First Five Evidence Appraisals

NURS 610

Article 1

In 2021, Artunduaga et al. published a review about safety risks and benefits related to the use of general anesthesia and sedation in the pediatric population undergoing MRI studies. Multiple pediatric institutions were used for reference and guidelines. This review discussed the need for sedation and general anesthesia during MRI studies in the pediatric population, the nuances associated with pediatric sedation and anesthesia, as well as the safety risks. These researchers explored strategies and benefits of lessening the need for sedation and general anesthesia and discussed advice for the use of sedation and general anesthesia in the pediatric population for MRI studies in the future.

Based on the Johns Hopkins Evidence-Based Practice Model for Nurses (Dang et al, 2022), this Level V B work by Artunduaga et al. (2021) is credible and has potential to contribute to the evidence-based nursing practice of increasing the knowledge of MRI safety in a pediatric hospital, but with some hesitation as there was no clear discussion on limitations in literature.

References

Artunduaga, M., Liu, C. A., Morin, C. E., Serai, S. D., Udayasankar, U., Greer, M.-L. C., & Gee, M. S. (2021). Safety challenges related to the use of sedation and general anesthesia in pediatric patients undergoing magnetic resonance imaging examinations. Pediatric Radiology, 51(5), 724–735. https://doi.org/10.1007/s00247-021-05044-5

Dang, D., Dearholt, S., Bissett, K., Ascenzi, J., & Whalen, M. (2022). Johns Hopkins evidence-based practice for nurses and healthcare professionals: Model and guidelines. 4th ed. Sigma Theta Tau International.

Article 2

In 2020, Hossen et al. published results of their study evaluating the awareness and attitudes of MRI technologists toward MRI safety. This was a descriptive cross-sectional study of 50 MRI technologists (n=50) who worked in various hospitals and diagnostic centers in Dhatka City, Bangladesh. The researchers utilized self-administered questionnaires and verbal interviews.

The results of this study revealed that there was an overall lack of knowledge of MRI zones, emergency situations, and safety signs. There was, however, knowledge of the continuous working MRI magnet and ferrous containing items being prohibited from the magnet room. The researchers discussed these gaps in knowledge and recommended an increase in employee training and professional development. There was no significant correlation between the level of education or work experience and the awareness of MRI safety.

Based on the Johns Hopkins Evidence-Based Practice Model for Nurses (Dang et al, 2022), this study is Level III A evidence that can be generalized with some caution as this was a small sample. Differences in healthcare practices are also a strong consideration as this study took place in Bangladesh.

References

Dang, D., Dearholt, S., Bissett, K., Ascenzi, J., & Whalen, M. (2022). Johns Hopkins evidence-based practice for nurses and healthcare professionals: Model and guidelines. 4th ed. Sigma Theta Tau International.

Hossen, M., Rana, S., Parvin, T., Muraduzzaman, S., & Jalali, M. A. (2020). Evaluation of knowledge, awareness, and attitude of MRI technologists towards MRI safety in Dhaka city of Bangladesh. International Journal of Pure Medical Research, 5(5), 16–19.

Article 3

In 2023, Monga and Aran published findings of a study aimed at increasing radiology resident knowledge about MRI safety at a medical center. A small sample of residents (N=35) was offered a 10-question baseline test. Those who completed the pre-test (n=10, 28.6%) were then given a PowerPoint presentation summarizing articles about MRI safety that they could review on their own time. The same quiz was given again and used to compare to the pre-test. The researchers stated that only nine residents completed the post test, but there was statistically significant difference in the pre-test and post-test scores (p=0.03). Limitations of this study are the small sample size (N=9) with subjects being in the early years of their residency.

Based on the Johns Hopkins Evidence-Based Practice Model for Nurses (Dang et al, 2022), this quasi-experimental study yielded Level I1B evidence that can be generalized with considerable caution due to the very limited sample.

References

Dang, D., Dearholt, S., Bissett, K., Ascenzi, J., & Whalen, M. (2022). Johns Hopkins evidence-based practice for nurses and healthcare professionals: Model and guidelines. 4th ed. Sigma Theta Tau International.

Monga, A., & Aran, S. (2023). Improving radiology resident proficiency in MRI safety. Applied Radiology, January/February 2023 Supplement, 42-45.

Article 4

In 2021, Sotardi et al. published clinical practice guidelines on developing and implementing an MRI safety program for pediatric facilities. These guidelines drew information and guidelines from three different institutions: The Children's Hospital of Philadelphia, Massachusetts General Hospital, and Children's Mercy Hospital. The guidelines discuss best practices for establishing a pediatric MRI safety program, emphasizing the need for a specific safety council, comprehensive policies and procedures, adherence to national guidelines, and continuing education and communication among all staff in the institution. For this program to be successful, there must be buy-in from all MRI staff.

Based on the Johns Hopkins Evidence-Based Practice Model for Nurses (Dang et al, 2022), this Level IV A work by Sotardi et al. (2021) is credible and has potential to contribute to the evidence-based nursing practice for increasing the knowledge of MRI safety in a pediatric hospital.

References

Dang, D., Dearholt, S., Bissett, K., Ascenzi, J., & Whalen, M. (2022). Johns Hopkins evidence-based practice for nurses and healthcare professionals: Model and guidelines. 4th ed. Sigma Theta Tau International.

Sotardi, S. T., Degnan, A. J., Liu, C. A., Mecca, P. L., Serai, S. D., Smock, R. D., Victoria, T., & White, A. M. (2021). Establishing a magnetic resonance safety program. Pediatric Radiology, 51(4), 709-715. https://doi.org/10.1007/s00247-020-04910-y

Article 5

In 2022, Mittendorff et al. published an expert opinion based on literature and expertise needed to increase the need of MRI safety and knowledge of MRI technologists. This expert opinion was conducted in medical institutions in Australia and New Zealand. The purpose of this expert opinion was to review current and developing MRI safety issues, educate MRI technologists, enhance clinical decision making, and encourage safe practices within the MRI environment.

Based on The Johns Hopkins Level of Evidence appraisal, this level IV A work by Mittendorff et al. is credible and has the potential to contribute to evidence-based MRI safety knowledge and practice. This translation to practice can be made with some caution as this expert opinion is not based in the US.

References

Dang, D., Dearholt, S., Bissett, K., Ascenzi, J., & Whalen, M. (2022). Johns Hopkins evidence-based practice for nurses and healthcare professionals: Model and guidelines. 4th ed. Sigma Theta Tau International.

Mittendorff, L., Young, A., & Sim, J. (2022). A narrative review of current and emerging MRI safety issues: What every MRI technologist (radiographer) needs to know. Journal of Medical Radiation Sciences, 69(2), 250-260. https://doi.org/10.1002/jmrs.546