



RESEARCH IN A SNAP

OVERVIEW

We're keeping you updated on citations added to The Center's Knowledge Repository.

The Knowledge Repository is a collaborative effort between The Center for Health Design and our partners

Academy of Architecture for Health
an AIA Knowledge Community



The American Institute of Architects



AAHF
ACADEMY OF ARCHITECTURE FOR HEALTH
FOUNDATION



ASHE
Optimizing health care facilities



FGI

Design for Aging
an AIA Knowledge Community



The American Institute of Architects

Additional key point summaries provided by



NIHD Nursing Institute for Healthcare Design
INSPIRING AND EDUCATING NURSES



RESEARCH DESIGN CONNECTIONS

Knowledge Repository News

Among 63 new entries in the Knowledge Repository, several papers focus on unit layout, and specifically, visibility. You will find studies on visibility related to several important outcomes, including staff communication, efficiency, care quality, and privacy. Check the citations listed in the Experience: Supportive Design category.

(Papers published ahead of print "in press" will be updated as volume and page information becomes available.)

November - December 2019

Experience

Perceived Quality of Care (Noise, Communication, Waiting, etc.)

1. Alzoubi, H. H., & Attia, A. S. (2019). Assessment of the acoustical standards in patient care units in Jordanian National Hospitals in light of the international criteria: Case of King Abdullah University Hospital. *Alexandria Engineering Journal*, in press. <https://doi.org/10.1016/j.aej.2019.10.004>
2. Devlin, A. S., Anderson, A., Hession-Kunz, S., Kelly, M., Noble, L., & Zou, A. (2020). Magnitude matters: Art image size and waiting time impact perceived quality of care. *HERD: Health Environments Research & Design Journal*, in press. <https://doi.org/10.1177/1937586719892602>
3. Haddox, J. C., & Jiang, S. (2019). The virtual shelf: A feasibility study on self-selected imagery and in-patient experience in a cancer treatment setting. *Proceedings of the Environmental Design Research Association 50th Conference*. Presented at the EDRA, Brooklyn, NY. Retrieved from <https://cuny.manifoldapp.org/read/the-virtual-shelf-a-feasibility-study/section/6f98929d-75ad-4765-b829-dcc0ef91ab33>
4. Ma, K. W., Mak, C. M., & Wong, H. M. (2020). The perceptual and behavioral influence on dental professionals from the noise in their workplace. *Applied Acoustics*, 161, 107164. <https://doi.org/10.1016/j.apacoust.2019.107164>
5. Mahmood, F. J., & Tayib, A. Y. (2019). Healing environment correlated with patients' psychological comfort: Post-occupancy evaluation of general hospitals. *Indoor and Built Environment*. <https://doi.org/10.1177/1420326X19888005>

Supportive Design (Social Support, Distractions, Nature, etc.)

6. Abdelaal, M. S., & Soebarto, V. (2019). Biophilia and Salutogenesis as restorative design approaches in healthcare architecture. *Architectural Science Review*, 62(3), 195–205. <https://doi.org/10.1080/00038628.2019.1604313>



7. Bai, L., & Nasu, S. (2019). Study of common space layout design in Japanese nursing home. *Proceedings of the 12th Space Syntax Symposium*, 1–12.
8. Bates, V., Hickman, C., Manchester, H., Prior, J., & Singer, S. (2019). Beyond landscape's visible realm: Recorded sound, nature, and wellbeing. *Health & Place*, in press. <https://doi.org/10.1016/j.healthplace.2019.102271>
9. Clouse, J. R., Wood-Nartker, J., & Rice, F. A. (2019). Designing beyond the Americans with Disabilities Act (ADA): Creating an Autism-friendly vocational center. *HERD: Health Environments Research & Design Journal*, in press. <https://doi.org/10.1177/1937586719888502>
10. Di Sivo, M., & Balducci, C. (2019). Patient-centered care approach: Strategies for healing gardens. *Journal of Civil Engineering and Architecture*, 13(12), 740–751. <https://doi.org/10.17265/1934-7359/2019.12.002>
11. Gerber, S. M., Jeitziner, M.-M., Sanger, S. D., Knobel, S. E. J., Marchal-Crespo, L., Muri, R.-M., ... Nef, T. (2019). Comparing the relaxing effects of different virtual reality environments in the intensive care unit: Observational study. *JMIR Perioperative Medicine*, 2(2), e15579. <https://doi.org/10.2196/15579>
12. Gharaveis, A., Shepley, M. M., Hamilton, K., Pati, D., & Rodiek, S. (2019). The influence of visibility on staff face-to-face communication and efficiency in emergency departments. *Facilities*, 37(5/6), 352–363. <https://doi.org/10.1108/F-07-2018-0077>
13. Jalalianhosseini, M., Freihoefer, K., Doyle, N., & Simpson, A. (2019). The impact of infusion center layout on workflow and satisfactions in two cancer infusion centers: A case study on staff and patients. *HERD: Health Environments Research & Design Journal*, in press. <https://doi.org/10.1177/1937586719888221>
14. Jamshidi, S., Parker, J. S., & Hashemi, S. (2019). The effects of environmental factors on the patient outcomes in hospital environments: A review of literature. *Frontiers of Architectural Research*, in press. <https://doi.org/10.1016/j.foar.2019.10.001>
15. Jimenez, F. E., Puumala, S. E., Apple, M., Bunker-Hellmich, L. A., Rich, R. K., & Brittin, J. (2019). Associations of patient and staff outcomes with inpatient unit designs incorporating decentralized caregiver workstations: A systematic review of empirical evidence. *HERD: Health Environments Research & Design Journal*, 12(1), 26–43. <https://doi.org/10.1177/1937586718796590>
16. Lim, L., Kanfer, R., Stroebel, R. J., & Zimring, C. M. (2019). Backstage staff communication: The effects of different levels of visual exposure to patients. *HERD: Health Environments Research & Design Journal*, in press. <https://doi.org/10.1177/1937586719888903>
17. Luetz, A., Grunow, J. J., Morgeli, R., Rosenthal, M., Weber-Carstens, S., Weiss, B., & Spies, C. (2019). Innovative ICU solutions to prevent and reduce delirium and post-intensive care unit syndrome. *Seminars in Respiratory and Critical Care Medicine*, 40(5), 673–686. <https://doi.org/10.1055/s-0039-1698404>
18. MacKay, P., Ruhlen, T., Crow, P., Hughes, J., Pfeiffer, K., & Hagler, K. (2019). The effect of a quiet environment on the comfort of post-operative infants and young children. *Pediatric Nursing*, 45(5), 244–257.



19. Mahmood, F. J., & Tayib, A. Y. (2019). The role of patients' psychological comfort in optimizing indoor healing environments: A case study of the indoor environments of recently built hospitals in Sulaimani City, Kurdistan, Iraq. *HERD: Health Environments Research & Design Journal*, in press. <https://doi.org/10.1177/1937586719894549>
20. McCunn, L. J., & Wright, J. (2019). Hospital employees' perceptions of circadian lighting: A pharmacy department case study. *Journal of Facilities Management*, 17(5), 422–437. <https://doi.org/10.1108/JFM-04-2019-0016>
21. Nezamdoost, A., & Modarres Nezhad, M. (2019). Vitamin V: Evaluating the benefits of view quality in hospital patient rooms using a large-scale human factors study. *Building Services Engineering Research and Technology*, in press. <https://doi.org/10.1177/0143624419889548>
22. Pachilova, R., & Sailer, K. (2019). Ward layout, communication and care quality. *Proceedings of the 12th Space Syntax Symposium*, 1–18. Beijing.
23. Reinke, L., Haveman, M., Horsten, S., Falck, T., Heide, E. M. van der, Pastoor, S., ... Tulleken, J. E. (2019). The importance of the intensive care unit environment in sleep—A study with healthy participants. *Journal of Sleep Research*, in press. <https://doi.org/10.1111/jsr.12959>
24. Spence, C., & Keller, S. (2019). Medicine's melodies: On the costs & benefits of music, soundscapes, & noise in healthcare settings. *Music and Medicine*, 11(4), 211–225.
25. Xuan, X., Chen, X., & Li, Z. (2019). Impacts of nursing unit design on visibility and proximity and its influences on communication, privacy, and efficiency. *HERD: Health Environments Research & Design Journal*, in press. <https://doi.org/10.1177/1937586719881443>
26. Yin, J., Yuan, J., Arfaei, N., Catalano, P. J., Allen, J. G., & Spengler, J. D. (2020). Effects of biophilic indoor environment on stress and anxiety recovery: A between-subjects experiment in virtual reality. *Environment International*, 136, in press. <https://doi.org/10.1016/j.envint.2019.105427>

Safety

Infection Prevention/Control

27. Alfred, M., Catchpole, K., Huffer, E., Fredendall, L., & Taaffe, K. M. (2019). Work systems analysis of sterile processing: Decontamination. *BMJ Quality & Safety*. <https://doi.org/10.1136/bmjqs-2019-009422>
28. Cooper, J., Himaras, Y., Wong, T., & Bryce, E. (2019). Evaluation of a new sink design incorporating ozonated water. *Journal of Hospital Infection*, in press. <https://doi.org/10.1016/j.jhin.2019.11.023>
29. Colin, M., Charpentier, E., Klingelschmitt, F., Bontemps, C., De Champs, C., Reffuveille, F., & Gangloff, S. C. (2019). Specific antibacterial activity of copper alloy touch surfaces in five long-term care facilities for older adults. *Journal of Hospital Infection*, in press. <https://doi.org/10.1016/j.jhin.2019.11.021>



30. Gonçalves, E., Carvalhal, R., Mesquita, R., Azevedo, J., João Coelho, M., Magalhães, R., ... Lopes Cardoso, I. (2019). Detection of Staphylococcus aureus (MRSA/MSSA) in surfaces of dental medicine equipment. *Saudi Journal of Biological Sciences*, in press. <https://doi.org/10.1016/j.sjbs.2019.12.003>
31. Gregory, L., Weston, L. E., Harrod, M., Meddings, J., & Krein, S. L. (2019). Understanding nurses' workflow: Batching care and potential opportunities for transmission of infectious organisms, a pilot study. *American Journal of Infection Control*, *47*(10), 1213–1218. <https://doi.org/10.1016/j.ajic.2019.03.034>
32. Kanaan, M., Ghaddar, N., Ghali, K., & Araj, G. (2015). Upper room UVGI effectiveness with dispersed pathogens at different droplet sizes in spaces conditioned by chilled ceiling and mixed displacement ventilation system. *Building and Environment*, *87*, 117–128. <https://doi.org/10.1016/j.buildenv.2015.01.029>
33. Lerner, A. O., Abu-Hanna, J., Carmeli, Y., & Schechner, V. (2019). Environmental contamination by carbapenem-resistant *Acinetobacter baumannii*: The effects of room type and cleaning methods. *Infection Control & Hospital Epidemiology*, in press. <https://doi.org/10.1017/ice.2019.307>
34. Li, Y., Tang, J., Noakes, C., & Hodgson, M. J. (2015). Engineering control of respiratory infection and low-energy design of healthcare facilities. *Science and Technology for the Built Environment*, *21*(1), 25–34. <https://doi.org/10.1080/10789669.2014.965557>
35. Lv, Y., Xiang, Q., Jin, Y. Z., Fang, Y., Wu, Y. J., Zeng, B., Yu, H., Cai, H. M., Wei, Q. D., Wang, C., Chen, J., & Wang, H. (2019). Faucet aerators as a reservoir for Carbapenem-resistant *Acinetobacter baumannii*: A healthcare-associated infection outbreak in a neurosurgical intensive care unit. *Antimicrobial Resistance & Infection Control*, *8*(1), 205. <https://doi.org/10.1186/s13756-019-0635-y>
36. Rawlinson, S., Cloutman-Green, E., Asadi, F., & Ciric, L. (2019). Surface sampling within a pediatric ward—How multiple factors affect cleaning efficacy. *American Journal of Infection Control*, in press. <https://doi.org/10.1016/j.ajic.2019.10.023>
37. Schmidt, M. G. (2020). The role of antimicrobial surfaces in hospitals to reduce healthcare-associated infections (HAIs). In J. Walker (Ed.), *Decontamination in Hospitals and Healthcare* (Second Edition, pp. 259–299). <https://doi.org/10.1016/B978-0-08-102565-9.00013-3>
38. Schmidt, M. G., Attaway, H. H., Fairey, S. E., Howard, J., Mohr, D., & Craig, S. (2019). Self-disinfecting copper beds sustain terminal cleaning and disinfection (TC&D) effects throughout patient care. *Applied and Environmental Microbiology*, in press. <https://doi.org/10.1128/AEM.01886-19>
39. Strauch, J., Braun, T. M., & Short, H. (2019). Use of an automated hand hygiene compliance system by emergency room nurses and technicians is associated with decreased employee absenteeism. *American Journal of Infection Control*, in press. <https://doi.org/10.1016/j.ajic.2019.11.023>



40. Villafruela, J. M., Olmedo, I., Berlanga, F. A., & de Adana, M. R. (2019). Assessment of displacement ventilation systems in airborne infection risk in hospital rooms. *PLOS ONE*, *14*(1), e0211390. <https://doi.org/10.1371/journal.pone.0211390>
41. Zellmer, C., Blakney, R., Van Hoof, S., & Safdar, N. (2015). Impact of sink location on hand hygiene compliance for *Clostridium difficile* infection. *American Journal of Infection Control*, *43*(4), 387–389. <https://doi.org/10.1016/j.ajic.2014.12.016>

Medication Safety

42. Manias, E., Cranswick, N., Newall, F., Rosenfeld, E., Weiner, C., Williams, A., ... Kinney, S. (2019). Medication error trends and effects of person-related, environment-related and communication-related factors on medication errors in a paediatric hospital. *Journal of Paediatrics and Child Health*, *55*(3), 320–326. <https://doi.org/10.1111/jpc.14193>

Care across the Lifespan

Therapeutic Environments: Behavioral/Mental Health

43. Liddicoat, S. (2019). Enhancing emergency care environments: Supporting suicidal distress and self-harm presentations through environmental safeguards and the built environment. *Patient Experience Journal*, *6*(3), 91–104. <https://doi.org/10.35680/2372-0247.1361>

Psychiatric Facilities

44. Cowart, T., & Stoudemire, A. (1989). Nursing staff development and facility design for medical-psychiatry units. *General Hospital Psychiatry*, *11*(2), 125–136. [https://doi.org/10.1016/0163-8343\(89\)90056-X](https://doi.org/10.1016/0163-8343(89)90056-X)

Pediatric

45. Iskander, M., Sherif, A., & Mansour, Y. (2019). Cultural impact on design of inpatient rooms. *Architecture & Urbanism... A Smart Outlook*, 728–737.

Elders/Aging

46. Hou, C., Saeger, A., & Golde, J. (2019). Design with concerns: A community-based senior center in Germany. *Designing with and for People with Dementia: Wellbeing, Empowerment and Happiness*, 101–108. Dresden, Germany: Technische Universität Dresden.
47. Thomas, P., Aletta, F., Filipan, K., Mynsbrugge, T. V., De Geetere, L., Dijckmans, A., ... Devos, P. (2020). Noise environments in nursing homes: An overview of the literature and a case study in Flanders with quantitative and qualitative methods. *Applied Acoustics*, *159*. <https://doi.org/10.1016/j.apacoust.2019.107103>



Cognitive Impairment & Dementia

48. Brodsky, D., & Shepley, M. M. (2019). Comparative study of the social interactions of two differently designed long-term care facilities for individuals with acquired brain injury. *HERD: Health Environments Research & Design Journal*, in press. <https://doi.org/10.1177/1937586719888847>
49. Høj, L. D. (2019). Exploring the potentials of dementia village architecture. *Designing with and for People with Dementia: Wellbeing, Empowerment and Happiness*, 123–136. Dresden, Germany: Technische Universität Dresden.

Building Systems & Technology

50. Aganovic, A., Steffensen, M., & Cao, G. (2019). CFD study of the air distribution and occupant draught sensation in a patient ward equipped with protected zone ventilation. *Building and Environment*, 162, in press. <https://doi.org/10.1016/j.buildenv.2019.106279>
51. Cesari, S., Valdiserri, P., Coccagna, M., & Mazzacane, S. (2018). Energy savings in hospital patient rooms: The role of windows size and glazing properties. *Energy Procedia*, 148, 1151–1158. <https://doi.org/10.1016/j.egypro.2018.08.027>
52. Fadda, J. (2020). Green healthcare system: Main features in supporting sustainability of healthcare system – A review. In A. Sayigh (Ed.), *Green Buildings and Renewable Energy: Med Green Forum 2019—Part of World Renewable Energy Congress and Network* (pp. 113–128). https://doi.org/10.1007/978-3-030-30841-4_8
53. Guifen, L., Yu-Che, H., & Bei, S. (2019). A study on environmental impact assessment of prefabricated building construction. *IOP Conference Series: Earth and Environmental Science*, 330, 022013. <https://doi.org/10.1088/1755-1315/330/2/022013>
54. Mustafa, M. S. S., Yusop, F., Abdullah, A., Rahman, M. A. A., Aini Mohd Sari, K., Fahmi, A. R., ... Hariri, A. (2019). Humidity control strategies in operation theatre Malaysia. *IOP Conference Series: Earth and Environmental Science*, 373, 012016. <https://doi.org/10.1088/1755-1315/373/1/012016>

Design & Evaluation (e.g., Process, Methods, Simulation Modeling)

55. Keszei, B., Halász, B., Losonczy, A., & Dúll, A. (2019). Space syntax's relation to seating choices from an evolutionary approach. *Periodica Polytechnica Architecture*, 50(2), 115–123. <https://doi.org/10.3311/PPAr.14251>
56. Miedema, E., Lindahl, G., & Elf, M. (2019). Conceptualizing health promotion in relation to outpatient healthcare building design: A scoping review. *HERD: Health Environments Research & Design Journal*, 12(1), 69–86. <https://doi.org/10.1177/1937586718796651>
57. Muhamad, J., Ahmad, H., & Abd Aziz, A. (2019). A triangulation for passive design strategies in public hospital. *IOP Conference Series: Earth and Environmental Science*, 385. <https://doi.org/10.1088/1755-1315/385/1/012025>



58. Pomare, C., Churruca, K., Long, J. C., Ellis, L. A., & Braithwaite, J. (2019). Organisational change in hospitals: A qualitative case-study of staff perspectives. *BMC Health Services Research*, 19(1), 840. <https://doi.org/10.1186/s12913-019-4704-y>
59. Sahamir, S. R., Zakaria, R., Omar, M. F., Shakri, M. R., Chughtai, M. W., Mustafar, M., & Rooshdi, R. R. R. M. (2019). Energy efficiency criteria for planning and design of green hospital buildings rating system. *IOP Conference Series: Materials Science and Engineering*, 620. <https://doi.org/10.1088/1757-899X/620/1/012082>
60. Serghides, D., Dimitriou, S., & Kyprianou, I. (2020). Paving the way towards zero energy hospitals in the Mediterranean Region. In A. Sayigh (Ed.), *Green Buildings and Renewable Energy: Med Green Forum 2019—Part of World Renewable Energy Congress and Network* (pp. 159–167). https://doi.org/10.1007/978-3-030-30841-4_11
61. Taylor, E. (2020). We agree, don't we? The Delphi Method for health environments research. *HERD: Health Environments Research & Design Journal*, 13(1), 11–23. <https://doi.org/10.1177/1937586719887709>
62. Wang, H., Tang, W., & Zhang, X. (2019). BEAM upgrade and cost premium for green building development. *Sustainable Buildings and Structures: Building a Sustainable Tomorrow: Proceedings of the 2nd International Conference in Sustainable Buildings and Structures*, 235–242. Suzhou, China: CRC Press.
63. Zook, J., Nanda, U., & Renner, K. (2019). ICU as informational interface. *Proceedings of the 12th Space Syntax Symposium*, 1–14. Beijing, China.