

Surgeons Ergonomics Issues in the Operating Room

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DESCRIPTION

Healthcare is one of the world's largest sectors, employing millions of people on a part-time or full-time basis. Healthcare employment is predicted to continue to rise faster than any other industry, owing to the high growth of the senior population. At the same time, the rate of occupational injury and illness in the healthcare industry has been higher than the overall private sector average. As new technological technology and methods emerge, ergonomic problems in the healthcare industry continue to rise. Understanding the features of ergonomics-related issues is critical to developing successful interventions.

Ergonomics is defined as the application of information from the human sciences to match people physical and mental capabilities to jobs, systems, products, and surroundings in order to improve safety, health, and well-being while executing activities effectively. Ergonomics has become a more significant component of the healthcare business as new technologies and products emerge. To limit the risk of harm and ensure the health of employees, ergonomic standards should be used to improve the man-machine interface and job efficiency. Because of the nature of their activities, such as standing in static and awkward positions, holding equipment and supplies, working extended periods of time, requiring precision skills, and operating new equipment, healthcare staff in the Operation Theatre (OT) setting faces considerable ergonomic risks. The instruments, devices and equipment used in OT may not be properly fitted to the worker, causing musculoskeletal pain to develop. Improving ergonomics in the OT workplace can reduce worker stress, strain, and tiredness, as well as help the surgical team avoid musculoskeletal injuries and improve performance. Occupational therapists are exposed to ergonomic risk factors that can lead to Musculoskeletal Diseases during work (MSDs).

Most ergonomics research aims to enhance working conditions linked with the use of hand-held equipment and video displays, with an emphasis on surgeons' ergonomic concerns. An ideal work environment, however, is dependent on interactions between the environment, equipment, and medical personnel. The OT surgical team faces physical, sensory, and cognitive ergonomic issues as a result of the increased reliance on technology to perform surgical procedures (including, e.g., surgeon, assisting surgeon, scrub nurse, circulating nurse). The

minimally invasive OT, for example, is typically crammed with necessary equipment, limiting the surgical team's operating area.

Surgeons' physical ergonomic challenges

Although surgery has many benefits for patients, it also comes with a number of physical ergonomic dangers for the surgeon. The following explains the surgeon's physical ergonomic risks connected to his or her work, as well as the physical, perceptual, and cognitive problems that surgeon faces.

Operating table: During surgery, the height of the operating table affects the surgeon's and assistant surgeon's upper extremity excursions. Depending on the surgery and the surgeon's physical state, working on the operating table poses risks to surgeons. Inadequate table height can create physical discomfort in the surgeon's upper arms, neck, and shoulders, as well as unnatural body positions (abducted arms, raised/flexed shoulders, and/or ulnar deviated wrists).

Position of the monitor: The surgeon's and helping surgeon's postures are influenced by the position of the viewing monitor. Incorrect monitor height and position might cause physical discomfort. A protracted period of static neck flexion, extension, and rotation can occur if the monitor is not properly positioned in line with the operation field. If other OT workers obstruct the vision, the surgeon must abduct the upper body (side bending or front bending) to look at the monitor.

Hand-held instruments: To evaluate OT ergonomic issues, the hand-held equipment were examined utilizing a questionnaire/interview and checklist. The surgeons are exposed to ergonomic dangers (excessive excursions and uncomfortable postures, for example) as well as pressure peaks on both fingers and palms, which can lead to musculoskeletal injuries. Endoscopes, graspers, scissors, staplers, retractors, and irrigation tools are examples of these instruments. Using surgical instruments causes discomfort in surgeons' arms and hands, and intense exertions and repetitive upper-limb movements have been associated to wrist and hand pain. When the nerves of the thumb are injured during laparoscopy, a frequent musculoskeletal condition known as laparoscopist's thumb (surgical thumb) develops in surgeons.

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Surgeons' cognitive (mental) ergonomic challenges

Due to limited access to the patient, fewer degrees of freedom in their operations, and a lack of direct view of the surgical field, surgeons have distinct cognitive ergonomic obstacles. The two-dimensional viewing of the three-dimensional field in many surgeries necessitates ongoing contemplation on picture interpretation. When the surgeon's viewing direction differs from the camera's viewing direction, the surgeon must translate the visuals on the monitor during video-assisted surgery. The fulcrum effect, in which an internal movement to the right is portrayed on the monitor as a movement to the left, is another quandary that inhibits the surgeon's development of laparoscopic surgical skills and threatens surgical quality. This can lead to much worse performance and increased mental stress in a novice surgeon.

CONCLUSION

Physical and mental ergonomic issues have arisen as a result of the increased reliance on technology in laparoscopy. Longer static body postures, severe joint positions, and repetitive movements are typical among OT personnel (surgeons and PNTs). Because of the frequent postures kept while performing fine hand movement for surgery or technical labour, the neck, back, shoulders, and wrists/hands are the most afflicted body components. Laparoscopy ergonomics research is lagging behind the rate of new OT surgical procedure development because to the ever-growing variety of technology. The input of ergonomic researchers should be incorporated into the designing and manufacture of surgical tools.