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

ACADEMY of ARCHITECTURE for HEALTH FOUNDATION

ASHE
Optimizing health care facilities

FGI

Additional key point summaries provided by

NIHD Nursing Institute for Healthcare Design
INSPIRING AND EDUCATING NURSES

RESEARCH DESIGN connections

Knowledge Repository News

Among the 34 new entries in the Knowledge Repository, several papers focus on supportive environments. Three of these papers look specifically at how the environment can support staff health and wellbeing. A study by Hammouni and Poldma considers staff perceptions of the link between their environment and their work and wellbeing. The findings indicate the importance of a rounded approach to design that involves both the spatial configuration *and* the operations of the unit. A book chapter by Løvseth and colleagues tells the story of the design of a therapeutic space in a children's hospital where both relatives and staff can go when feeling the emotional stress associated with caregiving for young patients. And another chapter by Van der Zwart and Pilosof provides an overview of the three pillars of "Healthy Healthcare": staff health and wellbeing, professional practices, and quality of care. The authors discuss how evidence-based design can support the needs of healthcare staff, especially in terms of mitigating stress, improving communication, and supporting teamwork. Check the citations listed in the Experience, Care Across the Lifespan, and Design & Evaluation categories below.

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

January - February 2021

COVID-1

1. Chen, L.-K., Yuan, R.-P., Ji, X.-J., Lu, X.-Y., Xiao, J., Tao, J.-B., Kang, X., Li, X., He, Z.-H., Quan, S., & Jiang, L. Z. (2021). Modular composite building in urgent emergency engineering projects: A case study of accelerated design and construction of Wuhan Thunder God Mountain/Leishenshan hospital to COVID-19 pandemic. *Automation in Construction, 124*. https://doi.org/10.1016/j.autcon.2021.103555
2. Dargahi, A., Jeddi, F., Vosoughi, M., Karami, C., Hadisi, A., Ahamad Mokhtari, S., Ghobadi, H., Alighadri, M., Haghighi, S. B., & Sadeghi, H. (2021). Investigation of SARS CoV-2 virus in environmental surface. *Environmental Research, 195*, 110765. https://doi.org/10.1016/j.envres.2021.110765
3. Iqbal, S. A. (2021). COVID-19 and the need for more accessible and designed hospital outdoor spaces in developing countries. *HERD: Health Environments Research & Design Journal*, in press. https://doi.org/10.1177/1937586721993767

4. Ram, K., Thakur, R. C., Singh, D. K., Kawamura, K., Shimouchi, A., Sekine, Y., Nishimura, H., Singh, S. K., Pavuluri, C. M., Singh, R. S., & Tripathi, S. N. (2021). Why airborne transmission hasn't been conclusive in case of COVID-19? An atmospheric science perspective. *Science of The Total Environment, 773*. https://doi.org/10.1016/j.scitotenv.2021.145525

5. Verdoorn, B. P., Bartley, M. M., Baumbach, L. J., Chandra, A., McKenzie, K. M., De la Garza, M. M., Sanchez Pellecer, D. E., Small, T. C., & Hanson, G. J. (2021). Design and implementation of a skilled nursing facility COVID-19 unit. *Journal of the American Medical Directors Association*. https://doi.org/10.1016/j.jamda.2021.02.001

6. Yatmo, Y. A., Harahap, M. M. Y., & Atmodiwirjo, P. (2021). Modular isolation units for patients with mild-to-moderate conditions in response to hospital surges resulting from the COVID-19 pandemic. International Journal of Technology, 12(1), 43–53. https://doi.org/10.14716/ijtech.v12i1.4115

7. Zhang, Y., Han, O., Li, A., Hou, L., Olofsson, T., Zhang, L., & Lei, W. (2021). Adaptive wall-based attachment ventilation: A comparative study on its effectiveness in airborne infection isolation rooms with negative pressure. *Engineering*, in press. https://doi.org/10.1016/j.eng.2020.10.020

Experience

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

8. Xuan, X., Li, Z., Chen, X., Cao, Y., & Feng, Z. (2021). Study of the physical environment of waiting areas and its effects on patient satisfaction, experience, perceived waiting time, and behavior in China. *HERD: Health Environments Research & Design Journal*, in press. https://doi.org/10.1177/1937586721989058

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

9. Ameli, R., Skeath, P., Abraham, P. A., Panahi, S., Kazman, J. B., Foote, F., Deuster, P. A., Ahmad, N., & Berger, A. (2021). A nature-based health intervention at a military healthcare center: A randomized, controlled, cross-over study. *PeerJ, 9*, e10519. https://doi.org/10.7717/peerj.10519

10. Aygün, A. H., & Erçin, Ç. (2021). Evaluation of hospital's emergency departments according to user requirements. *European Journal of Sustainable Development, 10*(1), 103–122. https://doi.org/10.14207/ejsd.2021.v10n1p103

11. García, T. C., & Rasmussen, B. (2020). Reverberation time regulations for stairwells and corridors – A pilot study for hospitals in selected countries in Europe. *Proceedings of Forum Acusticum 2020*, 235–240. https://vbn.aau.dk/en/publications/reverberation-time-regulations-for-stairwells-and-corridors-a-pil-2

12. Hammouni, Z., & Poldma, T. (2021). Human centered design in one new hospital in Canada: A lived experience of healthcare professionals. In D. Russo, T. Ahram, W. Karwowski, G. Di Bucchianico, & R. Taiar (Eds.), *Intelligent Human Systems Integration 2021* (pp. 415–420). Springer International Publishing. https://doi.org/10.1007/978-3-030-68017-6_62

13. Kevdzija, M., & Marquardt, G. (2021). Stroke patients' nonscheduled activity during inpatient rehabilitation and its relationship with the architectural layout: A multicenter shadowing study. *Topics in Stroke Rehabilitation*, in press. https://doi.org/10.1080/10749357.2020.1871281

14. Lee, S. J., Mehta-Desai, R., Oh, K., Sanford, J., & Prilutsky, B. I. (2019). Effects of bilateral swing-away grab bars on the biomechanics of stand-to-sit and sit-to-stand toilet transfers. *Disability and Rehabilitation: Assistive Technology, 14*(3), 292–300. https://doi.org/10.1080/17483107.2018.1447605

15. Martin, K., Nanu, L., Kwon, W.-S., & Martin, D. (2021). Small garden, big impact: Emotional and behavioral responses of visitors to a rooftop atrium in a major hospital. *HERD: Health Environments Research & Design Journal*, in press. https://doi.org/10.1177/1937586721992799

16. Talantikite, S. I., & Bencherif, M. (2021). Effect of spatial ambiances on the patient satisfaction and well-being in hospitals: The case of UHC Ibn Sina Annaba and UHC Benbadis Constantine—Algeria. *HERD: Health Environments Research & Design Journal*, in press. https://doi.org/10.1177/1937586720986106

17. Waggener, L., Pati, D., Rane, A. P., Montenegro-Montenegro, E., & Angelo, E. (2021). Lessons learned from decentralization of an elective surgery medical-surgical unit. *HERD: Health Environments Research & Design Journal*, in press. https://doi.org/10.1177/1937586721989687

Safety

18. Mcleod, R., Myint-Wilks, L., Davies, S., & Elhassan, H. (2021). The impact of noise in the operating theatre: A review of the evidence. The Annals of The Royal College of Surgeons of England, 103(2), 83–87. https://doi.org/10.1308/rcsann.2020.7001

Infection Prevention/Control

19. Boncea, E. E., Expert, P., Honeyford, K., Kinderlerer, A., Mitchell, C., Cooke, G. S., Mercuri, L., & Costelloe, C. E. (2021). Association between intrahospital transfer and hospital-acquired infection in the elderly: A retrospective case–control study in a UK hospital network. *BMJ Quality & Safety*, in press. https://doi.org/10.1136/bmjqs-2020-012124

20. Khalil, E. E. (2021). Indoor air quality and air flow regimes in surgical operating theatres. In *AIAA Scitech 2021 Forum*. American Institute of Aeronautics and Astronautics. https://doi.org/10.2514/6.2021-1920

Care across the Lifespan

Pediatric

21. Løvseth, L. T., Wellinger, S., Ødegård, M. S., & Nordbø, S. H. (2020). The 'FRIrom' at St Olav University Hospital in Norway. A room for emotional outlets, finding strength and courage for the relatives and caregivers of the youngest patients. In L. Tevik Løvseth & A. H. de Lange (Eds.), *Integrating the Organization of Health Services, Worker Wellbeing and Quality of Care: Towards Healthy Healthcare* (pp. 391–397). Springer International Publishing. https://doi.org/10.1007/978-3-030-59467-1_24

22. Wingler, D., Liston, D., Joseph, A., Wang, Y., Feng, H., & Martin, L. (2020). Perioperative anxiety in pediatric surgery: Induction room vs. operating room. *Pediatric Anesthesia*, in press. https://doi.org/10.1111/pan.14098

Elders/Aging

23. Kim, D., Chang, C., & Margrett, J. (2021). Understanding older adults' perception and usage of indoor lighting in independent senior living. *HERD: Health Environments Research & Design Journal*, in press. https://doi.org/10.1177/1937586720988616

Building Systems & Technology

24. Dagli, R., Çelik, F., Özden, H., & Şahin, S. (2021). Does the laminar airflow system affect the development of perioperative hypothermia? A randomized clinical trial. *HERD: Health Environments Research & Design Journal*, in press. https://doi.org/10.1177/1937586720985859

25. Fan, M., Cao, G., Pedersen, C., Lu, S., Stenstad, L.-I., & Skogås, J. G. (2021). Suitability evaluation on laminar airflow and mixing airflow distribution strategies in operating rooms: A case study at St. Olavs Hospital. *Building and Environment*. https://doi.org/10.1016/j.buildenv.2021.107677

26. Jain, N., Burman, E., Stamp, S., Shrubsole, C., Bunn, R., Oberman, T., Barrett, E., Aletta, F., Kang, J., Raynham, P., Mumovic, D., & Davies, M. (2021). Building performance evaluation of a new hospital building in the UK: Balancing indoor environmental quality and energy performance. *Atmosphere, 12*(1), 115. https://doi.org/10.3390/atmos12010115

27. Muhamad, J., Ahmad, H., & Abdul Aziz, A. (2019). *A comprehensive approach to passive design strategies for public hospital*. 2–9. https://gogreen2019inspired.wixsite.com/index/eproceeding

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

28. Gul, M., & Guneri, A. F. (2021). Hospital location selection: A systematic literature review on methodologies and applications. *Mathematical Problems in Engineering*, 2021. https://doi.org/10.1155/2021/6682958

29. Mahmood, F. J. (2021). The role of evidence-based design in informing health-care architects. *Journal of Facilities Management*, in press. https://doi.org/10.1108/JFM-09-2020-0062

30. Pilosof, N. P., Schaumann, D., Sopher, H., Kalay, Y. E., & Yahav, J. (2020). Outpatient clinic design in Israel: Comparative evaluation by digital simulation. In L. Tevik Løvseth & A. H. de Lange (Eds.), *Integrating the Organization of Health Services, Worker Wellbeing and Quality of Care: Towards Healthy Healthcare* (pp. 377–383). Springer International Publishing. https://doi.org/10.1007/978-3-030-59467-1_22

31. Salem, D., & Elwakil, E. (2021). Expert-based approach to rank critical asset assessment factors for healthcare facilities. *Facilities*, in press. https://doi.org/10.1108/F-05-2020-0060

32. Van der Zwart, J. (2020). Evidence-based Design in Action—Dublin Methodist Hospital, Ohio, USA. In L. Tevik Løvseth & A. H. de Lange (Eds.), *Integrating the Organization of Health Services, Worker Wellbeing and Quality of Care: Towards Healthy Healthcare* (pp. 385–389). Springer International Publishing. https://doi.org/10.1007/978-3-030-59467-1_23

33. Van der Zwart, J., & Pilosof, N. P. (2020). Evidence-based design for healthcare work environments. In L. Tevik Løvseth & A. H. de Lange (Eds.), *Integrating the Organization of Health Services, Worker Wellbeing and Quality of Care: Towards Healthy Healthcare* (pp. 245–262). Springer International Publishing. https://doi.org/10.1007/978-3-030-59467-1_11

34. Zhao, C., Yang, J., Xiong, W., & Li, J. (2021). Two generative design methods of hospital operating department layouts based on healthcare systematic layout planning and generative adversarial network. *Journal of Shanghai Jiaotong University (Science), 26*(1), 103–115. https://doi.org/10.1007/s12204-021-2265-9