
Perceived Stress in the Healthcare Workplace	.098**	.026
Direct Patient Contact	.121***	.009
R^2 Change	**.020*** **	**.004**
Increment 3		
Total Rest Breaks (min. per shift)	.146***	.001
R^2 Change	**.019*** **	**.001**
Increment 4		
Patio Configuration	.000	.999
Trees in Outdoor Space	.062	.286
Flowers in Outdoor Space	.076	.189
R^2 Change	**.032*** **	**.005**
Multiple R	**.293*** **	**.005**
Cumulative R^2	**.086*** **	**.005**

Number of participants = 555
* p < .10, ** p < .05, ***p < .01

5.6.6. Perceived Importance of Break Areas for Interest in Continuing to Work at a Particular Facility

A two-stage hierarchical multiple regression was conducted with perceived importance of break areas for interest in continuing to work at a particular facility as the criterion variable. The demographic variables of age, gender, ethnicity, and level of education were entered together as potential predictors in the first increment. Stress levels in the work environment, extent of direct patient contact, and total break minutes per shift were entered together in the second step (see Table 5.11).

In the first stage of the analysis, demographic factors were shown to contribute significantly to the regression model ($F[5, 702] = 2.93$, $p = .000$) and to account for 3.5% of the variation in perceived importance. In the second stage, the included work-related factors were shown to explain an additional 2.3% of variation in perceived importance, and this R^2 change was shown to be significant ($F[3, 699] = 5.57$, $p = .001$). Stress level (beta = .120, $p = .002$) and total break minutes per shift (beta = .089, $p = .021$) were significant individual predictor variables. Together the variables considered in this analysis significantly accounted for 5.7% of the variance in the perceived importance of break areas for nurses' interest in continuing to work at a particular facility.

Table 5.11. Hierarchical Multiple Regression Analyses of Perceived Importance of Break Areas for Interest in Continuing to Work at a Particular Facility

Predictive Variables	**Standardized Coefficients Beta**	**P-Value**
Increment 1		
Gender	-.012	.751
Age	.057	.128
Ethnicity	-.082**	.031
Race	-.145***	.000
Level of education	.009	.807
R^2	**.035*** **	**.000**
Increment 2		
Perceived Stress in the Healthcare Workplace	.120***	.002
Direct Patient Contact	.060	.140
Total Rest Breaks (min. per shift)	.089**	.021
R^2 Change	**.023*** **	**.001**
Multiple R	**.239*** **	**.001**
Cumulative R^2	**.057*** **	**.001**

Number of participants = 708
* p < .10, ** p < .05, ***p < .01

5.6.7. Perceived Importance of Break Areas for Nurses' Productivity and Quality of Patient Care

In this analysis, two hierarchical multiple regressions were conducted in parallel—one for the criterion variable of perceived importance of break areas for nurses' productivity, and another for the criterion variable of perceived importance of break areas for quality of patient care. The regressions were performed in two stages. In the first stage, the demographic variables of age, gender, ethnicity, and level of education were entered together as potential predictors. In the second stage, stress levels in the

work environment, frequency of outdoor breaks per shift, and doing exercise during short non-meal breaks were entered together (see Table 5.12).

In the first stage of the analysis, demographic factors were shown to contribute moderately to both regression models (Productivity: $F[5, 648] = 1.89$, $p = .093$; Patient Care: $F[5, 649] = 2.23$, $p = .050$) and to account for a portion of the variation in perceived importance (Productivity: 1.4%; Patient Care: 1.7%). In the second stage, the included work-related factors were shown to explain an additional 3.5% of variation in perceived importance for productivity, and 2.8% of the variation in perceived importance for patient care. In both cases these R^2 changes were shown to be significant (Productivity: $F[3, 645] = 5.84$, $p = .000$; Patient care: $F[3, 646] = 4.66$, $p = .001$). In the productivity model, stress level (beta = .107, $p = .007$) and frequency of outdoor breaks per shift (beta = .114, $p = .004$) were significant predictor variables. In the patient-care model, frequency of outdoor breaks per shift (beta = .109, $p = .006$) and doing exercise during short non-meal breaks (beta = .078, $p = .045$) were significant predictor variables. Together the variables considered in this analysis significantly accounted for 4.8% of the explained variance in the perceived importance of break areas for nurses' productivity, and for 4.5% of the explained variance in the perceived importance of break areas for the quality of patient care.

Table 5.12. Hierarchical Multiple Regression Analyses of Perceived Importance of Break Areas for Nurses' Productivity and Quality of Patient Care

Predictive Variables	**Productivity**		**Patient Care**	
	Stand. Coeffic. Beta	**P-Value**	**Stand. Coeffic. Beta**	**P-Value**
Increment 1				
Gender	.027	.498	.030	.445
Age	.013	.737	-.001	.976
Ethnicity	-.083**	.040	-.066*	.100
Race	-.068*	.094	-.092**	.023
Level of education	.012	.762	.034	.387
R^2	**.014***	**.093**	**.017****	**.050**
Increment 2				
Perceived Stress in the Healthcare Workplace	.107***	.007	.074*	.061
Outdoor Breaks (freq. per shift)	.114***	.004	.109***	.006
Exercise During Non-Meal Breaks	.068*	.078	.078**	.045
R^2 Change	**.035*****	**.000**	**.028*****	**.001**
Multiple R	**.221*****	**.000**	**.211*****	**.001**
Cumulative R^2	**.049*****	**.000**	**.045*****	**.001**

Productivity model: Number of participants = 654
Patient care model: Number of participants = 655
* p < .10, ** p < .05, ***p < .01

5.6.8. Perceived Importance of Break Areas for Reducing Job-Related Health Concerns

A three-stage hierarchical multiple regression was conducted with perceived importance of breaks for reducing job-related health concerns as the criterion variable. The demographic variables of age, gender, ethnicity, and level of education were entered together as potential predictors in the first increment. Perceived stress levels in the work environment and the extent of direct patient contact were entered together in the second step. Break space configuration and overall staff satisfaction

with facility break spaces were entered together as the third increment (see Table 5.13).

In the first stage of the analysis, demographic factors were determined not to be significant predictors of the criterion variable in this model. In stage two, the included work-related factors were shown to explain 2.2% of variation in perceived importance, and this R^2 change was shown to be significant ($F[2, 704] = 8.08$, $p = .000$). Perceived stress level (beta = .137, p = .000) was the most significant predictor variable. In the third stage, the included environmental factors were also shown to contribute significantly to the regression model ($F (2, 702) = 6.54$, $p = .002$), and to account for 1.8% of the variance in perceived importance. Roof terrace configuration for outdoor break space (beta = .102, p = .007) and staff satisfaction with overall break areas (beta = -.098, p = .010) were significant predictor variables. Together the variables considered in this analysis significantly accounted for 5.0% of the variance in the perceived importance of break areas for reducing job-related health concerns.

Table 5.13. Hierarchical Multiple Regression Analyses of Perceived Importance of Break Areas for Reducing Job-Related Health Concerns

Predictive Variables	**Standardized Coefficients Beta**	**P-Value**
Increment 1		
Gender	.070*	.063
Age	.002	.950
Ethnicity	-.053	.168
Race	-.047	.223
Level of education	-.008	.832
R^2	**.010**	**.229**
Increment 2		
Perceived Stress in the Healthcare Workplace	.137***	.000
Direct Patient Contact	.047	.246
R^2 Change	**.022*** **	**.000**
Increment 3		
Roof Terrace Configuration	.102***	.007
Satisfaction with Overall Break Areas	-.098***	.010
R^2 Change	**.018*** **	**.002**
Multiple R	**.223*** **	**.002**
Cumulative R^2	**.050*** **	**.002**

Number of participants = 708
* p < .10, ** p < .05, ***p < .01

5.7. Summary

In this chapter the results of the written survey and visual assessment were reported and analyzed. Notable findings include the result that the length of nurses' breaks, and the degree of satisfaction they had with their break areas, were both statistically significant predictors for the level of stress that nurses perceived within their work environments. Additionally, having access to an outdoor area adjacent to indoor break rooms was found to be a statistically significant predictor for the amount of time that nurses spent on breaks. The visual assessments and survey results demonstrated that

nurses are more satisfied with their break areas, and have less perceived stress, when break rooms include artworks, windows, or access to outdoor areas. In the next chapter a more detailed discussion of the findings from the interviews, written surveys, and visual assessments is provided, comparing these results with each other and with the findings from previous studies.

CHAPTER VI

DISCUSSION

In this chapter the findings from all three phases of the study—the interviews, written surveys, and visual assessments—are discussed and compared. Each of the research questions that the study was designed to answer is considered in turn. As a reminder, the study's specific research questions emerged from a broad concern about the high incidence of fatigue, burnout, and staff turnover among nurses in the U.S., and a desire to improve the quality of nurses' restorative breaks. A mixed-method study design was implemented to accomplish two primary objectives:

> Objective 1: Understand the main challenges that prevent nursing staff from taking restorative breaks in healthcare facilities.

> Objective 2: Assess the usage patterns, verbal/visual preferences, and perceived restorative qualities of specific design features in staff break areas.

The empirical data collected during this study provides new knowledge that can help nurses, facility designers, and healthcare managers in their efforts to improve the quality of restorative breaks. The results support the understanding that well-designed

and well-equipped break areas are important for reducing fatigue among nursing staff, and they indicate specific policy and design interventions that can help to make nurses' break times more effective.

6.1. Study Population

As several of the interview participants pointed out during this study, nursing is a unique profession with many distinct sub-cultures. It is therefore important to understand the demographic features of the study population. Most importantly, this research was focused on nurses whose primary healthcare role was inpatient care. Previous researchers have shown that inpatient care environments require particularly intense, ongoing focus on the part of nurses, and significant involvement with patients. When combined with extended working hours and inadequate rest, these conditions can lead rapidly to fatigue and burnout, more so than in other nursing environments (Rogers & Hughes, 2008). The need for better rest is particularly acute among inpatient nurses, and therefore this population was prioritized for consideration in the study. The vast majority of the survey and visual assessment participants (84.7%) were working in inpatient settings at the time of the study; many of them (63.6%) were bedside nurses. One average, the participants were engaged in direct patient contact during 59.9% of their working hours.

The demographics of the study population reflected the overall gender disparity of the nursing profession (Keogh & O'Lynn, 2007; Villeneuve, 1994)—all of the interviewees were female nurses, and the overwhelming majority of the respondents to the online survey and visual assessment were female (94.3%). The study population also reflected the aging composition of the nursing profession in the U.S. (Health Resources and Services Administration, 2013). All of the interviewees and 51.6% of the respondents to the online survey were over the age of 50. Only 9.5% of the survey respondents were younger than 30 years of age. The demographic findings also confirmed that nurses tend to be highly educated (Rosseter, 2014). A significant majority (79.0%) of the survey respondents held baccalaureate, master's, or doctoral degrees.

6.2. Findings Related to Healthcare Facility Policies

Many of the findings in this study have implications for the policies and regulations that are enacted in healthcare facilities. The stress levels and fatigue experienced by nurses can be either heightened or alleviated by individual facility policies, government regulations, and the concepts/strategies adopted by healthcare leaders. This section addresses the topic of policy-related efforts to provide nurses with better opportunities for restorative breaks. It answers the following research questions:

1. How much stress do nurses perceive in their work environments?
2. What policy-related challenges do nurses face in regard to taking restorative breaks?

3. What do nurses' break patterns look like? Aside from a primary meal break, do they take opportunities for short, non-meal breaks during their working shifts?
4. How can healthcare facilities better educate staff about the importance of restorative breaks, and what are the most important break-related policies to implement in order to reduce nurses' fatigue?

6.2.1. Stress in the Work Environment

Healthcare facilities are ranked as one of the most stressful contemporary work environments for their employees, and this is especially true for nurses (Pines & Maslach, 1978; Tummers, Janssen, Landeweerd, & Houkes, 2001). The findings from this study confirmed the existing literature regarding the stressfulness of nursing. The majority of the study participants (68.1%) ranked their stress levels at work as 7 or greater on a 10-point scale. A detailed analysis was conducted to identify factors in the survey data that were associated with higher or lower levels of reported stress.

The research revealed that some of the variation in levels of perceived stress was tied to demographic factors—male participants and nurses with higher levels of education tended to assign a lower ranking to the stressfulness of their work. These findings correspond with previous studies on how different individuals interpret their environments (Karasek, 1992; Nelson & Burke, 2002). An additional portion of the variation in reported stress was tied to work settings. Inpatient environments and

greater amounts of direct patient contact were associated with higher levels of perceived stress. This finding was expected and is consistent with previous studies (Duquette, Kérowc, Sandhu, & Beaudet, 1994; Potter et al., 2010). Beyond the factors of individual variation and type of work environment, however, the research also revealed that facility policies accounted for a significant portion of the variation in reported stress. Nurses who worked longer shifts, who took fewer breaks, and who were less satisfied with their break areas perceived their work environments to be more stressful. These are factors that can potentially be reshaped by facility policies in order to help reduce nurses' stress-related fatigue and burnout.

The widespread problem of stress and burnout among nursing staff should be a serious concern for healthcare facility managers. These job-related hazards can cause physical and mental disabilities in nurses (Costantini et al., 1997; Meadors & Lamson, 2008). They can also lead to a greater incidence of medical errors, a reduction in the overall quality of patient care, and poorer facility outcomes (Argentero, Dell'Olivo, & Ferretti, 2008; Poghosyan, Clarke, Finlayson, & Aiken, 2010). Finally, staff stress and burnout can affect facilities by increasing rates of absenteeism, intention to leave the profession, and actual turnover (Barrett & Yates, 2002; Eriksson, Starrin, & Janson, 2008; Siefert, Jayaratne, & Chess, 1991). Facility managers can help to avoid these misfortunes by creating reasonable schedules, encouraging nurses to get adequate rest, and providing high-quality break areas.

6.2.2. Health-Promoting Break Policies

In the United States, regular employee breaks are not mandated by the federal government, and employers are not required to compensate staff when they do take breaks (U.S. Department of Labor, 1961a, 1961b). In the absence of federal regulations, it remains up to healthcare facilities to support the health and productivity of their nursing staff by establishing policies that ensure employees get adequate rest. These policies are particularly critical for nurses who are involved in direct patient care and are required to maintain high levels of focus to ensure patient safety. The results from interviews suggest that in order to maintain maximum alertness nurses should take at least one 15-minute break every two hours. For example, during an 8-hour working shift, nurses would need to take three breaks—typically a short break after two hours, a longer meal-break at the midpoint of the shift, and then another short break two hours later. However, the survey results indicated that more than 50% of nurses never took short breaks at all. On average, short (non-meal) breaks were reported to occur only 0.66 times per shift, for an average duration of 7.06 minutes per shift.

In a climate where breaks are not mandated and nursing staff are not compensated for break times, it becomes more likely that employees will skip breaks, resulting in greater risks both to themselves and to their patients. As one of the interviewees in the study explained, “nurses cheat themselves on breaks all the time.” Solving this problem requires a significant cultural change in the employment climate of healthcare facilities.

Today, some facilities have started to create new break-oriented initiatives in order to maintain staff health and improve the quality of patient care. For example, as part of the "Transforming Care at the Bedside" initiative at Massachusetts General Hospital, day-shift nurses were encouraged to leave the work environment and take an extended break during the middle of their shift. After settling into this new institutional structure, nurses reported feeling less fatigue and demonstrated greater levels of alertness throughout the day (Stefancyk, 2009). Another such program has been developed by Tylor (2005), who suggests that nurses should be encouraged to take short "booster breaks" and restore themselves through eating healthy snacks and undertaking mindfulness exercises (yoga, tai chi, meditation, etc.). Through programs such as these, healthcare facilities in the U.S. have the ability to take the initiative in changing the healthcare employment climate, thereby improving staff satisfaction and increasing the quality of patient care.

6.2.3. Strategic Napping Programs

There is currently a great deal of debate in U.S. healthcare workplaces regarding the value of restorative naps. A few organizations, such as the Veterans Health Administration, have implemented "strategic napping" programs in order to combat staff fatigue and increase alertness (Howard & Schuldheis, 2008; Arora et al., 2006; Smith-Coggins et al., 2006). However, these programs have been slow to catch on. The respondents in this study indicated that opportunities for such naps were practically

nonexistent in the overall U.S. healthcare climate—break times were much too short to facilitate any type of napping, and the overwhelming majority of the facilities where respondents worked (92.5%) lacked any kind of dedicated spaces for naps. Nonetheless, several of the interview participants, and 48.1% of the survey respondents, agreed that it would be worthwhile to have such napping spaces available. The majority of nurses expressed a preference for one-person private napping rooms (52.2%), as opposed to semi-private (36.0%) or group (8.5%) rooms. The participants largely agreed that these rooms should be separated from staff break areas (92.3%), while still being located close to patients (within approximately one minute of travel time from the nurses' primary work-stations).

6.3. Findings Related to Healthcare Facility Design

The majority of this study's findings are related to the environmental design features of healthcare facilities, and how these environments can be improved to provide nurses with better opportunities for restorative breaks. The study results are consistent with recent meta-analyses in indicating that attention to environmental design in healthcare facilities has been largely focused on patient-care areas, without adequately considering the needs of nursing staff (Chaudhury, Mahmood, & Valente, 2009; Rechel, Buchan, & McKee, 2009; Ulrich et al., 2008). When planning for space allocation, healthcare managers and designers typically prioritize patient/family spaces, as well as clinical work areas, while ignoring or minimizing the needs of employees. The result is

that break areas are typically minimal spaces with minimal amenities, and do not assist as much as they could in helping nurses to rest and refocus their attention. Fortunately, this trend is starting to change; in newer healthcare facilities it is more common to find well-designed break areas, with larger and brighter spaces and more amenities. As healthcare managers and designers continue to work to improve break-area environments, they need specific information on what design interventions are most effective. The following sections provide a discussion of the study's findings regarding break-area design principles.

6.3.1. The Benefits of High-Quality Break Areas

During this research data was collected about nurses' satisfaction with their current break rooms/areas, how often they used those areas, and the importance that they placed on high-quality breaks. An analysis of survey data revealed features of the break-room environments that predicted positive assessments. This section answers the following research questions:

5. Does nurses' satisfaction with the environmental qualities of their break areas have a positive association with their break patterns and usage of those areas?
6. Do nurses perceive well-designed staff break areas as playing an important beneficial role in relation to overall job satisfaction, staff retention, job performance, quality of patient care, and job-related health concerns? If yes, then what are the main environmental predictors of positive perceptions?

6.3.1.1. Staff Usage and Satisfaction with Break Areas

The majority of the study participants were either unsatisfied or neutral in regard to both their current indoor break areas (61.1%) and their current outdoor break areas (53.3%). Greater levels of satisfaction were associated with specific amenities and environmental features. In regard to indoor break rooms, nurses reported greater levels of satisfaction when their break spaces contained comfortable furniture (sofas, daybeds, reclining chairs, etc.). Having visual and physical access to the outdoors was another significant predictor of satisfaction. Incorporating natural elements into the environment, such as indoor plants, nature artwork, or window views of trees and sky, was also associated with greater satisfaction. Views of built-up areas and traffic were moderately associated with *lower* levels of staff satisfaction with their break areas. These findings are consistent with the existing body of knowledge regarding the positive impact of natural elements in increasing human satisfaction within built environments (Kaplan, 2001 & 2007). The study results indicated that when nurses were more satisfied with their indoor break areas, they took significantly more restorative breaks per shift.

In regard to outdoor break areas, spatial configurations and design were the most important predictors of nurses' satisfaction. Facilities with healing/viewing gardens, courtyards, and roof terraces were associated with higher levels of reported satisfaction. A large variety of outdoor environmental amenities were examined in the

study, but only two were found to be significantly tied to staff satisfaction—well-designed walkways and the presence of a water feature. These findings confirm existing evidence that healing gardens with enjoyable walkways and water features can increase levels of outdoor usage (Faris, Stigsdotter, Lottrup, & Nilsson, 2012; Rodiek & Lee 2009). Unfortunately, most of the healthcare facilities where the survey respondents worked (77.1%) had no outdoor break areas at all, and therefore, the majority of nurses (83.6%) never took outdoor breaks. However, when nurses did have outdoor areas available and were satisfied with those areas, the frequency and duration of their breaks were significantly greater.

6.3.1.2. The Importance of High-Quality Break Areas for Staff Retention, Job Performance, and Facility Outcomes

The evidence gathered in this study supports the understanding that high-quality staff break areas can positively influence nurses' job satisfaction, retention, and performance, while also decreasing their job-related health concerns. The qualitative data indicated that in facilities where high-quality staff break areas are provided, nurses feel that they are valued, respected, and recognized. This finding is in concurrence with previous studies (McGuire, Houser, Jarrar, Moy, & Wall, 2003; McNeese-Smith, 1997). The quantitative survey findings likewise indicated that a majority of respondents viewed high-quality break spaces as "fairly" or "very" important in terms of their potential to increase job satisfaction (77.7%) and staff retention (50.1%). However, the

analysis also showed that facility policies and regulations are significant predictors of nurses' outlooks on the value of break areas. When nurses had greater opportunities for breaks, they considered the quality of break areas to be an important issue. When nurses had fewer opportunities for breaks, the quality of the break areas was not their foremost concern. The upshot of this is that better institutional policies to encourage breaks are a prerequisite for improving nurses' satisfaction and retention—simply building better break spaces without giving nurses the opportunity to use them is unlikely to be effective.

The majority of the participants also reported that high-quality break spaces were "fairly" or "very" important for increasing job performance (76.5%) and the quality of patient care (66.8%). It appears that the nurses recognized the value of high-quality break areas in restoring their ability to focus on their work (again, assuming that appropriate institutional policies are in place to allow the staff to make use of those break areas). This finding is consistent with previous studies showing the positive impact of restorative breaks on nurses' performance (Mitra, Cameron, Mele, & Archer, 2008; Rogers, Hwang, & Scott, 2004). Further analyses showed that taking outdoor breaks and being able to exercise during break times were significant predictors for positive perceptions about the impact of break areas on staff performance.

Previous studies have shown that nurses were very concerned about the negative impact of their job on their health, and that 44% were unsure if they would again select nursing as a career if they were starting out today (AMN Healthcare, 2012). However, a majority of nurses in the current study (72.8%) reported that well-designed staff break areas were “fairly” or “very” important in alleviating their work-related health concerns. Additional analysis indicated that the quality of nurses’ current break areas was a significant predictor of the importance that they give to this issue. Nurses who viewed their current break spaces as unsatisfactory strongly believed that improving these areas would be of benefit to their health.

The perceived level of stress in the work environment was a significant predictor of the importance that nurses assigned to break areas for benefiting all of the categories discussed above (job satisfaction, staff retention, job performance, quality of patient care, and job-related health concerns). In other words, when stress levels were higher, nurses were more likely to emphasize the importance of high-quality break areas. Overall, these findings provide substantial evidence that improving the quality of restorative break areas can help to alleviate stress, and thereby improve staff retention, performance, and health. The evidence collected in this study provides strong empirical support for the agenda of improving staff break areas in healthcare facilities, a goal that has previously relied on intuitive or existential assumptions (Sadler et al, 2011; Rogers, Hwang, & Scott, 2004; Stefancyk, 2009).

6.3.2. Design Principles for High-Quality Break Areas

This section presents the most effective design interventions that were identified in the study for improving the restorative qualities of break areas. The results indicate that in order to obtain the maximum benefit from their rest breaks, nurses need a balance in which they maintain a reasonable physical proximity to their patients while still obtaining a sense of privacy and mental reprieve. Connection to the outside world beyond the work environment can be extremely helpful in obtaining the needed sense of distance. Visual or physical access to the outdoors provides a sense of escape from the job-related sources of stress and fatigue, as well as an opportunity for physical and mental distraction. The study participants also indicated a strong preference for access to nature, natural light, and fresh air, as beneficial aspects of restorative break spaces. This section answers the following research questions:

7. Do break areas that are located closer to nurses' workstations have higher usage and preference rates, and greater perceived restorative qualities, as compared to those that are further away?
8. Do break areas with higher levels of privacy and tranquility have higher usage and preference rates, and greater perceived restorative qualities, as compared to those that are public and shared with patients and families?
9. Do break areas with direct physical access to the outdoors have higher usage and preference rates, and greater perceived restorative qualities, as compared to those that have only widow views?

10. Do break areas that incorporate elements of nature and natural light have higher usage and preference rates, and greater perceived restorative qualities, as compared to those that lack these elements?
11. What are the most important amenities/appliances for improving nurses' satisfaction with indoor and outdoor break areas?

6.3.2.1. Proximity—Locating Break Areas Near Patients

Both indoor and outdoor break areas should be located in close proximity to patient-care areas. This was found to be one of the most important design principles to encourage nurses to take more restorative breaks. Nurses are responsible for human lives, and they tend to worry constantly about their patients. If break spaces are located too far away from patients then nurses may feel like they are abandoning their human responsibilities by seeking a reprieve. Furthermore, with limited time available for breaks, greater travel distances to break areas tends to reduce the likelihood that they will be used. The study data indicated that the distant location of break areas was one of the primary barriers currently preventing nurses from enjoying regular rest. As one of the interviewees noted: "if they are not able to have immediate access back to the unit, often times they won't take breaks." This finding confirms previous studies showing higher levels of usage for break areas that are closer to work environments in healthcare facilities (Faris, Stigsdotter, Lottrup, & Nilsson, 2012; Sherman, Varni, Ulrich, & Malcarne, 2005).

The survey data indicated that staff break rooms located within the medical unit were the most commonly selected location for breaks. The nurses prioritized these rooms as their first choice for both meal breaks and non-meal breaks. Additional analyses confirmed these results by showing that proximity between break areas and patient-care areas was a significant predictor for the likelihood of nurses taking regular short breaks. This issue of proximity is particularly important for outdoor break areas, which are more difficult to position near medical units. The study results suggest that typical designs, such as centralized healing gardens located far from the inpatient care areas, are unlikely to be used by nurses on a regular basis. These findings are consistent with previous studies indicating that in many cases, nurses did not even know about the existence of break spaces that were located far away from their work areas (Naderi & Shin, 2007). Based on an extensive study on workplace greenery, Lottrup (2012) also identified proximity to work areas as a critical design principle for constructing health-promoting outdoor break environments.

Establishing the correct proximity of break areas to patient-care areas is a delicate design issue, because in order to relax, nurses need both physical proximity to their patients and the ability to obtain psychological distance/reprieve from them. If break areas are *too* close to patients—for example, if they provide greater environmental cues linking back to the job rather than to external distractions—then this factor will also decrease nurses' ability to obtain rest. Nurses need to feel like they can quickly

reach their patients if an emergency arises, but they also need their break spaces to provide a significant amount of insulation from patients. This feature is the topic of the following section.

6.3.2.2. Privacy and Tranquility—Designing Secluded Break Areas

Break areas should provide nurses with complete privacy from patients and their families. The study results indicated that this privacy was a central concern for two reasons, (a) the need for personal alone-time and tranquility, and (b) the need to freely socialize and to share confidential information with other nurses. In designing staff break areas, locations and configurations should be selected to offer opportunities for both individual privacy and small-group interaction. Several of the interviewees suggested that one-person private respite areas would be a valuable addition to currently existing break spaces, in order to accommodate staff members who need to spend some time alone. The issue of privacy was also very important in regard to outdoor spaces, as survey respondents indicated that 87.4% of their existing outdoor break areas were open to the public. The respondents expressed a strong dissatisfaction with this state of affairs, indicating that greater privacy is needed if outdoor break areas are to have a restorative effect for nursing staff. These findings are in accordance with previous studies showing nurses' strong preference for privacy in their outdoor break areas (Faris, Stigsdotter, & Nilsson, 2012; Faris, Stigsdotter, Lottrup, & Nilsson, 2012; Naderi & Shin, 2007).

The privacy and tranquility of staff break areas were also examined in terms of adjacent support spaces such as toilets, locker rooms, and meeting spaces. The findings indicated that intrusive noise and traffic from these other spaces can be a significant liability in preventing nurses from obtaining the rest that they need. The study participants expressed a strong preference for separating staff break areas from other support spaces in order to reduce distractions. These findings are consistent with previous studies indicating the value of quietness and privacy for stress-reduction in indoor environments (Bayo, Garcia, & Garcia, 1995; Frontczak et al., 2012; Harris, Shepley, White, Kolberg, & Harrell, 2006).

6.3.2.3. Visual vs. Physical Access to the Outdoors—Designing for Escape

Working in healthcare environments, particularly in inpatient settings, requires a great deal of focus and intense concentration. Interviewees perceived the inpatient setting as living and working "in a bubble" without any connections to the outside world. According to the study participants, restorative breaks should be an opportunity to temporarily disengage from this bubble-world and reconnect with everything that is going on beyond the work environment. Interviewees indicated that rest breaks are most effective when they provide opportunities to perceive external life, track changes in the time of day, observe weather conditions, and experience seasonal changes. One of the nurses stated, "when I had a window it made all the difference in the quality of my day, being able to look at out and see what was going on." These findings are

consistent with existing evidence showing the positive impact of windowed workplaces for job satisfaction, perceived quality of the physical working environment, and overall employment experience (Bringslimark et al., 2011; Farley & Veitch, 2001; Finnegan & Solomon, 1981).

While celebrating the value of windows, the study participants indicated a marked preference for actual physical access to the outdoors. They noted the rejuvenating effects of being able to sit outside, to take a short walk in a garden, or to smell fresh air during their breaks. This finding is also compatible with previous qualitative studies showing the restorative value of direct physical access to nature (Kaplan & Kaplan, 1989; Nettleton, 1992; PricewaterhouseCoopers, 2004). The study participants described many challenges that interfered with their ability to step outside during their breaks—including a lack of suitable areas, concerns about safety, inhospitable weather/climate, difficulty of access, the short duration of breaks, and a lack of proximity of outdoor areas to their work units. Nonetheless, the nurses who participated in this study believed that suitably designed outdoor break areas with the proper amenities could be extremely valuable additions to healthcare facilities, even in inhospitable climates.

The survey results indicated that the majority of respondents worked in healthcare environments where existing staff break areas had neither windows (59.8%) nor access

to adjacent outdoor spaces (99.1%). However, windows and accessible outdoor spaces were found to be significantly associated with higher levels of staff satisfaction. These findings are consistent with the existing evidence showing that window views to nature and direct access to outdoor gardens substantially reduced staff stress and improved their alertness and productivity (Faris, Stigsdotter, Lottrup, & Nilsson, 2012; Pati, Harvey, Barach, 2008).

One of the central concerns in the visual assessment part of the study was to determine if nurses responded more positively to images of a break room with direct physical access to the outdoors (via a balcony), in comparison to images of the same break room with window views but no direct access. The results showed that physical access to the outdoors was perceived to add significantly more restorative value (Set1 = 7.81, Set2 = 8.12) when compared to window views (Set1 = 5.90, Set2 = 6.49). These findings are consistent with existing evidence showing that outdoor nature contact was more effective in reducing stress and improving general health than was indoor or indirect nature contact (Largo-Wight et al., 2011; Lottrup, Grahan, & Stiggsdotter, 2012).

6.3.2.4. Access to Nature and Natural Light—Incorporating the Outdoors

Considering the well-documented benefits of nature contact and daylight in relieving stress (Boyce, Hunter, & Howlett, 2003; Grinde & Patil, 2009; Ulrich et al., 2008), the study was designed to test whether or not these factors would be perceived by nurses

as adding significant restorative benefits to staff break areas. The qualitative findings revealed that nurses expressed an interest in incorporating a wide range of natural elements into their break spaces, ranging from indirect exposure via nature-related artworks, to the inclusion of indoor plants, to pleasant window views of mountains, gardens, and landscapes. The survey participants indicated that direct access to the outdoors was the most powerful stress reliever, but that other ways of incorporating natural elements into staff break areas could also be of benefit.

Among the survey respondents, only 40.2% worked in a healthcare facility with break spaces that had views to the outdoor environment. For those who did have views, buildings and signs were reported as the most prominent visual elements (81.7%). Less than 50% of existing window views included any form of greenery or park-like spaces. Furthermore, only a very small percentage of these existing break areas were reported to have nature artwork (10.9%), or indoor flowers/plants (3.9%). The preferences reported by the survey respondents were in striking contrast to these conditions. In terms of window views, the nurses expressed a strong preference for elements such as the sky, trees, flowers, and water features, a slightly lower preference for lawns and park-like areas, and almost no preference for buildings, signs, or traffic. Additional analysis of the survey data showed that views to natural elements were significantly associated with higher levels of reported staff satisfaction. These findings are in accordance with previous studies in demonstrating the value of natural elements in the

design of indoor and outdoor respite areas (Cooper, Marcus, & Barnes, 1999; Rodiek & Lee, 2009; Tyson, 1998).

In the visual assessment portion of the study, respondents were asked to rate their responses to images of the same staff break room that had been digitally manipulated to include an indoor plant, a nature painting, a window with a nature view, or a balcony with direct access to the outdoors. The images were presented in a random order. The results indicated that break rooms with direct access to nature and natural light were ranked significantly higher (though all of the interventions were rated as being more restorative than the enclosed, unmodified break room). Indoor plants and nature artworks had lower restorative effects, in comparison to windows and balconies. The greater restorative value that nurses attributed to window views and direct access to the outdoors is consistent with the large body of existing literature on the merits of nature access and natural light in work environments (Golden et al., 2005; Kaplan, 1993; Kaplan, 2007; Leather, Pyrgas, Beale, & Lawrence, 1998; Pati, Harvey, & Barach, 2008; Shin, 2007).

6.3.2.5. Additional Amenities—Designing for Comfort

The study results indicated that the restorative qualities of nurses' break areas can be enhanced through the inclusion of specific amenities. One of the most highly valued break-room features that emerged during the interviews and surveys was the presence

of comfortable furniture, extending beyond the traditional office seating. A need to "put one's feet up" was repeatedly mentioned as a means of physical reprieve from long hours of standing and walking. To this end, the study participants emphasized the importance of including couches, reclining chairs, and similar items within the break-room environment. Other strongly preferred amenities included refrigerators with ample storage space and computers with Internet service. In regard to outdoor break areas, the three most commonly requested amenities were comfortable seating, covered patios, and a rich natural environment.

6.4. Summary

The results of this empirical study support the conclusion that improvements in healthcare facility policies regarding staff breaks, as well as the creation of better-designed break areas, can be of significant benefit for nurses and the patients that they serve. Facility managers can enhance staff satisfaction and patient outcomes by investing in policy changes and health-promoting programs that encourage restorative breaks. Healthcare designers can improve the value of break spaces by adhering to the principles of close proximity to patients, high levels of privacy, and ample access to nature. Break areas should provide nurses with the needed opportunity to temporarily escape from the stresses of their work environments, to reconnect with the outside world, and to restore their capacity to provide the close attention that patients deserve. The next chapter will provide a specific list of design recommendations and

policy implications, as well as a discussion of the study's limitations and directions for future research.

CHAPTER VII

CONCLUSION

7.1. Summary of Policy Implications and Design Recommendations

This research study was conducted to examine the main barriers that prevent nurses from taking restorative breaks during their working shifts in U.S. healthcare facilities, and to assess the value of specific policy and design interventions for facilitating staff rest breaks. The study employed a mixed-method design to gather empirical data from nurses regarding their break patterns and the restorative qualities that they perceived in various break-area features. This concluding chapter provides a summary of the study's key findings, including policy implications and design recommendations for indoor and outdoor break areas. It also includes a description of the study's limitations, and directions for future research.

7.1.1. Policy Implications

This study confirmed that nurses experience very high levels of stress in inpatient healthcare environments, which can contribute to staff fatigue, burnout, and high rates of turnover. Restorative breaks are seldom possible in these intense workplaces, and in the absence of federal regulations it is incumbent upon facility managers to implement better policies to support the health and productivity of their employees. A lack of

adequate rest can lead to negative outcomes for both nurses and the patients that they care for. Nursing staff are involved with human life and death as part of their daily routine, and restorative breaks are essential in order to maintain the levels of alertness and safety that are needed in these frontline healthcare workers. Facility managers are aware of the potentially deadly consequences of staff burnout and fatigue, and some institutions have initiated programs to improve nurses' break patterns. Examples of such programs include the "Transforming Care at the Bedside" initiative at Massachusetts General Hospital (Stefancyk, 2009), the model of collective "booster breaks" advocated by Tylor (2005), and the Veterans Health Administration's "strategic napping" program (Howard & Schuldheis, 2008). Healthcare leaders need to take action to change the employment culture of nursing in the United States, in order to avert the growing crisis of qualified nurses leaving the profession, to improve staff satisfaction and retention rates, and to increase the quality of patient care.

7.1.2. Design Recommendations

The value of high-quality environmental design for human health and productivity is well-researched and documented, but in healthcare facilities efforts to improve the built environment have focused largely on patient/family spaces and clinical work areas, with little attention given to the needs of nursing staff (Chaudhury, Mahmood, & Valente, 2009; Rechel, Buchan, & McKee, 2009; Ulrich et al., 2008). Designers and healthcare managers usually give a low priority to staff break areas in their space

planning, with the result that break areas are often minimal spaces with minimal amenities. This research study provided empirical data to support the importance of well-designed and well-equipped break areas for helping nurses to rest and refocus their attention, thereby improving staff satisfaction and performance. The findings indicate that the environmental design features of break spaces can have a significant effect on staff health and retention, the quality of patient care, and overall facility outcomes. In addition, the study provided specific information on what design interventions are the most effective in improving the quality of nurses' breaks. The strength of this evidence can help healthcare designers and planners to support a greater emphasis on high-quality break areas in the early phases of space programming and strategic planning.

The majority of survey respondents indicated that they were either unsatisfied or neutral in regard to the quality of their current break areas. However, amenities such as comfortable furniture, and design features such as visual and physical access to the outdoors, were found to be significantly associated with higher levels of staff satisfaction. The study findings indicated that better institutional policies to encourage restorative breaks were a prerequisite for improving nurses' satisfaction levels (simply building better break spaces without giving nurses the opportunity to use them is unlikely to be effective). However, the findings indicated then when combined with better institutional policies, environmental design interventions to improve break areas

can greatly enhance the frequency and quality of nurses' breaks. The majority of respondents indicated that they perceived better break areas to be effective in positively influencing nurses' job satisfaction, retention, and performance, while also decreasing job-related health concerns. The perceived level of stress in healthcare facilities was a significant predictor of the importance that nurses assigned to break areas—when stress levels were higher nurses were more likely to emphasize their need for high-quality rest.

The majority of this study's findings are related to specific environmental design features that can provide nurses with better opportunities for restorative breaks. In the following sections the most important study findings in relation to environmental design are presented. The most effective design principles for improving the quality of nurses' break areas were found to be (a) proximity to patients, (b) privacy and tranquility, (c) visual and physical access to the outdoors, (d) the incorporation of natural elements and natural light into break area environments, and (e) the presence of specific amenities/furnishings.

7.1.2.1. Proximity—Locating Break Areas Near Patients

Nurses are responsible for human lives, and they tend to worry constantly about their patients. If break spaces are located too far away from patient-care areas, then nurses may feel like they do not have enough time to take breaks, and/or feel that they are

abandoning their human responsibilities by seeking a reprieve. Therefore, one of the most important design principles to encourage nurses to take restorative breaks is that break areas need to be located in close proximity to patient-care areas. The best design strategy is to decentralize staff break areas throughout the healthcare facility. This consideration is particularly important for outdoor break areas, which in current design trends are often created as large, centralized locations (for example, an extensive central healing garden located on the ground level of a healthcare facility). The study results indicate that such areas are unlikely to be used by nurses on a regular basis. A better strategy for providing outdoor break areas is to include a small balcony, private patio, or garden area directly adjacent to decentralized staff break rooms (see Figure 7.1). This will enable nurses to step outside, breathe fresh air, and reconnect with the world beyond their work environment, while still allowing for rapid access back to patients in case of emergencies. If outdoor break spaces cannot be provided for each individual nursing unit, then a secondary option is to create medium-sized outdoor break areas on each floor/level of the facility.

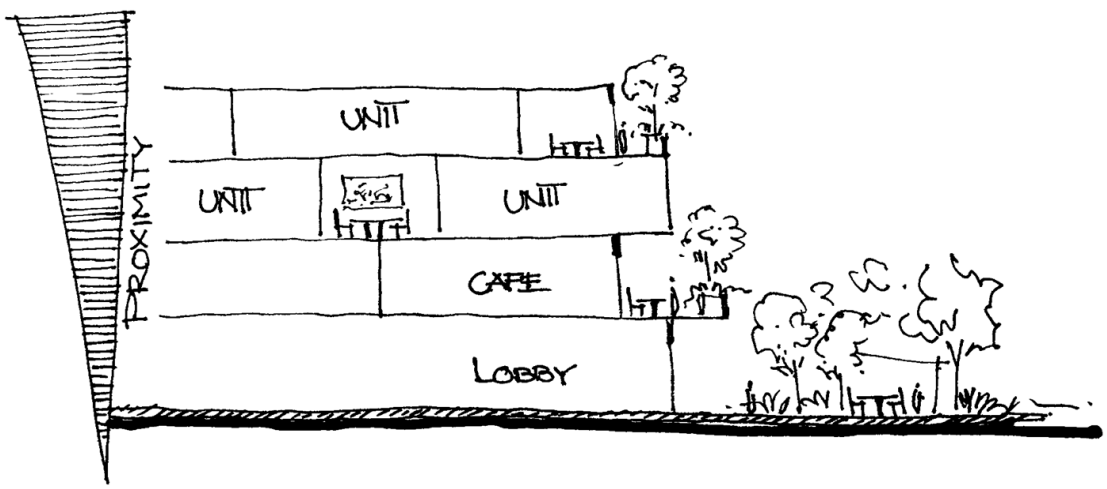


Figure 7.1. Proximity—Locating Break Areas Near Patients

7.1.2.2. Privacy and Tranquility—Designing Secluded Break Areas

The study results indicated that privacy and tranquility were fundamental concerns in encouraging nurses to take more restorative breaks. Most importantly, break areas should be designed to insulate nurses from patients and families, thereby providing psychological distance/reprieve away from the stresses of the working environment. While nurses need to feel that they can reach their patients quickly in the case of an emergency, they also need to feel confident that their break areas will remain free from non-emergency intrusions. In designing staff break areas, the locations, configurations, and amenities that are selected should allow for a mixture of individual privacy and small-group interactions among co-workers (see Figure 7.2). The ideal option is to incorporate one-person respite rooms alongside more traditional group break areas, so that nurses have the option of decompressing in solitude or socializing

with one another. If this is not possible, then the design configuration of staff break areas should include “nooks” or corners into which individuals can retreat, along with comfortable and movable furniture that can be rearranged to suit individual needs. To reduce intrusive noise and traffic, other support spaces such as toilets, locker rooms, and meeting spaces should be separated from break areas. In regard to outdoor spaces, the study results indicated a significant need for improved privacy. The vast majority of existing outdoor break areas are centralized and open to the public, a situation that is strongly unfavorable in the eyes of nursing staff and that further reduces the likelihood that nurses will make use of these areas.

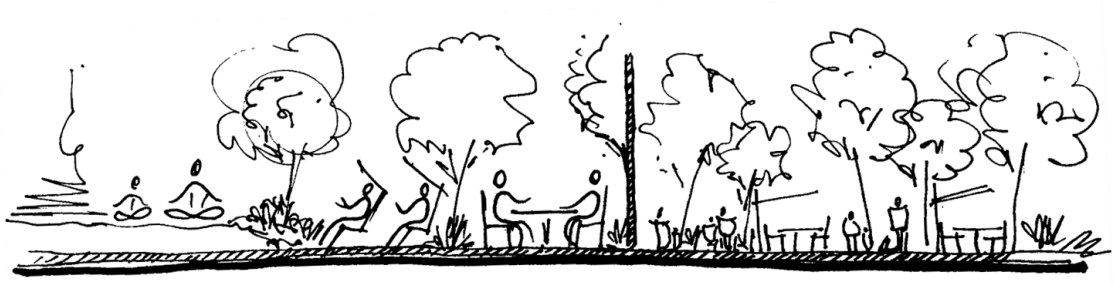


Figure 7.2. Privacy and Tranquility—Designing Secluded Break Areas

7.1.2.3. Visual vs. Physical Access to the Outdoors—Designing for Escape

Both visual and physical access to the outdoors were found to have a powerful restorative effect for nurses. The inpatient healthcare environment was often described as living and working “in a bubble,” and one of the most effective design

interventions for break areas was to incorporate cues that led away from this bubble-world. Restorative break areas with access to the outdoors can help nurses to perceive external life, track changes in the time of day, observe weather conditions, and experience seasonal changes. While celebrating the value of windows, the study participants expressed a strong preference for direct physical access to outdoors, noting the invigorating effects of being able to sit outside, to take a short walk in a garden, or to smell fresh air during their breaks. The survey results indicated a significant association between levels of staff satisfaction and the availability of such outdoor access. Results from the visual assessments of break-room spaces also confirmed this finding, showing that physical access to the outdoors (via a balcony) was perceived to add significantly more restorative value to a break room than did visual access (through a large window). Based on these study findings, it is recommended that direct physical access to the outdoors be incorporated into staff break areas as much as possible—whether it is through windows that can be opened, small private balconies or porches, or more luxurious features such as small private gardens or rooftop terraces (see Figure 7.3). When combined with other critical design features such as proximity to patients, privacy, and proper amenities/furnishings, these outdoor spaces can greatly improve the levels of break-area usage and staff satisfaction.

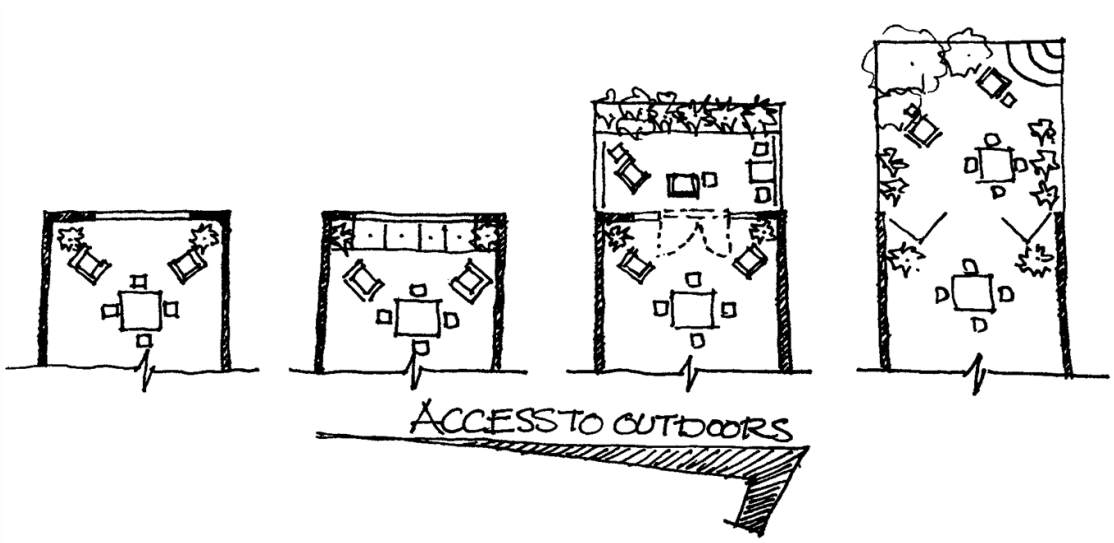


Figure 7.3. Visual vs. Physical Access to the Outdoors—Designing for Escape

7.1.2.4. Access to Nature and Natural Light—Incorporating the Outdoors

The participants in this study confirmed the well-documented benefits of nature contact and daylight in relieving stress. They expressed an interest in incorporating a wide range of natural elements into their break areas, ranging from indirect exposure via nature-related artworks, to the inclusion of indoor plants, to pleasant window views of mountains, gardens, and landscapes. The survey participants indicated that direct access to the outdoors was the most powerful stress reliever, but that other ways of incorporating natural elements into staff break areas could also be of benefit. Only a very small percentage of the respondents worked in facilities that currently incorporated natural elements in break areas, whether through direct access to the outdoors, window views of natural spaces, or the presence of indoor plants and nature

artwork. Nonetheless, the respondents expressed a strong preference for these features, indicating significantly higher levels of satisfaction and break-room usage when they were present. The findings from visual assessments of break-room spaces indicated that windows and balconies had a significantly greater perceived restorative effect than did indoor plants and nature artwork (though all of these interventions were rated as more restorative than the unmodified break areas that lacked natural elements). Based on these findings, it is recommended that healthcare managers and designers undertake whatever cost-effective steps are possible to incorporate natural elements into existing and future break areas. Direct access to nature and natural light is highly recommended and represents the ideal design scenario (see Figure 7.4). However, when options for physical access to the outdoors are not available, the presence of windows with natural views can be a valuable substitute. When no physical or visual access is possible, providing indoor plants or nature artworks can create some measure of improvement in the restorative qualities of break areas.

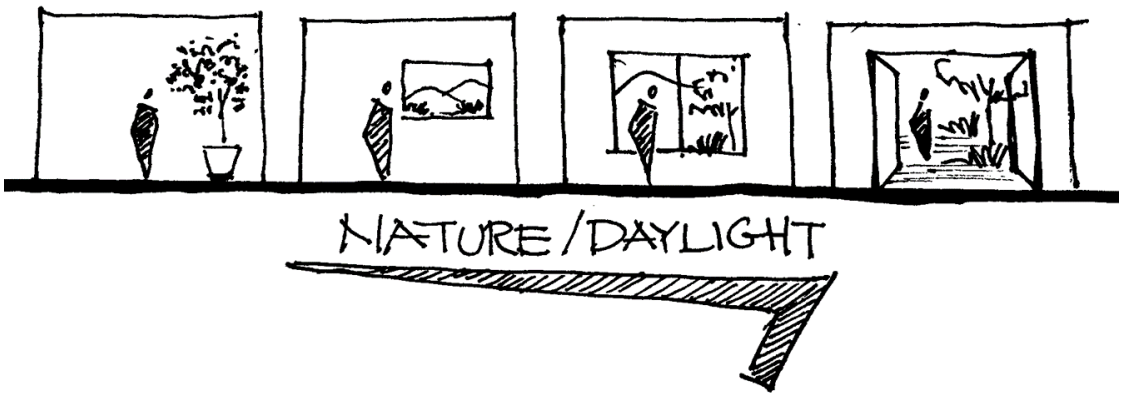


Figure 7.4. Access to Nature and Natural Light—Incorporating the Outdoors

7.1.2.5. Additional Amenities—Designing for Comfort

The study results indicated that specific break-area amenities were highly valued by nursing staff. For indoor break areas, the participants repeatedly mentioned the value of comfortable furniture. Nurses were significantly more satisfied with indoor break areas that included couches, daybeds, or reclining chairs. They also expressed a preference for movable furniture that could be easily rearranged for individual and group activities. Other strongly preferred amenities included refrigerators with ample storage space and computers with Internet service. For outdoor break areas, the three most commonly requested amenities were comfortable seating, covered patios to offer protection from the elements, and a rich natural environment (see Figure 7.5). The preferred outdoor environmental features included plants and flowers, the sounds of birds and running water, and the availability of direct sunlight.

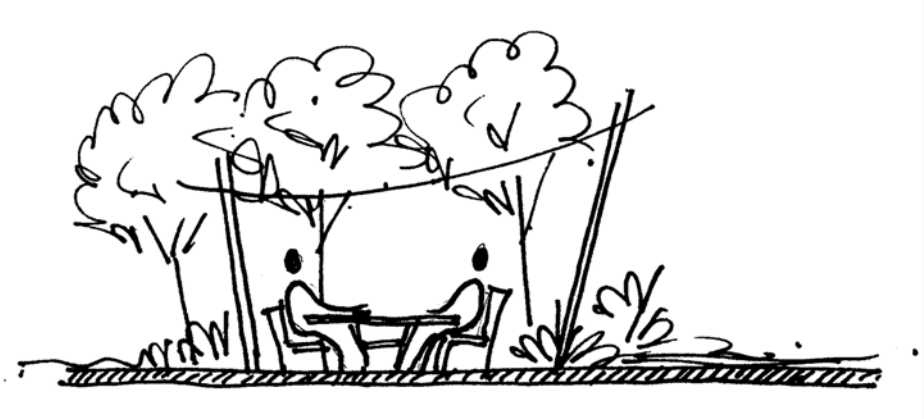


Figure 7.5. Additional Amenities—Designing for Comfort

7.2. Research Limitations

As with all research activities, this study has some limitations. First, the study population included U.S. nurses only, and the distribution of this population among different U.S. climate regions was not entirely representative. Because of this, the study findings may not be generalizable to other countries and to all regions of the United States. Local differences in healthcare systems, climate conditions, and cultural backgrounds may have a strong influence on shaping staff break patterns and the effective design of break spaces. A second limitation is that the small number of focused interviews and an emphasis on interview participants who currently work as design consultants may have introduced perspective bias into the qualitative explorations of potential design features. In other words, the lack of detailed interviews with non-design-focused nurses may have resulted in a biased outlook regarding what

break-related interventions are most important. Interviewing more nurses and including those who are not design consultants into the sample could potentially provide new insights and recommendations. The third and perhaps most important study limitation is the reliance on self-reported survey data for evaluating the quality and benefits of indoor and outdoor break spaces. There is no way to easily triangulate these results and determine if the nurses who responded to the survey accurately evaluated the effects of various break-related interventions. This limitation may result in the persistence of confounding variables in the study results. Further research is needed to investigate staff usage, preferences, and the effects of different break-related interventions using alternative methodologies such as direct observation and standardized measurement.

7.3. Directions for Future Research

Further research is needed to address the limitations of this study by focusing on different regions, different healthcare populations, and alternative research methodologies. Conducting similar studies in diverse local regions with varied healthcare systems, climate conditions, and cultural backgrounds may lead to further insights about what break-area design interventions are most effective in specific local contexts. Furthermore, while this study was focused on medical-surgical nurses who work in inpatient settings, similar studies can be conducted to explore the needs of nursing staff who work in other settings (e.g., preoperative care, radiology, or

pathology). It would be of great benefit if future researchers could develop a standardized audit tool to evaluate the quality of employee break areas. This would allow for standardized measurements to be made in diverse healthcare facilities, and would improve inter-rater and test/retest reliabilities. Finally, a quasi-experimental study to replicate the visual assessment activity in a real-world setting would be a valuable addition to the research literature. Such a study would allow observers to directly measure behavioral, physiological, and psychological responses to higher levels of nature access and natural light in staff break areas.

This research study provided new empirical evidence in identifying barriers that prevent nurses from taking restorative breaks and assessing the value of specific break-related policy and design interventions. Important findings were discovered that can provide support and information for managers and designers who are attempting to reduce problems associated with nurses' high levels of fatigue and burnout. However, there is still a great need for future researchers to examine how break-related policies and environmental design interventions can help to improve the wellbeing of nurses and the patients that they care for.

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APPENDIX A

IRB LETTER

DIVISION OF RESEARCH

Office of Research Compliance

TEXAS A&M UNIVERSITY

DATE: November 12, 2013

MEMORANDUM

TO: Mardelle Shepley
TAMU - College Of Architecture - Architecture

FROM: Office of Research Compliance
Institutional Review Board

SUBJECT: Initial Review

Protocol Number: IRB2013-0692

Title: Assessing Usage, Preferences, and Perceived Restorative Qualities of Staff Break Areas in Healthcare Facilities

Approval Date: 11/12/2013

Continuing Review Due: 10/01/2014

Expiration Date: 11/01/2014

Review Type: Expedite

Documents Reviewed and Approved:

Title	Version Number	Version Date	Outcome
Questionnaire for Interview and Survey-10-5-13	Version 1.0	10/05/2013	Approved
Interview Questionnaire-10-21-13	Version 1.0	10/21/2013	Approved
Survey Questionnaire-10-21-13	Version 1.0	10/21/2013	Approved
Dissertation proposal-10-1-13	Version 1.0	10/05/2013	Approved
Site Authorization Letter-9-26-13	Version 1.0	10/05/2013	Approved
Survey Recruitment Email-9-30-13	Version 1.0	10/03/2013	Approved
Interview Recruitment Email-9-26-13	Version 1.0	10/03/2013	Approved
Survey Information Sheet	Version 1.2	10/05/2013	Approved
Interview Information Sheet	Version 1.2	10/05/2013	Approved

This research project has been approved. As principal investigator, you assume the following responsibilities

1. **Continuing Review:** The protocol must be renewed by the expiration date in order to continue with the research project. A Continuing Review application along with required documents must be submitted by the continuing review deadline. Failure to do so may result in processing delays, study termination, and/or loss of funding.
2. **Completion Report:** Upon completion of the research project (including data analysis and final written papers), a Completion Report must be submitted to the IRB.
3. **Unanticipated Problems and Adverse Events:** Unanticipated problems and adverse events must be reported to the IRB immediately.
4. **Reports of Potential Non-compliance:** Potential non-compliance, including deviations from protocol and violations, must be reported to the IRB office immediately.
5. **Amendments:** Changes to the protocol must be requested by submitting an Amendment to the IRB for review. The Amendment must be approved by the IRB before being implemented.

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6. **Consent Forms:** When using a consent form or information sheet, you must use the IRB stamped approved version. Please log into iRIS to download your stamped approved version of the consenting instruments. If you are unable to locate the stamped version in iRIS, please contact the office.
7. **Audit:** Your protocol may be subject to audit by the Human Subjects Post Approval Monitor. During the life of the study please review and document study progress using the PI self-assessment found on the RCB website as a method of preparation for the potential audit. Investigators are responsible for maintaining complete and accurate study records and making them available for inspection. Investigators are encouraged to request a pre-initiation site visit with the Post Approval Monitor. These visits are designed to help ensure that all necessary documents are approved and in order prior to initiating the study and to help investigators maintain compliance.
8. **Recruitment**: All approved recruitment materials will be stamped electronically by the HSPP staff and available for download from iRIS. These IRB-stamped approved documents from iRIS must be used for recruitment. For materials that are distributed to potential participants electronically and for which you can only feasibly use the approved text rather than the stamped document, the study's IRB Protocol number, approval date, and expiration dates must be included in the following format: TAMU IRB#20XX-XXXX Approved: XX/XX/XXXX Expiration Date: XX/XX/XXXX.

The Office of Research Compliance and Biosafety is conducting a brief survey for the purpose of programmatic enhancements. Click here to take survey or copy and paste in a browser https://tamu.qualtrics.com/SE/?SID=SV_1CgOkLNU45QebvT

This electronic document provides notification of the review results by the Institutional Review Board.

DIVISION OF RESEARCH

Research Compliance and Biosafety

DATE: March 20, 2014

MEMORANDUM

TO: Mardelle Shepley
TAMU - College Of Architecture - Architecture

FROM: Human Subjects Protection Program
Institutional Review Board

SUBJECT: Expedited Approval- Amendment

Study Number: IRB2013-0692

Title: Assessing Usage, Preferences, and Perceived Restorative Qualities of Staff Break Areas in Healthcare Facilities

Approval Date: 11/12/2013

Continuing Review Due: 10/01/2014

Expiration Date: 11/01/2014

Documents Reviewed and Approved:

Title	Version Number	Version Date	Outcome
Updated Survey Questionnaire-2-24-14	Version 1.1	02/24/2014	Approved
Interview Recruitment Email for AMSN Nurses-2-15-14	Version 1.0	02/15/2014	Approved
Formatted Survey Information Sheet-2-24-14	Version 1.2	02/24/2014	Approved
Formatted Interview Information Sheet-2-24-14	Version 1.2	02/24/2014	Approved

Document of Consent: Waiver approved under 45 CFR 46.117 (c) 1 or 2/ 21 CFR 56.109 (c)1

Submission Summary: Revised Survey Questionnaire
Revised Information sheet
Add 10 interviews of nurses, members of the Academy of Medical-Surgical Nurses.

This research project has been approved. As principal investigator, you assume the following responsibilities:

1. **Continuing Review:** The protocol must be renewed by the expiration date in order to continue with the research project. A Continuing Review application along with required documents must be submitted by the continuing review deadline. Failure to do so may result in processing delays, study termination, and/or loss of funding.
2. **Completion Report:** Upon completion of the research project (including data analysis and final written

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papers), a Completion Report must be submitted to the IRB.

3. **Unanticipated Problems and Adverse Events:** Unanticipated problems and adverse events must be reported to the IRB immediately.
4. **Reports of Potential Non-compliance:** Potential non-compliance, including deviations from protocol and violations, must be reported to the IRB office immediately.
5. **Amendments:** Changes to the protocol must be requested by submitting an Amendment to the IRB for review. The Amendment must be approved by the IRB before being implemented.
6. **Consent Forms:** When using a consent form or information sheet, you must use the IRB stamped approved version. Please log into iRIS to download your stamped approved version of the consenting instruments. If you are unable to locate the stamped version in iRIS, please contact the office.
7. **Audit:** Your protocol may be subject to audit by the Human Subjects Post Approval Monitor. During the life of the study please review and document study progress using the PI self-assessment found on the RCB website as a method of preparation for the potential audit. Investigators are responsible for maintaining complete and accurate study records and making them available for inspection. Investigators are encouraged to request a pre-initiation site visit with the Post Approval Monitor. These visits are designed to help ensure that all necessary documents are approved and in order prior to initiating the study and to help investigators maintain compliance.
8. **Recruitment**: All approved recruitment materials will be stamped electronically by the HSPP staff and available for download from iRIS. These IRB-stamped approved documents from iRIS must be used for recruitment. For materials that are distributed to potential participants electronically and for which you can only feasibly use the approved text rather than the stamped document, the study's IRB Protocol number, approval date, and expiration dates must be included in the following format: TAMU IRB#20XX-XXXX Approved: XX/XX/XXXX Expiration Date: XX/XX/XXXX.

1. **FERPA and PPRA:** Investigators conducting research with students must have appropriate approvals from the FERPA administrator at the institution where the research will be conducted in accordance with the Family Education Rights and Privacy Act (FERPA). The Protection of Pupil Rights Amendment (PPRA) protects the rights of parents in students ensuring that written parental consent is required for participation in surveys, analysis, or evaluation that ask questions falling into categories of protected information.
2. **Food:** Any use of food in the conduct of human subjects research must follow Texas A&M University Standard Administrative Procedure 24.01.01.M4.02.
3. **Payments:** Any use of payments to human subjects must follow Texas A&M University Standard Administrative Procedure 21.01.99.M0.03.

This electronic document provides notification of the review results by the Institutional Review Board.

DIVISION OF RESEARCH

Research Compliance and Biosafety

TEXAS A&M UNIVERSITY

DATE: September 24, 2014

MEMORANDUM

TO: Mardelle Shepley
TAMU - College Of Architecture - Architecture

FROM: Dr. James Fluckey
Chair
Institutional Review Board

SUBJECT: Continuing Review - Approval

Study Number:	IRB2013-0692D
Title:	Assessing Usage, Preferences, and Perceived Restorative Qualities of Staff Break Areas in Healthcare Facilities
Review Type:	Expedited
Approval Date:	11/12/2013
Continuing Review Due:	08/15/2015
Expiration Date:	09/15/2015

Document of Consent: Waiver approved under 45 CFR 46.117 (c) 1 or 2/ 21 CFR 56.109 (c)1

Comments: Local data analysis only: no subject contact/no additional data collection

This research project has been approved. As principal investigator, you assume the following responsibilities:

1. **Continuing Review:** The protocol must be renewed by the expiration date in order to continue with the research project. A Continuing Review application along with required documents must be submitted by the continuing review deadline. Failure to do so may result in processing delays, study termination, and/or loss of funding.
2. **Completion Report:** Upon completion of the research project (including data analysis and final written papers), a Completion Report must be submitted to the IRB.
3. **Unanticipated Problems and Adverse Events:** Unanticipated problems and adverse events must be reported to the IRB immediately.
4. **Reports of Potential Non-compliance:** Potential non-compliance, including deviations from protocol and violations, must be reported to the IRB office immediately.
5. **Amendments:** Changes to the protocol must be requested by submitting an Amendment to the IRB for review. The Amendment must be approved by the IRB before being implemented.
6. **Consent Forms:** When using a consent form or information sheet, you must use the IRB stamped approved version. Please log into iRIS to download your stamped approved version of the consenting instruments. If you are unable to locate the stamped version in iRIS, please contact the office.
7. **Audit:** Your protocol may be subject to audit by the Human Subjects Post Approval Monitor. During the life of the study please review and document study progress using the PI self-assessment found on the RCB website as a method of preparation for the potential audit. Investigators are responsible for

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maintaining complete and accurate study records and making them available for inspection. Investigators are encouraged to request a pre-initiation site visit with the Post Approval Monitor. These visits are designed to help ensure that all necessary documents are approved and in order prior to initiating the study and to help investigators maintain compliance.

8. **Recruitment**: All approved recruitment materials will be stamped electronically by the HSPP staff and available for download from iRIS. These IRB-stamped approved documents from iRIS must be used for recruitment. For materials that are distributed to potential participants electronically and for which you can only feasibly use the approved text rather than the stamped document, the study's IRB Protocol number, approval date, and expiration dates must be included in the following format: TAMU IRB#20XX-XXXX Approved: XX/XX/XXXX Expiration Date: XX/XX/XXXX.
9. **FERPA and PPRA:** Investigators conducting research with students must have appropriate approvals from the FERPA administrator at the institution where the research will be conducted in accordance with the Family Education Rights and Privacy Act (FERPA). The Protection of Pupil Rights Amendment (PPRA) protects the rights of parents in students ensuring that written parental consent is required for participation in surveys, analysis, or evaluation that ask questions falling into categories of protected information.
10. **Food:** Any use of food in the conduct of human subjects research must follow Texas A&M University Standard Administrative Procedure 24.01.01.M4.02.
11. **Payments:** Any use of payments to human subjects must follow Texas A&M University Standard Administrative Procedure 21.01.99.M0.03.

This electronic document provides notification of the review results by the Institutional Review Board.

APPENDIX B

INTERVIEW RECRUITMENT LETTER

Dear Sir/Madam,

I am a Ph.D. student at the Center for Health Systems and Design, in the College of Architecture at Texas A&M University.

As part of my doctoral dissertation, I am studying the quality of staff break areas in healthcare facilities, to better understand nursing staff usage and preferences.

To accomplish this study, I would like to conduct **in-person or phone interviews** with 10 nurses who are currently working in architectural firms in the United States (estimated length of interview is 30 min or less).

If you have a nurse consultant working in your healthcare design group who might be interested in participating in this study, could you please forward this email to him/her?

I really appreciate your help and support.

Regards,
Adeleh

Adeleh Nejati, *M.Arch., EDAC*
Ph.D. Candidate, Research Assistant
Center for Health Systems & Design
Texas A&M University
College Station, TX 77843-3137

APPENDIX C

INTERVIEW INFORMATION SHEET

Texas A&M University Human Subjects Protection Program
Information Sheet

Assessing Usage, Preferences, and Perceived Restorative Qualities of Staff Break Areas in Healthcare Facilities

Introduction

You are invited to participate in a research study being conducted by Adeleh Nejati, a researcher from Texas A&M University. The purpose of this study is to better understand the usage, preferences, and potential restorative qualities of staff break areas in healthcare facilities, so they may be designed better in future facilities. You are being asked to take part in this study because you are involved in the design process of healthcare facilities as a nurse consultant who has the experience of working in clinical settings.

Procedures

This survey will ask you about your opinions, preferences, and usage of staff break areas in your healthcare facility, as well as basic background information. Then you will be asked to participate in an interview to discuss a few questions in detail. The interview will be audio-recorded. If you do not want to be recorded, it will not be possible to include you in the study. Your participation in this study will last 30 minutes or less.

Cost and Compensation

Aside from your time, there are no costs for taking part in the study, and you will not be paid for being in this study.

Participation

Participation in this survey is completely voluntary, and there is no penalty for not participating. You may decide to not begin the survey, or to stop it at any time. By completing the survey, you are giving permission for the investigator to use your information for research purposes, where your responses will be combined with those of other participants.

Confidentiality

Information about you will be kept confidential and secure to the extent permitted or required by law. No identifiers linking you to this study will be included in any report that might be published. People who have access to your information include the Principal Investigator and research study personnel. Representatives of regulatory agencies such as the Office of Human Research Protections (OHRP) and entities such as the Texas A&M University Human Subjects Protection Program may access your records to make sure the study is being run correctly and that information is collected properly.

Questions about the Research

You may contact the Principal Investigator, Mardelle Shepley, D.Arch., to report a concern or complaint about this research at 979-845-7009 or mshepley@arch.tamu.edu. You may also contact the Protocol Director, Adeleh Nejati at nejatia@tamu.edu.

Questions about your Rights as Research Participants

For questions about your rights as a research participant, or if you have questions, complaints, or concerns about the research and cannot reach the Principal Investigator or want to talk to someone other than the Investigator, you may call the Texas A&M Human Subjects Protection Program office. Phone number: (855) 795-8636 Email: irb@tamu.edu

Nejati, M.Arch., EDAC
Ph.D. Candidate, Research Assistant
Center for Health Systems & Design
Texas A&M University
College Station, TX 77843-3137

APPENDIX D

SURVEY RECRUITMENT LETTER

Dear Nursing Professional,

As a member of the Academy of Medical-Surgical Nurses, you are invited to take part in a brief online survey conducted by a doctoral student at the Center for Health Systems & Design at Texas A&M University.

The purpose of this new study is to better understand your usage of and preferences for **Staff Break Areas** in the healthcare work environment. Your input can help designers improve the quality of future healthcare facilities, by incorporating your needs and preferences.

This user-friendly online survey will ask you to respond to written questions and then evaluate photographs that represent options for staff break rooms. This should take 10-15 minutes.

You **CAN** save your survey and finish it later, if you are interrupted. At the end of the survey, you will be given the opportunity to enter into a drawing for one of the three **$100 GIFT CARDS** from Amazon.

If you would like to help us with this study, → **Please Click Here.**

I really appreciate your time and attention!

Regards,
Adeleh

Adeleh Nejati, *M.Arch., EDAC*
Ph.D. Candidate, Research Assistant
Center for Health Systems & Design
College of Architecture
Texas A&M University
College Station, TX 77843-3137

APPENDIX E

SURVEY INFORMATION SHEET

Texas A&M University Human Subjects Protection Program
Information Sheet

Assessing Usage, Preferences, and Perceived Restorative Qualities of Staff Break Areas in Healthcare Facilities

Introduction

You are invited to participate in a research study being conducted by Adeleh Nejati, a researcher from Texas A&M University. The purpose of this study is to better understand the usage, preferences, and potential restorative qualities of staff break areas in healthcare facilities, so they may be designed better in future facilities. You are being asked to take part in this study because you, as a member of Academy of Medical-Surgical Nurses (AMSN), have the experience of working as a nursing staff member in healthcare facilities.

Procedures

This survey will ask you about your opinions, preferences, and usage of staff break areas in your healthcare facility, as well as basic background information. It will take approximately 10-15 minutes to complete.

Cost and Compensation

Aside from your time, there are no costs for taking part in the study. You will not be paid for being in this study, but all participants who complete the survey will be given the opportunity to enter into a drawing for one of three $100 (Amazon) gift cards.

Participation

Participation in this survey is completely voluntary, and there is no penalty for not participating. You may decide to not begin the survey, or to stop it at any time. By completing the survey, you are giving permission for the investigator to use your information for research purposes, where your responses will be combined with those of other participants.

Confidentiality

The survey link is completely anonymous and will not collect any personally identifiable information. Information about you will be kept confidential and secure to the extent permitted or required by law. No identifiers linking you to this study will be included in any report that might be published. People who have access to your information include the Principal Investigator and research study personnel. Representatives of regulatory agencies such as the Office of Human Research Protections (OHRP) and entities such as the Texas A&M University Human Subjects Protection Program may access your records to make sure the study is being run correctly and that information is collected properly.

Questions about the Research

You may contact the Principal Investigator, Mardelle Shepley, D.Arch., to report a concern or complaint about this research at 979-845-7009 or mshepley@arch.tamu.edu. You may also contact the Protocol Director, Adeleh Nejati at nejatia@tamu.edu.

Questions about your Rights as Research Participants

For questions about your rights as a research participant, or if you have questions, complaints, or concerns about the research and cannot reach the Principal Investigator or want to talk to someone other than the Investigator, you may call the Texas A&M Human Subjects Protection Program office. Phone number: (855) 795-8636 Email: irb@tamu.edu

Adeleh Nejati, M.Arch., EDAC
Ph.D. Candidate, Research Assistant
Center for Health Systems & Design
Texas A&M University
College Station, TX 77843-3137

APPENDIX F

WAIVER OF DOCUMENTATION OF CONSENT

TEXAS A&M UNIVERSITY HUMAN SUBJECTS PROTECTION PROGRAM

WAIVER OF CONSENT OR DOCUMENTATION OF CONSENT FOR THE USE OF HUMAN SUBJECT RESEARCH

This form may be included with the any Application form when requesting a Waiver of Written Documentation of the Consent Process or a Waiver or Alteration of the Consent Process.

A waiver or alteration of the consent process according to 45 CFR§46.116 (c) and (d) would waive part or all of the consent process. Examples of the use of this waiver are in deception research (waiving elements of consent) or research to analyze data (waiving consent all together). A waiver of documentation of consent according to 45 CFR §46.117(c) would waive the required signature of the informed consent form and would require the use of an information sheet to provide to participants that contains all the elements of informed consent according to 45 CFR§46.116(a). Examples of the use of a waiver to documentation of consent would be for the use of internet surveys.

In order to ensure that the waiver is considered and documented appropriately, please provide a reasonable amount of detail in your responses.

I. Project Identification

Title of Project	Assessing Usage, Preferences, and Perceived Restorative Qualities of Staff Break Areas in Healthcare Facilities
Principal Investigator	*Mardelle Shepley*
IRB Protocol # (if assigned)	

II. Waiver of Documentation of Consent - 45 CFR§46.117

Provide protocol-specific reasons and justification on how *at least one* of the following criteria are met:
That the research presents no more than minimal risk of harm to participants and involves no procedures for which written consent is normally required outside of the research context. In cases in which the documentation requirement is waived, the IRB may require the investigator to provide participants with a written statement regarding the research. **Protocol-specific explanation:** For both interviews and online surveys, there is no foreseeable risk to participants with this research study. The intent of this study is to collect non-sensitive information about participants' opinions and preferences for environmental conditions; only minimal demographic data will be collected. Any identifiable personal information will be coded and separated from the responses. All data will be stored in the researcher's password-protected university computer, and only the researchers listed in Section 3.0 will have access to the information.
IRB Use Only ☐ Approved ☐ Denied ☐ Portions of the study ☐ All of the study Comments:

APPENDIX G

INTERVIEW QUESTIONS

Texas A&M University
College Station, Texas
Contact: anejati@tamu.edu

Assessing Usage, Preferences, and Perceived Restorative Qualities of Staff Break Areas in Healthcare Facilities

Interview Guide

This document is intended to guide the interview discussion. Each interviewee will fill out the survey questionnaire for the pilot study, and the interview will follow.

1. What challenges are nursing staff facing for taking breaks?
2. Aside from meal break, do they take short non-meal break, if yes, how often?
3. Which type of places were nursing staff most likely to take their break? Where would they ideally like to go for break?
4. In nice weather, do they like to take their breaks outdoors?
5. What do they do during their meal /non meal break? What would they ideally like to do?
6. How does their break area look like? What environmental amenities would nursing staff like to have in their break areas?
7. The main focus of my study is the indoor-outdoor connection for staff break areas: how much do you think, staff value having access to the outdoor greenery from their break area?
8. How much having physical access vs. visual access to outdoors, having balconies or outdoor garden vs. windows, can be effective in term of relieving their stress and helping them feel more refreshed?
9. If they have the opportunity to take their breaks outdoors, what amenities would they like to have?
10. how important are good quality staff break areas, in terms of their potential to:
    - increase your overall job satisfaction
    - increase your interest in working and remaining as an employee at a particular facility
    - increase your productivity, job performance, and the quality of patient care you are providing
    - decrease worry about the negative impact of your job on your health
11. Have you seen any good example of staff break rooms?
12. Now that you went through my online survey, do you have any comments or suggestions to improve it? Was it too long? Any problem with responding to any question?

APPENDIX H

SURVEY QUESTIONNAIRE

Texas A&M University
College Station, Texas
Contact: anejati@tamu.edu

Assessing Usage, Preferences, and Perceived Restorative Qualities of Staff Break Areas in Healthcare Facilities

Survey Questionnaire

Please take a few minutes to fill out this survey. The main purpose of the study is to better understand nurses' usage and preferences for staff break areas in healthcare facilities. The researchers welcome your feedback. Your survey response will be anonymous. Thank you for your participation.

Background

1. Are you:

☐ Male ☐ Female

2. What is your age?

☐ < 24 ☐ 25-29 ☐ 30-34 ☐ 35-39 ☐ 40-44
☐ 45-49 ☐ 50-54 ☐ 55-59 ☐ 60-64 ☐ > 65

3. Are you Hispanic, Latino, or of Spanish origin?

☐ Yes ☐ No

4. Would you describe yourself as: (Check all that apply)

☐ American Indian or Alaska Native
☐ Asian
☐ Black or African American
☐ Native Hawaiian or Other Pacific Islander
☐ White/Caucasian
☐ Other, please describe: _____

5. What is the highest level of education you have completed?

☐ Diploma-nursing
☐ Associate degree-nursing
☐ Associate degree-other
☐ Baccalaureate degree-nursing
☐ Baccalaureate degree-other
☐ Master's degree-nursing
☐ Master's degree-other
☐ Doctoral degree-nursing
☐ Doctoral degree-other
☐ Other, please describe: _____

Working Experience

6. Where are you currently working?

Facility Name (Optional): _____City, State: _____

7. In which healthcare setting are you currently working? (Select ONE answer)

☐ Inpatient acute care ☐ Skilled nursing homes ☐ Urgent care center ☐ Surgical center
☐ Inpatient critical care ☐ Senior Long-term care ☐ Ambulatory care ☐ HMO
☐ Inpatient long-term care ☐ Home health care ☐ Clinic ☐ Academic Medical Center
☐ Other, please describe: _____

8. What is your professional status?

☐ Registered Nurse
☐ Licensed Practical (Vocational) Nurse (LPN, LVN)
☐ Restorative Nurse Assistant (RNA)
☐ Certified Nursing Assistant (CNA)
☐ Other, please describe: _____

9. How long have you worked:

	Not Applicable	Less than 1 year	1 to 5 years	6 to 10 years	11 to 15 years	16 to 20 years	21 years or more
in nursing?	☐	☐	☐	☐	☐	☐	☐
as a registered nurse?	☐	☐	☐	☐	☐	☐	☐
as a medical/surgical nurse?	☐	☐	☐	☐	☐	☐	☐
in an inpatient care unit?	☐	☐	☐	☐	☐	☐	☐
in your current healthcare facility?	☐	☐	☐	☐	☐	☐	☐

10. What is your current primary position in your healthcare facility? (Select ONE answer)

☐ Administrator/Director ☐ Unit Manager/Head Nurse ☐ Clinical Nurse Specialist
☐ Nurse Educator/Faculty ☐ Nurse Practitioner ☐ Researcher
☐ Staff Nurse ☐ Student
☐ Other, please describe: _____

11. What is your current primary work area or unit? (Select ONE answer)

☐ Medicine (non-surgical) ☐ Surgery ☐ Obstetrics ☐ Emergency department
☐ Pediatrics ☐ Intensive care unit ☐ Anesthesiology ☐ Psychiatry/mental health
☐ Rehabilitation ☐ Pharmacy ☐ Laboratory ☐ Radiology
☐ Oncology ☐ Many different units or No specific units
☐ Other, please describe: _____

12. How long have you worked in your current specialty listed above?

☐ Less than 1 year ☐ 1 to 5 years ☐ 6 to 10 years
☐ 11 to 15 years ☐ 16 to 20 years ☐ 21 years or more

13. How many hours per week do you typically work?

Hours per week _____

14. In your current staff position, how much direct contact with patients do you typically have?
(Include all face to face interactions, such as talking with them, taking blood pressure, fixing their pillows, etc.)
Percentage of time per shift _____

15. How would you describe the level of stress in your work environment, on a scale of 0-10?
_____ (0-Low, 10-High)

16. While working in your healthcare facility, what do you typically do to relieve your stress, and feel more refreshed?

_____

_____

Working Environments

17. What is your typical working shift?
☐ Days ☐ Evenings ☐ Nights ☐ Combination, please describe: _____

18. How long is your typical:

Working shift _____ Hours
Meal break _____ Minutes
Non-meal break _____ Minutes

19. Aside from your meal break, how many breaks per shift do you typically take?
_____ (Breaks per shift)

20. In suitable weather, how many breaks per shift do you typically spend *outdoors*?
_____ (Breaks per shift)

21. In which places are you most likely to take your MEAL break?
(Please select your top three choices from the drop down list, or describe them in the text entry boxes)
First choice: _____
Second choice: _____
Third choice: _____

Drop down list includes:
Small break alcove in the unit
Staff break room in the unit
Open public lounge in the unit
Facility cafeteria (staff and visitors)
Facility cafeteria (staff only)
Facility garden or outdoor space
Off campus café, store, etc.
Other, please describe:_____

22. What activities do you typically do during your MEAL breaks? (Check all that apply)
☐ Working meetings ☐ Eating or drinking ☐ Walking ☐ Exercising
☐ Watching TV ☐ Surfing the Internet ☐ Talking on phone ☐ Reading
☐ Lying down and relaxing ☐ Smoking ☐ Having conversations with co-workers
☐ Other, please describe: _____

23. In which places are you most likely to take your NON-MEAL break?
(Please select your top three choices from the drop down list, or describe them in the text entry boxes)

First choice: _____
Second choice: _____
Third choice: _____

Drop down list includes:
Small break alcove in the unit
Staff break room in the unit
Open public lounge in the unit
Facility cafeteria (staff and visitors)
Facility cafeteria (staff only)
Facility garden or outdoor space
Off campus café, store, etc.
Other, please describe:_____

24. What activities do you typically do during your NON-MEAL breaks? (Check all that apply)

☐ Working meetings ☐ Eating or drinking ☐ Walking ☐ Exercising
☐ Watching TV ☐ Surfing the Internet ☐ Talking on phone ☐ Reading
☐ Lying down and relaxing ☐ Smoking ☐ Having conversations with co-workers
☐ Other, please describe: _____

Quality of Staff Break Areas

25. Is there a staff break room or area in your healthcare facility?

☐ Yes ☐ No ☐ I don't know.

26. What conveniences does this break room or area have? (Check all that apply)

☐ Refrigerator ☐ Coffee maker ☐ Ice maker ☐ Filtered water/ water cooler
☐ Microwave ☐ Television ☐ Computer ☐ Printer
☐ Phone ☐ Bulletin board ☐ Bathroom (staff only) ☐ Lockers
☐ Sofa and/or lounge chair ☐ Coffee table ☐ Dining table ☐ Conference table
☐ Chairs ☐ Built-in beds, daybeds or reclining chairs ☐ Exercise equipment
☐ Other, please describe: _____

27. What environmental qualities does this break room or area have? (Check all that apply)

☐ Music
☐ Plants or flowers
☐ Artwork such as paintings or photographs
☐ Windows
☐ Accessible outdoor space
☐ Other, please describe: _____

28. Can you view the outdoor from this break room or area?

☐ Yes ☐ No

29. If Yes, what are you able to see? (Check all that apply)
If No, what would you like to see if you were able to view the outdoor from this break room or area?

☐ Buildings / Signs
☐ Cars / Traffic
☐ Sky

☐ Trees
☐ Lawn
☐ Flowers
☐ Park-like or landscape natural environment
☐ Undeveloped area/ empty lot
☐ Other, please describe: _____

30. What additional amenities would you like to add in your break room or area?

_____

_____

31. Can you reach an outdoor space from your break room or area in your healthcare facility?
☐ Yes ☐ No ☐ I don't know.

32. Is this outdoor area private or public?
☐ Nursing staff only ☐ All staff in the healthcare facility ☐ Public (staff, patients and visitors)
☐ Other, please describe: _____

33. How would you describe this outdoor area? (Check all that apply)
☐ Patio (outdoor area NOT covered by a roof)
☐ Porch (outdoor area covered by a roof)
☐ Screened porch (usable outdoor area protected from insects, with roof)
☐ Balcony or upper porch (outdoor space projected from a wall of an upper floor)
☐ Roof terrace or garden (usable outdoor space above other parts of the building)
☐ Courtyard (surrounded by building, can be entered from indoors)
☐ Viewing garden (surrounded by building all sides, designed to be seen from indoors)
☐ Healing or meditation garden (designed for specific therapeutic intent)
☐ Atrium/ greenhouse/ sunroom (usable indoor space with partially glazed roof, may have plants)
☐ Other, please describe: _____

34. What amenities does this outdoor area have? (Check all that apply)

☐ Walkways	☐ Chairs and/or benches	☐ Tables
☐ Shade	☐ Trees	☐ Plants
☐ Lawn	☐ Flowers	☐ Water feature
☐ Playground for children	☐ Views beyond facility boundaries	

☐ Other, please describe: _____

35. What additional amenities would you like to add in this outdoor area?

_____

_____

36. In your healthcare facility, how satisfied are you with the following, if applicable:

	Didn't have this in my unit/facility	Very unsatisfied	Somewhat unsatisfied	Neither satisfied nor unsatisfied	Somewhat satisfied	Very satisfied

Overall Facility break areas	☐	☐	☐	☐	☐	☐
Small break alcove in the unit	☐	☐	☐	☐	☐	☐
Staff break room in the unit	☐	☐	☐	☐	☐	☐
Open public lounge in the unit	☐	☐	☐	☐	☐	☐
Facility cafeteria	☐	☐	☐	☐	☐	☐
Facility garden or outdoor space	☐	☐	☐	☐	☐	☐
Other, please describe:_____	☐	☐	☐	☐	☐	☐

Potential Future Staff break Areas

37. How important were **good quality** staff break areas, in terms of their potential to:

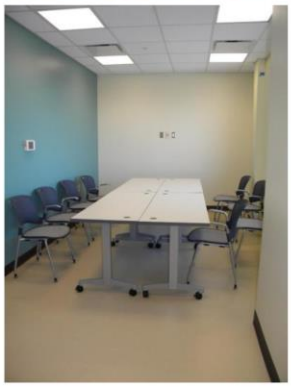
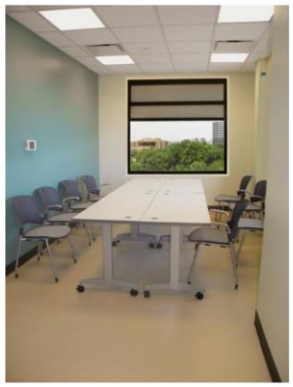
	Not at all important	Fairly unimportant	Neither	Fairly Important	Very important
increase your job satisfaction	☐	☐	☐	☐	☐
increase your productivity and job performance	☐	☐	☐	☐	☐
increase quality of patient care you provide	☐	☐	☐	☐	☐
increase your interest in continuing to work at a particular facility	☐	☐	☐	☐	☐
decrease possible concern about the negative impact of nursing practice on your health	☐	☐	☐	☐	☐
Other, please describe:_____	☐	☐	☐	☐	☐

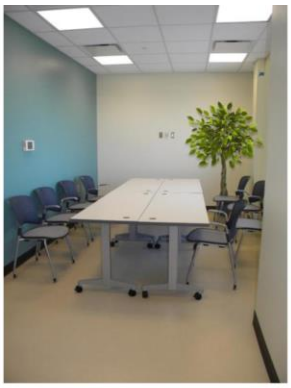
38. What would an ideal break area be like?

_____

_____

39. On a scale of 0-10 (0-Low, 10-high), please evaluate each room in terms of how effectively it helps relieve your stress, and makes you feel more refreshed. You can select your ratings from the dropdown lists at the bottom of each image, and you can enlarge each image by clicking on it.


40. On a scale of 0-10 (0-Low, 10-high), please evaluate each room in terms of how effectively it helps relieve your stress, and makes you feel more refreshed. You can select your ratings from the dropdown lists at the bottom of each image, and you can enlarge each image by clicking on it.





Dedicated Space for Quick Restorative Naps

Recently, design researchers are considering whether it is worthwhile to have dedicated areas on the unit where staff can take quick restorative naps. Some hospital organizations have developed and implemented astrategic nap program, with the intent to improve alertness and performance of frontline health care workers, through the use of conveniently located nap or respite rooms on the unit.

41. Do you currently have a space for quick restorative naps on your unit?
☐ Yes ☐ No ☐ I don't know.

42. Do you consider this to be a worthwhile space on a nursing unit? Please describe why?
☐ Yes ☐ No ☐ Not sure

_____

_____

43. What spaces should be near this space? (Check all that apply)
☐ Bathroom
☐ Nurse locker room
☐ Nurse lounge/break room
☐ Other, please describe: _____

44. How long should it take you to reach this space from the main nurse station/communication center?
Time to get there _____in Seconds

45. Should this space be: (Check all that apply)
☐ A screened-off space in the staff break room, separated with partition or curtains
☐ A separate room immediately adjacent to the staff break room
☐ A separate room in a different location than the staff break room
☐ Other, please describe: _____

46. What level of privacy would you require, to take a quick nap in this space?
☐ Private
☐ Semi-private (2 people)
☐ 3 people or more
☐ Other, please describe: _____

47. In addition to a comfortable bed couch, or recliner, what amenities should this space have? (Check all that apply)
☐ Access to sound insulating head phones
☐ Storage space for your belongings
☐ Emergency intercom/alarm
☐ Disposable eye masks
☐ Clean Blanket, linens, pillow, etc.
☐ Other, please describe: _____

Additional Feedback

48. If you have seen good examples of staff break areas, please describe them and tell us where they are located (Facility Name, City and State):

_____

_____

49. Please provide any additional comments about staff taking breaks and their break areas in healthcare facilities.

_____

_____

50. Would you like to participate in a phone interview (15-20 Min) to discuss a few questions more in detail?

☐ No

☐ Yes, please provide your name and phone number in the box below: _____

51. Would you like to be entered into a drawing to win one of the three $100 Amazon gift cards?

☐ No

☐ Yes, please provide your contact information below:

Name (optional): _____Phone number (optional): _____, Email address: _____

Thank you for taking the time to fill out our survey.
Your feedback will help us improve the quality of staff break areas in healthcare facility.
Your input is greatly appreciated.