

# Mental and Behavioral Health Environments: Measurement of Building Performance

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**Acknowledgements:** The authors would like to acknowledge the research funding provided by the Academy of Architecture for Health Foundation. We would also like to acknowledge the manuscript preparation support provided by Kimia Erfani and the statistical support of Stephen Parry, both of Cornell University.

**Keywords:** behavioral health, mental health, psychiatric facility design, design research



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# EXECUTIVE SUMMARY

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There has been an increase in the number of mental and behavioral health (MBH) facilities built in the United States in the last few years; however, research has not kept pace to inform the design process. Currently, little is known about facility design in MBH settings, and standards of best practice have yet to be established. The emergent use of evidence-based design strategies in healthcare settings has opened the door for dialogue and research.

This white paper describes an empirical study of MBH facilities. The purpose of the study is fourfold: 1) to develop a tool to evaluate mental and behavioral health facilities 2) to identify design features believed to positively impact staff, patients, and families in psychiatric environments 3) to evaluate the quality and presence of these features in existing facilities and 4) to make recommendations for future research.

## LITERATURE REVIEW

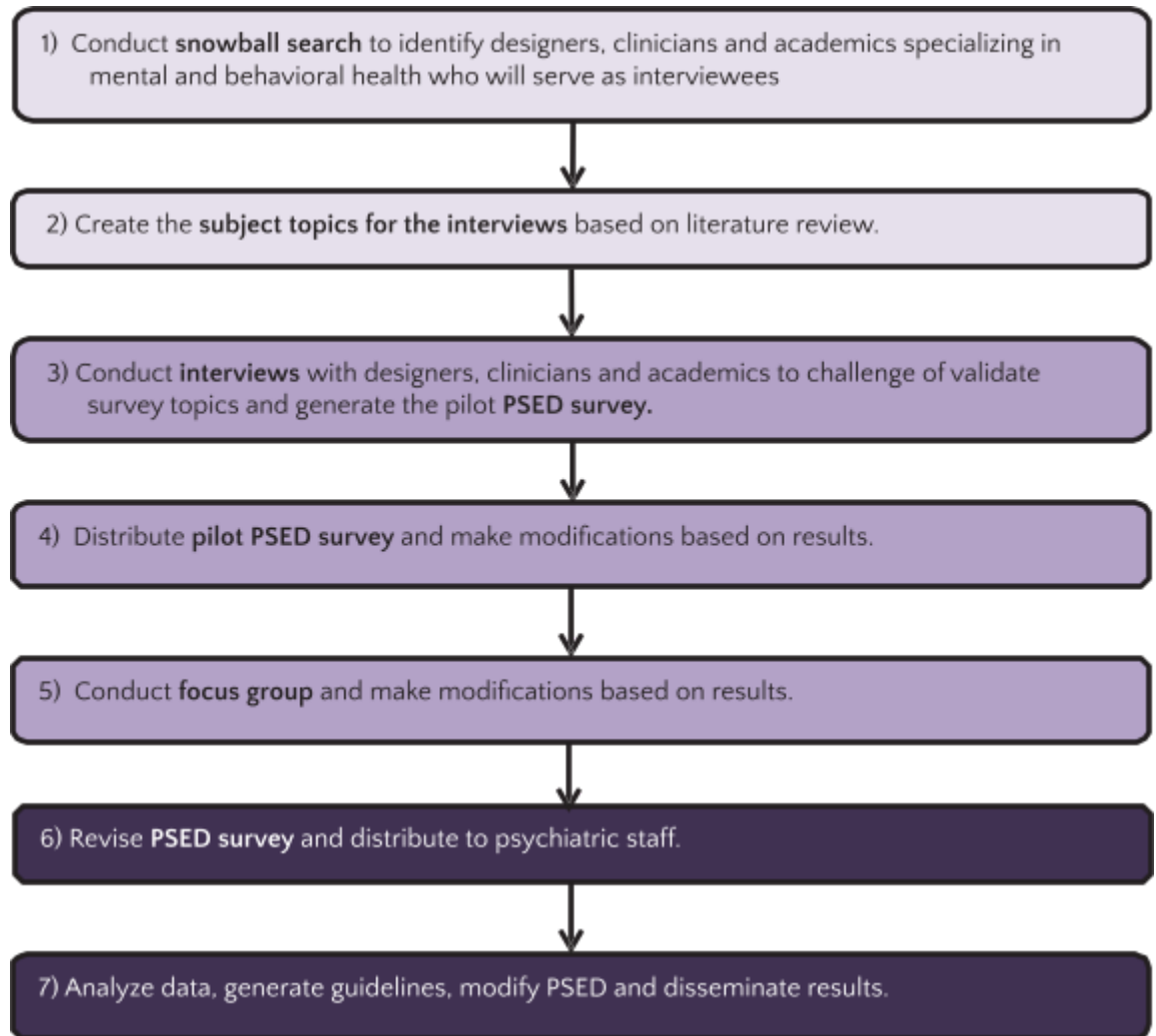
The literature review addresses design features believed to confer positive changes in individuals in an MBH environment. We identify and explore the aspects of design that have been subject to debate in the literature and in the industry. Lastly, we elucidate the areas of design in MBH facilities that would benefit from further research. Interviews, focus groups, and surveys were used to explore these issues and are described in detail.

The review incorporates and expands upon an in-depth review conducted by Shepley and Pasha (2013). Rather than address the entire body of published documentation on MBH environments, this research project focuses on issues that have received at least a minor level of substantiation. The following topics were identified by Shepley and Pasha as the ones with the most (although limited) support in the research literature.

1. Deinstitutionalized and Homelike Environment
2. Orderly and Organized Environment
3. Well-Maintained Environment
4. Visual or Physical Access to Nature
5. Damage-Resistant Furnishings
6. Maximum Daylight
7. Staff Safety/Security
8. Private/Low Density Rooms
9. Patient-Staff Interaction/Observation
10. Social Interaction/Community
11. Autonomy and Spontaneity
12. Suicide-Resistant Furniture Fixtures and Equipment (FFE)
13. Mix of Seating
14. Smoking Room
15. Nurse Station Observation
16. Indoor/Outdoor Therapy
17. Staff-Patient Interaction

## METHODS AND RESEARCH TOPICS

This research project consisted of seven phases, including the pilot studies as summarized in the following figure. In summary, a draft version of the survey tool, entitled the Psychiatric Staff Environmental Design (PSED), was developed. It was based on the previous literature and used as the topic of discussion for the interviewees who were identified by a snowball search process. The interviews were followed by a focus group whose members also served as subjects for the pilot study. Based on these conversations, the survey was revised and then distributed to psychiatric nursing organizations and a treatment facility. Overall, there were four primary methods of research: snowball search, interviews, focus group, and surveys.



## SNOWBALL SEARCH

The researchers started with a known group of experts and contacted these individuals to ask whom they consider to be experts; the additional experts in turn provided still more names. The 17 final interviewees were from a range of professions within the field of MBH care and design. Represented professions include psychiatric nursing, academia, architecture, and administration of hospitals and facilities.

## INTERVIEWS

Each interview was allotted a maximum of 35 minutes from start to finish and was conducted by the principal investigator (PI). With the exception of two of the interviews, a research assistant also participated. Once the interview transcripts were generated, data was collected and analyzed using the qualitative analysis method described by Lincoln and Guba (1985) in *Naturalistic Inquiry*.

## FOCUS GROUP

The focus group critique took place in an architectural office in Boston, MA. Participants included the principals/architects in two design firms, a senior staff architect, and a senior staff interior designer. Also present were the PI and a student research assistant. Four participants met in person and two were connected to the meeting via WebEx. Comments were reviewed immediately after the focus group and modifications were made regarding the content of the survey.

## PSED SURVEY

Subjects for the PSED survey were recruited from five psychiatric nursing organizations and a large behavioral health facility in New York City. The organizations were the International Society of Psychiatric-Mental Health Nurses, Horatio (Europe), American Psychiatric Nurses Association, Canadian Federation of Mental Health Nurses, and Australian College of Mental Health Nurses. The analysis of interview note cards informed modifications to the Psychiatric Staff Physical Environment (PSED) survey. In addition, respondent demographic questions were added to the survey to assess job title, experience, location, and other variables.

The core questions in the 50-question survey followed a pattern. For each design topic, three questions were asked. The first question asked respondents to rank the importance of design qualities that pertain to a specific design topic, such as landscaping. The second question asked respondents to rank the importance of the topic. The third question asked respondents to assess their current facility's ability to address the topic. Once all of the topics raised during interviews had been addressed on the survey, the survey questions were given to the focus group for a follow-up critique.

## RESEARCH TOPICS

Multiple relationships were investigated in this study, examples of which follow:

- Relationship between demographics and perception of importance or effectiveness (Typical hypotheses: Nurses perceive the environment to be less effective and more important than doctors do; more experienced nurses perceive the environment to be less effective and more important.)
- Relationship between importance and effectiveness (Hypothesis: The greater the importance, the lower the effectiveness.)
- Relationship between type of facility, effectiveness, and importance (Hypothesis: Different types of facilities will have different effectiveness and importance.)
- Relationship between importance of different environmental characteristics within categories and overall (Hypothesis: Some characteristics will be found to be more important than others.)
- Relationship between effectiveness of different environmental characteristics within categories and overall (Hypothesis: Some characteristics will be found to be more effective than others, e.g. safety rather than nature.)

## RESULTS

### INTERVIEWS

Overall, the majority of the topics derived from the literature review were deemed appropriate for the survey by interviewees. Some topics were challenged (e.g., order/organization and autonomy/spontaneity) because the definitions of terms were unclear. The topic of suicide was generally thought to have been previously addressed, but due to the critical need to protect life, it was retained. The topic of smoking was neither objected to nor supported, as most interviewees perceived smoking to be a non-issue due to the advent of restrictions in many buildings and the availability of nicotine patches.

There was an unexpectedly strong response to two of the topics: the importance of access to nature and the importance of an aesthetic environment. These environmental interventions are often seen as amenities, or extras, rather than core components. However, all of the interviewees indicated that these were important considerations, so they were added to the survey.

Two topics generated intense discussion during the interviews: private versus shared bedrooms and open versus closed nurse stations. The majority of interviewees felt that private rooms were highly desirable as they reflect a less institutional environment, but two were adamantly opposed, stating that the increased supervision by other patients in a shared bedroom could be a deterrent to self-harm. The point was also made that private rooms increased construction costs and (potentially) staffing costs due to the greater difficulty supervising larger areas. The point was also made that patients have vastly different diagnoses and therefore different needs in terms of private versus shared rooms.



Regarding open versus closed nurse stations, the debate centered on the protection and safety of staff, as well as the protection, safety, and normalization of patients. Interviewees commented that staffers need to provide the most supervision possible and to interact with patients directly. On the other hand, staff members in units with potentially violent patients consider the nurse's station as a place of retreat in an emergency. Two interviewees mentioned a hybrid station. Another possibility is a closed nurse station that can be transformed easily into a less formidable barrier between staff members and patients.

## FOCUS GROUP

Eight additional topics were generated via the interviews and focus group. These topics were added to the survey and were the following:

- Attractive/Aesthetic Space
- Attractive/Comfortable Furniture
- Good Electric Lighting
- Noise Control
- Impact of Experience
- Positive Distraction
- Impact of Length of Stay
- Impact of Unit Size

## SURVEYS

### *Subject characteristics*

Approximately 70% of subjects had more than 15 years of work experience in psychiatric facilities. Sixty percent were psychiatric nurses. Their occupations included: registered nurses (RN), psychiatric licensed practical nurses (LPN), clinical psychologists, mental health counselors, occupational therapists and social workers, treatment managers and educators, and non-licensed personnel such as mental health technicians and patient safety attendants. Half of the respondents were affiliated with residential facilities. The highest response rates came from the United States and Australia. Subjects worked in facilities that specialize in patients with a broad range of diagnoses.

### *Facility and patient population characteristics*

Fifty-three percent of respondents worked in facilities that were adjacent to or part of a general hospital. Forty-three percent of these hospitals' emergency rooms had 10 holding areas or fewer, while 14% were larger than 20 bed units. In surveyed outpatient facilities, 26% had more than 20 counseling rooms and only 5% had five rooms or fewer.

The average residential facility had a total of 10 to 50 beds. Within these facilities, 70% had units ranging from 15 to 25 beds. The recommended size of a unit,

according to 75% of respondents, was 11 to 20 beds. In the majority of units, fewer than 50% of patient rooms and fewer than 50% of bathrooms were private.

We sought to compare length of stay in our population with national demographics. Almost 50% of respondents in this study reported that the average length of stay of a patient was slightly less than seven days. This is similar to the average length of stay (7.2 days) for hospital inpatient care for all diagnosed mental disorders in the US, as reported by the Centers for Disease Control and Prevention (2015). In Australia, according to that country's Institute of Health and Welfare (2015), the average length-of-stay in public acute care hospitals was 16 days in 2013–2014, or more than twice as long.

### ***Importance versus Effectiveness and Environmental variables***

One of the important conclusions of this study is that there is a statistically significant difference between the perceived importance of desirable features and the perceived effectiveness of them. In other words, there is a gap between what psychiatric nursing staffers feel is important in the facilities where they work and the presence or quality of those traits in their facilities.

The data was separated into general categories (i.e., deinstitutionalized/ homelike environments, orderly and organized environments, well-maintained environments, access to nature, and attractive and aesthetically pleasing features) and more specific environmental features (security, noise, day lighting, furniture, lighting, staff respite, etc.). A summary follows of some of the conclusions under these two headings.

#### ***General categories***

Overall, the observation that an environment was well maintained was perceived as the single most important quality in an MBH setting. This was followed by other qualities: access to nature, attractiveness and aesthetics, deinstitutionalized environment, and orderly and organized environment. All of these qualities were perceived as relatively important; only the difference between the first one (maintenance) and the last one (orderliness) was statistically significant. And while all of these factors were considered to be important, none of them was perceived to be effective in the facilities where people were reporting from.

The primary findings (both statistically significant results and substantive trends) for the general categories were:

- A sense of respect for patients, choice and control, and a welcoming entry area were the most highly ranked contributors to a deinstitutionalized and homelike environment.
- Absence of clutter and a navigable and readable environment were the most highly ranked contributors to achieving an organized and orderly environment.
- Clean floors, walls, and furniture, and well-operating mechanical systems were

- the most highly ranked contributors to a well-maintained environment.
- Views of gardens and views of natural landscapes were the most highly ranked contributors to achieving visual access to nature.
- Outdoor safety and private conversation spaces were the most highly ranked contributors to creating an accessible outdoor environment.

### ***Specific environmental features***

The primary findings (both statistically significant results and substantive trends) for specific environmental features were these:

- Adequate staff safety and security was the highest priority of environmental features among respondents to this questionnaire.
- Good noise control was the second most important environmental category.
- Day lighting, comfortable furniture, appropriate electrical light, damage-resistant furniture, and staff respite spaces were not as strongly supported as staff safety and noise control, but they were still deemed to be important.
- Staffers in facilities that have private patient rooms feel that this privacy is important. (The mean importance score of private patient bedrooms on a 7-point Likert scale was 5.84 and the mean importance score of private bathrooms was 5.82.) This topic was the most contentious of those addressed in both the interviews and the survey.
- One-on-one consulting rooms were considered to be the most important and effective means of enhancing staff-patient interaction, followed by monitoring via a window and open nurse stations. Camera and audio monitoring and closed nurse stations and auditory monitoring were considered to be ineffective.
- Positive distraction was found to be almost as important as suicide resistance. Contributors to positive distraction, in order of importance, were music, board games, and video games.
- Group activities, shared eating, and group therapy were thought to be the primary contributors to social interaction and a sense of community.
- Primary contributors to staff respite were outdoor spaces for staff and a private staff entrance. A staff nap room was not considered particularly important.
- Security was the primary contributor to patient autonomy and spontaneity. Other features, slightly less strongly supported, were: technology, access to the outdoors, access to exercise, and access to snacks.
- Regarding contributors to suicide-resistance, basic anti-ligature devices are the most important. Shared bedrooms and shared bathrooms were not thought to contribute to suicide resistance, which runs contrary to the opinion of some interviewees.

### ***Staff characteristics and outcomes***

- Data suggest that job title was not related to an individual's sense of the importance of predicted environmental variables, although that title was related to perceived effectiveness.

- Current setting (rural, suburban, or urban) was not related to the importance or effectiveness of quality landscaping.
- Staff from urban facilities viewed quality landscaping similarly to staff from facilities in rural environments, in terms of its importance and effectiveness.
- Time in the field was related to the perceived importance of attractive and well-maintained environments.

## CONCLUSION

### DESIGN GUIDELINES

In spite of the lack of pre-existing evidence-based recommendations, the preliminary data from this study suggest several design objectives for MBH environments (in order of reported importance):

- features that ensure patient safety
- features that ensure staff safety
- presence of positive distractions
- high levels of maintenance
- spaces dedicated to staff respite
- visual and physical access to the outdoors
- attractive and aesthetically pleasing decor
- deinstitutionalized appearance
- orderly and organized furniture, storage, and configuration

Private rooms and open nurse stations received a great deal of support in the interviews and surveys, but no recommendation is provided at this juncture for these design options. These components have dramatically significant impacts on staff and patient safety and must be researched more diligently. A conservative approach in both cases would be to provide hybrid features, which address the diverse needs of patients. In the case of private rooms, it is recommended to provide private and semi-private rooms or large private rooms that could be converted to shared rooms if needed.

In the case of nurse stations, a semi-open station with the flexibility to be fully open after minor remodeling is a thoughtful approach. This supports the notion that patients are not all identical in their needs and that a mix of diagnoses will vary over time. In conclusion, our research team strongly suggests that future research in behavioral health facilities focus on the impact of private patient rooms on suicide attempts and other outcomes, as well as outcomes associated with open and closed nurse stations.

## THE PSYCHIATRIC STAFF ENVIRONMENTAL DESIGN

### (PSED) RESEARCH TOOL

The usefulness of the PSED tool was corroborated by the high level of importance associated with each of the research questions. The only question that received a low importance rating was about smoking. This issue is being addressed by other

means, such as nicotine patches. Other minor modifications to the instrument include requesting more specific information on the number of rooms, etc., and the re-clustering of specific topic areas.

## QUALITY OF EXISTING FACILITIES

One of the clearest findings in this study is that there is a significant disparity between the environments that MBH staffers believe are important for the health of patients, families, and staff and the frequency of these features in their facilities. The impediments to achieving these design goals include fiscal limitations, stigmatization of mental health patients, and lack of research to support design objectives.

## FUTURE RESEARCH

The research project's literature, interviews, focus group, and survey helped to identify prime areas for future research on MBH facilities. Our recommendation, in order of priority, would be studies on:

1. private versus shared bedrooms
2. open versus closed nurse stations
3. acoustics
4. access to nature
5. positive distraction
6. lighting
7. staff respite areas

The impact of private versus shared bedrooms and the design of nurse stations are most urgent topics due to their impact on safety. Shared bedrooms might cut down on the frequency of aggressive acts and suicide attempts; we need to find this out. And we need to know if the degree of openness of a nurse station might have a desirable effect on patient behavior and sense of security and on staff sense of security.

The objectives of this research project, which were to create a tool for evaluating MBH facilities, to identify design goals, to evaluate the quality of existing features, and to make recommendations for future research, were met. The findings are an initial step toward focusing attention on MBH settings. We hope that the content will inspire and inform future designers and researchers.