Understanding Staff and Student Experiences at McKinley Health Center

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Contemporary preoccupation with physical and mental wellbeing demands that we study physical environments to ensure they contribute to overall wellness. Despite scarce research probing them, student health centers on university campuses are no exception. The environments of campus health centers must encourage university students' mental and physical wellbeing while offering preventative and acute health services and providing a supportive work environment for staff. The McKinley Health Center, housed in a 97-year-old building, exists to provide university students with professional primary, specialized, and emergency healthcare and to serve as a campus center for medications, resources, and health education. This mission provided a framework for a post-occupancy study of the facility to structure advice for architectural renovations to improve staff and student experiences. Two research questions focused the study's mixed methods research design.

How do current environmental conditions at the facility influence experiences of student-patients, and staff, and staff-student interactions?

What physical-environment changes would improve these?

We collected data through observation of physical traces, building-document analysis, two surveys administered to distinct user populations, and content from public online facility reviews. Through descriptive, content, and thematic analyses, we identified wayfinding, indoor environmental quality, and student-staff interactions as prominent themes in the experiences of student-patients as they seek care and health resources; and staff as they go through their daily work activities. McKinley's floorplan complexity underpins severe wayfinding challenges that frustrate student-patients and distract staff. Among our redesign suggestions, we propose color-coded wings to provide redundant cognitive cues, simplify directions, and ease patient anxiety. The introduction of color can also transform an environment perceived as "grey" and "boring". This relatively straightforward intervention can augment clearer signage. We believe this design approach can improve both student-patient and staff experiences and reflect an environment supportive of the student health and wellbeing priorities of the university.

1.0 INTRODUCTION

Many students attending U.S. colleges and universities believe their health and well-being are among their institution's priorities.[1] Campus healthcare centers have an important role in providing for students' physical and mental healthcare on campus. Physical health ailments are the most commonly treated at these health centers. However, the greatest health risks derive from mental health conditions such as depression, which afflicted up to 41 percent of U.S. college students in 2021.[2] Notable, because it influences healthcare providers' ability to deliver empathic and meaningful care, recent research also shows that physicians experience much higher rates of burnout, depression, and suicide than the general population.[3] Some of the stress underpinning these findings derives from their physical environments at work. High levels of sterility required in healthcare facilities often constrain sensorial stimuli, compounding negative wellbeing impacts of oft-noted inappropriate lighting design; both conditions contribute to increased psychological distress of staff and patients.[4] Furthermore, the quality of patient interaction with healthcare staff impacts satisfaction. Thus, for campus healthcare centers, appropriate sensorial stimuli and lighting design offer the potential to positively impact both staff and student-patient experiences. Effective wayfinding – those social and design cues that silently or unconsciously direct occupants throughout a space – is also a crucial component of a successful healthcare facility.[5] Important wayfinding cues include signage to guide visitors and can also involve furniture layouts that leave walkways unobstructed while also signaling waiting or lounging areas.[6,7]

Although not formal hospitals, approximately 1,500 university campus healthcare centers exist in the United States as places college students trust to deliver preventative and acute physical and mental health treatment by trained professionals.[8] The McKinley Health Center at the University of Illinois comprises three major building components which have been remodeled multiple times over its 97-year history (figure 1). The original

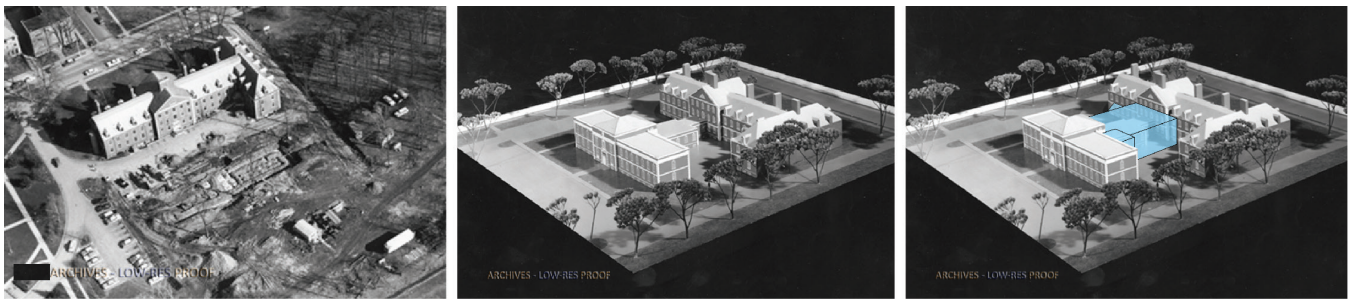


Figure 1. The progression of the additions to the McKinley Health Center. Image: university archive.

McKinley Memorial University Hospital was built in 1926, with a second structure added in 1961 and a third addition linking the two adjoined in 1986.[9] The McKinley Health Center's mission is to provide [specific university] students with professional mental and physical primary, specialized, and emergency healthcare and to serve as a campus center for medications, other health resources, and health education. In addition to general healthcare, the center offers mental health counseling and treatment, a women's health clinic, and basic imaging, diagnostic, and specialist referrals.

This mission served as the study's framework to guide a post-occupancy evaluation of the existing facility with an eye toward developing guidance for architectural renovations that could improve staff and student experiences in the facility, potentially inform redesign of similar facilities, and feed future research. The following questions framed data collection.

1. How do current environmental conditions at the McKinley Health Center influence student-patients' experiences?

2. How do current environmental conditions at the McKinley Health Center influence staffs' experiences?

3. How do current environmental conditions at the McKinley Health Center influence staff-student interactions within the facility?

4. What changes to the environment of the McKinley Health Center would improve the experience for student-patients and staff?

5. What changes to the environment of the McKinley health center would improve staff-student interactions within the facility?

2.0 LITERATURE REVIEW

Using Academic Search Ultimate, EBSCOhost, and Google Scholar databases, we searched for research literature to ground our study and inform the development of our data collection instruments. We targeted literature published in English between 1990 and 2023. However, few studies addressed university healthcare facilities, so we incorporated patient-and-staff-experience literature from healthcare centers more generally.

2.1 PATIENT AND STAFF EXPERIENCES

Much literature focuses on visitor wayfinding either addressing clinic layout or signage. O'Neill found that additional signage resulted in reduced travel time and fewer path errors, yet the overall floorplan complexity had more significance for travel time and errors than signage.[10] Another study found a positive correlation between views of the outdoors and lower stress levels during wayfinding.[11] Incorporation of technology, like mobile applications and interactive digital signage, also aids in wayfinding.[12] Of special relevance to university health centers, universal wayfinding signage is shown to limit communication errors across cultures.[13]

Elements of the physical environment can affect both patient experience and staff productivity, in turn impacting patient experience. Environmental elements, including light and spaciousness, contribute significantly to overall perceived satisfaction.[14] The brighter and more open a space, the more comfortable and relaxed an individual feels. Environmental qualities such as daylighting and clinic temperature affect both patients and staff experiences, while conditions like exterior and interior maintenance and the clinic's overall cleanliness and appearance also make a lasting impact.[15,16] Finally, both staff and students believe that clinic furniture should be adaptable and match the space's program.[17] Colors should also match the program (e.g., add more green elements to reduce stress and improve mood of both patients and staff).[18]

Outreach can combat negative stereotypes that students may have towards campus healthcare centers.[19] Outreach surrounding mental health can help decrease the number of clinic visits, as reduced stress can reduce illness and improve health overall.[20]

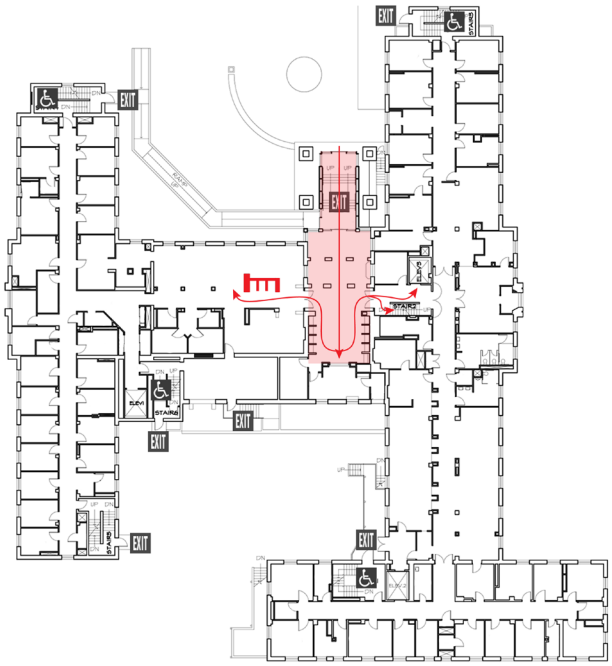


Figure 2. Floor plan illustrating current wayfinding conditions. Image: author diagram over university document.

2.2 STAFF PRODUCTIVITY AND PATIENT CARE

Environmental factors that impact both perceived care and providers' abilities to provide adequate care include patient volume, staffs' physical comfort and sense of security, and the age of a facility's medical equipment.[21,22] Staff productivity levels may decrease in more stressful environments.[23] Staff productivity can be improved by introducing high-quality technology to increase efficiency and lower student-patient wait times.[24] Implementing technological resources for staff communications may help decrease wait times, allow providers to appropriately prepare a room for patients' specific needs, and enable more patient-physician interactions.[25]

3.0 RESEARCH DESIGN & METHODS

We employed a mixed methods research design, including data collected through observation of physical traces, building-document analysis, two surveys administered to distinct user populations, and content from public online facility reviews. We received university IRB approval in April 2023.

Physical traces, observed during a staff-guided after-hours facilities tour, provided cues about users' interaction with the facility and suggested areas of misfit between activities and the environment. This data enabled improved understanding of facility use. We documented physical-trace observations in notes and photographs, linking that to literature-review content through categories of wayfinding, landmarks, and overall physical characteristics of the space.

The study's research questions, analysis of physical traces, and content from our literature review informed development of two Qualtrics-administered surveys. Questions aimed to assess the perception of building design factors and their impact on student-patients and healthcare providers. The ten-question student-patient-directed survey, sought to collect information about how individuals have experienced the physical environment and interactions with clinic staff. Half of these questions utilized a 5-point Likert Scale; the others were short answer. We advertised this survey via departmental email lists and posters displayed across campus currently resulting in 72 responses. The staff-focused survey was assembled to gather first-hand responses about environmental conditions and the impact of these on staff sentiments about their job and interactions with student-patients. This 24-question staff-focused survey included 12 question-pairs – a 7-point Likert Scale question paired with an open-ended question. On the research team's behalf, a facility administrator advertised this anonymous survey via an email sent to 24 facility staff who interact extensively with student-patients in their day-to-day schedule. This yielded 18 completed surveys.

To broaden our understanding of experiences with the facility and its environment, we analyzed content in public online reviews from Google, Facebook, and Yelp. This additional material provided frank accounts of patients' experiences, helping to enrich our understanding.

We used descriptive, content, and thematic analysis as complementary strategies. Descriptive analysis included reviewing building and physical trace documentation, identifying key features, and interpreting the information with respect to themes from our literature review to understand how the facility's physical layout may be impacting student and staff experiences. We used content analysis to analyze text-based content to develop a deeper understanding of the experiences and perspectives of facility users. We then analyzed across our descriptive and content analyses to identify key themes supported by evidence within those data.

4.0 RESULTS

Through data analyses we identified wayfinding, indoor environmental quality, and student-staff interactions as themes figuring prominently in the experiences of student-patients as they seek care and health resources; and staff as they go through their daily work activities.

4.1 WAYFINDING

Visitors and staff in any healthcare setting must be able to locate their destination without delay or frustration. Floor plan analysis of this facility highlighted numerous potential movement and wayfinding issues for visitors. These, in turn, can impede staff

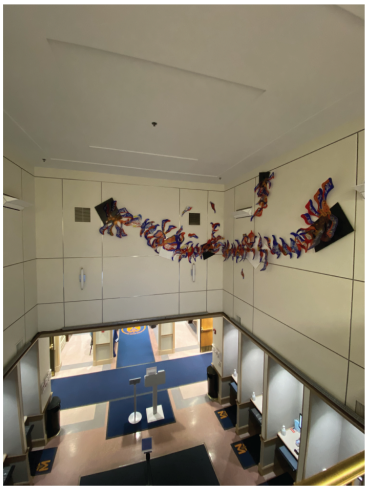
WAYFINDING

3.1 Pharmacy pickup line and waiting area - Overlapping circulation paths with too many signs/ directions.

3.2 Overall Signage – Lack of consistency across signs, including font type, color, size, and layout make it confusing for wayfinding.

3.3 Lower level – The excessive use of 3 double-sided signs can be confusing and overwhelming for patients.

INDOOR ENVIRONMENTAL QUALITY



3.4 Second floor view of main check-in – Artwork has been added to the double-height space, but it is rarely seen or appreciated by the visitors.

3.5 Exam room corridor – Long, plain corridor and artificial lighting creates a stressful environment for student-patients.

3.6 Typical exam room – Room size and furniture is consistent with other medical facilities. However, artificial lighting and lack of artwork increases patient stress and anxiety during any medical appointment.

Figure 3. Physical observation photographed from facility tour of McKinley Health Center. Photographs: author.

by diverting them from their primary duties to direct students around the building. The ground-floor entry, shown in figure 2, illustrates the initial wayfinding challenge. Students enter the building and immediately see the check-in desk straight ahead. However, the main circulation core is not directly in sight; it must be accessed by backtracking, going through doors, then down a hallway. The primary waiting area is on the opposite side of the check-in desk and is similarly disconnected from the entry by doors and wall. These visual barriers oblige the employee working at the front desk to direct traffic, hampering other duties.

While moving through the facility, we found brightly colored arrows taped to the floor to direct traffic flow. Shown in Figure 3.1, these arrows are utilized mainly in the pharmacy and reception areas. The facility contains a variety of signage; some areas receive more signage than others. Signage clusters often include designs varying by background color, border/font color, style, and size (Figure 3.2). In addition to wall signage, some spaces have excessive amounts of surrounding signage (e.g., the x-ray check-in desk in Figure 3.3).

Currently, wayfinding does not enhance overall wellbeing for staff or students. Seventy-five percent of the staff respondents agreed that the layout and wayfinding within the present arrangement is confusing, confirming our hypothesis about wayfinding as a critical concern for future facility developments. Open-ended staff responses further emphasized that the floor plan is confusing and suggested it is easy for those unfamiliar with the facility to get lost in its hallways and corridors.

Student open-ended survey responses referred to the building as “maze-like” and “complex.” Students perceive hallways as narrow and awkward in size, also noting that hallways on each level look alike, increasing the likelihood of getting confused and lost. Signage was also described variously as “too small,” “having vague arrows,” “lacking specificity,” and “blending in with the surrounding.” While we found multiple areas overloaded with signage during our facility tour, many respondents requested more signage. Students also noted that there is not a clear primary entrance or circulation path upon entering, likely because the original street-facing entrance was abandoned at some point, and the main entrance was moved to the backside of the original building.

4.2 INDOOR ENVIRONMENTAL QUALITY

The facility’s interior physical environment resembles a traditional medical clinic. The interior color schemes combine white, brown, and other muted colors with few instances of artwork or bright colors. One larger piece of artwork within the building is hung on a high wall in the double-height lobby of the main entry. Patients rarely notice it when checking in because it is high above them, attached to a wall behind them, and they are focused on the check-in screen directly in front of them (Figure 3.4). In addition to the lack of artwork, the corridors leading to the exam rooms are long, dull, and artificially lit, creating a more disorienting and ominous circulation path for patients (Figure 3.5). Aside from a small cork bulletin-board showcasing educational information and clinic events within each exam room, they appear very institutional and unwelcoming (Figure 3.6). Students’ comments indicated, “it’s drab and boring in there,” and “the building has somewhat of a grey, hopeless attitude, which is not what I’m looking for when I’m already feeling sick.”

Currently, sensitive medical services, such as blood drawing and radiology, are conducted in the below-grade level in conditions of minimal natural light. The dark and dull ambiance of the basement may lower student-patients’ moods and elevate tensions for both student-patients and staff. During our facility tour we noted that the entire building, aside from the entry, depended on artificial light for primary illumination. Some public areas offered clerestory windows, but these did not contribute noticeable daylighting within the building. Furthermore, when we toured the building, we saw only one instance of green vegetation inside the building. Located in the mental health wing waiting area on an upper floor, it was away from the main visitor areas and the experiences of most student-patients.

Staff survey responses ranked indoor air quality as the second most important item after wayfinding and the most important environmental factor. While we were not able to accurately assess noise levels, temperature, or air quality during our tour, staff respondents generally agreed that air quality is adequate. However, multiple mentions of unsuccessful efforts to improve the facility’s indoor air quality in their written responses suggest this is an area of concern. Lighting was ranked by staff as the least important indoor-environment component, although the need for improvements to artificial lighting ranked higher than the need to improve natural daylighting. Staff-respondents mentioned that modern light fixtures have been introduced but only lighting in general task areas seems to be unproblematic. Treatment room lighting was noted as “too harsh,” and other lighting, particularly in the basement, was “too fluorescent” or “yellowish and dim,” especially compared to natural daylight. Overall, staff did not rate privacy and noise levels as an area of high concern, but noted in their open-ended responses that noise from hallways tends to interfere with their work undertaken in surrounding spaces.

Student respondents commented variously on the quality of the indoor environment, referring to it as “dimly lit” and “cold and outdated”. Numerous student respondents called the facility “unwelcoming.”

4.3 STUDENT AND STAFF INTERACTIONS

The ability to control visual and auditory interactions within a medical facility is important for healthcare providers and patients. Individual patient care rooms serve the purpose of facilitating private discussions regarding patient matters. However, providing spaces for interaction among providers and staff members is also essential. During our tour of the facility,

we noticed several instances of crowded staff and service areas. The pharmacy exemplifies one area within the facility currently grappling with this issue. Another notable example is the business office, which is housed in the space of the previous facility entrance, now converted into a snug office space. Unfortunately, this adaptation has resulted in a cramped environment with occupancy exceeding intended capacity, leaving employees with few designated workstations and insufficient smaller meeting areas for private conversations. Furthermore, some patient rooms have been transformed into offices for multiple primary providers. Although staff responses suggest they may prefer the autonomy provided by individual desk spaces, the current layout offers limited opportunity for individual desks and spatial privacy buffers.

Building floor plan and overall layout analyses suggest the building's separation into wings may inhibit staff-to-staff interaction. The H-form plan creates a substantial spatial disconnection between different departments resulting in difficult between-department communication. Open-ended responses from staff indicate the desire for more staff-to-staff interactive spaces to facilitate staff-to-staff communications for different interface needs. Staff responses indicate that common gathering spaces are integral to support staff-to-staff interactions, but they note these interactive zones are unevenly distributed. These observations highlight the pressing need to address space constraints within this facility to ensure privacy for interactions with patients and sufficient types of space for diverse staff collaborations. Our tour of the facility emphasized a second-floor room used for staff meetings and training sessions. The room appeared to have sufficient chairs and space to accommodate thirty individuals. However, our guide noted that there may be instances where up to fifty people need to simultaneously gather there.

Overall, responses to the student survey (figure 4), tended toward neutral or positive satisfaction levels. The two questions that received the most combined "dissatisfied" and "highly dissatisfied" responses reflected dissatisfaction with the physical environment and with reception/clerical staff. These aspects comprise the emphasis of content in the students' open-ended responses. Many responses criticized the overall building layout, signage, and lack of space. Likewise, numerous responses revealed students' negative perception of interactions with staff, identifying a lack of assistance in wayfinding, eagerness to finish an interaction, rudeness, being impatient, judgmental, or passive-aggressive, and experiencing a lack of care. One student-survey respondent wrote, "Sometimes they are a little rude and don't give directions to where we need to go." Some respondents perceived a lack of deeper knowledge of health about specific conditions among primary care physicians. In reference to medical diagnosis, students pointed to feeling like they were not provided adequate information.

The public reviews we collected focused on staff interactions rather than the physical environment or wayfinding. They added more detail on experiences with the student health center. Most of the reviews were negative, focusing on interactions where student-patients perceived staff as rude or incompetent. One review from Yelp stated, "In the future I plan on steering clear of McKinley as much as possible" while another noted that the clinic was convenient and affordable for students. The staff's thoughts on staff-student interactions were inconclusive.

5.0 DISCUSSION

Our analysis combined with content from literature, design observations, and open-ended responses underpins the following discussion of possible built environment changes at McKinley Health Center that might improve experiences for student-patients and staff.

5.1 WAYFINDING

The McKinley facility as currently configured is challenged by floorplan complexity that results from its form which is an aggregation of two parallel multistory bars linked by a third perpendicular addition each built at different points in its 97-year history. O'Neill indicates this presents more of a wayfinding challenge than confusing signage.[26] The facility's monotonous interior color palette and material similarity throughout, as well as multiple examples of confusing signage, contributing to difficulty with wayfinding by augmenting floor plan complexity. Several design strategies could be employed to improve wayfinding. Staff suggested some type of pathway color-coding, including colored carpet or flooring, could improve wayfinding and reduce their need to guide visitors. Color-coded wings are used as universal language to provide redundant cognitive cues, simplify directions, and ease patient interpretation. This intervention can be a relatively affordable addition to augment clearer signage. Currently, staff members assist with check-in and directions. However, interactive digital maps are an alternative that allows visitors to visualize the entire floor plan without relying on staff to direct them. Clear, adequate, but not overly redundant signage is also important to eliminate confusion caused by signage overuse that can negatively influence wayfinding. Color coded wings, digital interactive maps, signage redesign, and backlit signage for darker areas may be helpful design strategies to improve experiences at the facility.

5.2 INDOOR ENVIRONMENTAL QUALITIES

A multitude of environmental factors may influence staff productivity and their ability to effectively care for patients. Students suggested creating a calmer, friendlier, and more welcoming environment through color-palates changes and the addition of plants and greenery. Lighting is another prominent environmental factor that could transform the facility's overall ambience. While in comparison to other floors the basement was the least naturally lit, all floors and areas of the building seemed to rely primarily on artificial light as we observed many window blinds closed to provide visual privacy and temper direct sunlight and glare. Appropriate levels of daylight and artificial light provided through an integrated lighting design that

Figure 4. Likert-scale responses from the student survey. Graphics: author.

incorporates direct and indirect daylight and artificial light that can be easily controlled by occupants are vital components of an environment that supports improved mental health and increased worker productivity. Indoor air quality and temperature are other aspects that may impact worker productivity. Research demonstrates the importance of staffs' ability to personalize their work environment, which includes adjusting temperature and lighting.[27] Student and staff comments overall suggest that lighting, brighter colors, carefully considered furniture, and overall interior design are factors to consider when aiming to address indoor environmental qualities for improved student and staff experiences.

5.3 STAFF-STUDENT AND STAFF-STAFF INTERACTIONS

Students' commentary highlighting their negative experiences point to the stresses and stress-responses both students and staff face during their use of the McKinley facility and how these can impact staff-student and staff-staff interactions. Student responses suggest adding more staff at the reception to improve overall student experience and reduce stress in the departments. To improve their experience, students also suggested a more straightforward website/app to make appointments and the possibility of making appointments in-person. To improve overall ambience, thus improving the quality of staff-to-student interactions, the building's organization could benefit from moving all patient operations out of the basement.

Staff responses indicate that staff-to-staff interaction spaces are critical to improve the effectiveness of facility staff. Currently, staff have little or no personal workspace and unsuitable areas for conversing with other staff. Their responses indicate a desire for increased provider meeting zones that can act as quick, informal collaboration areas where discussions remain private from patients and other staff members. And, while staff survey responses suggest they may prefer the autonomy provided by individual desk spaces, the current layout offers limited opportunity for individual desks with any spatial privacy buffer. Beyond the potential to reduce staff-student interactions around wayfinding design and technology strategies, patient-staff interaction did not appear to concern staff. Staff commented that interactions with patients in all areas appear confidential, especially with the high number of individual patient-care rooms.

To reduce individual staff and student stresses that impact their interactions, additional types, and sizes of space for staff to assemble comfortably and a range of types of spaces that support staff-to-staff and staff-to-student interactions and communications are needed. A potential substantial future change could

include redesigning the layout and scheduling of some spaces within the facility to free up rooms for both staff and students, as perceived crowding can add additional stress on both parties. Some other design suggestions that could benefit everyone by reducing stress-inducing conditions include introducing more plants and greenery as well as strategically locating wall art that can transform the institutional coldness into an atmosphere of warmth and caring.

6.0 CONCLUSION

In an era when the United States is hyper-focused on health and wellbeing, it is critical to examine the places where healthcare is delivered to ensure the physical environment is contributing to overall wellness. Despite scarce research probing them, student health centers on university campuses are no exception as they offer an environment critical to addressing the physical and, more importantly, the mental health needs of U.S. college students; 41 percent of whom are estimated to suffer from one or more mental health conditions that degrade quality of life. A large part of this study focused on evaluating aspects of the McKinley Student Health Center to identify qualities of the physical environment that contributed to negative or unduly stressful healthcare experiences for students and a potentially linked negative or stressful work experience for facility staff.

The results of this study, perhaps unsurprisingly, mirror literature examining other types of healthcare settings. Yet architects and designers should not neglect the campus health center as a setting worthy of study as often the clients for such projects, campus administration, may not conceive of these spaces as related to for example, hospitals and public medical clinics. Indeed, the McKinley Health Center shares several traits in common with some of the largest hospitals. Chief among them is a built environment comprised of additions aggregated over its 97-year history, resulting in a spatially complex floor plan perceived as maze-like by student-patients and staff. Though McKinley's administration is attempting to address wayfinding challenges through signage, there remain aspects to address at the level of interior environment to improve staff satisfaction and productivity within their working environment, in turn improving staff-student interactions. Although the layout and historical importance of the building limit major facility renovations, there are opportunities to address areas of concern within the facility. Borrowing from revelations in healthy environments literature a few relatively straight-forward design strategies arise to address wayfinding, indoor environmental qualities, and social interaction. We believe that the design approach outlined in our discussion, which incorporates these strategies, can improve the student-patient and staff experiences, and reflect an environment supportive of the student health and wellbeing priorities of the university.

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