Overcoming barriers in the prevention of surgical site infections

Impact paragraph

In this section, we will reflect on the studies reported in this dissertation and, in doing so, address the following questions:

1. (Research) What is the main objective of the research described in the dissertation at hand and what are its most important results and conclusions?
2. (Relevance) How do these research results contribute to science and, if applicable, to social sectors and social challenges?
3. (Target group) To whom are the research results of interest and/or relevance and why?
4. (Activity) In what way can these target groups be involved in and informed about the research results, so that the knowledge gained can be used in the future?

The main objective, results, and conclusions of the research

We aimed to bridge the gap between knowledge and the practice of surgical site infection (SSI) control in the operating rooms (ORs) of a low- and middle-income country (LMIC), that is, Pakistan. To this end, we conducted four empirical studies. In the first study, we found amongst others that the country lacked education and training in SSI prevention in the ORs, which inspired the development of a training program. The second and third studies, focused on developing, evaluating, and implementing a task-based, interprofessional, reflective training program to prevent infections in the ORs. Finally, in the fourth study, we developed a master training plan to raise awareness of SSIs and produce lasting behavioral changes.

The results from the first study (Chapter 2) showed that the factors that inhibited the implementation of SSI control measures in the ORs originated at either the individual or institutional level. The lack of a surveillance system, education, and training, as well as the absence of a culture of embracing the evidence-based clinical practice, were identified as major hindering factors related to the institution. We, therefore, shifted our focus towards raising awareness among healthcare workers about how to reduce the rate of SSIs in LMICs, by developing adequate education and training. Consistent with instructional design guidelines, this training emphasized the importance of authentic, interprofessional, and reflective learning that was organized around a coherent set of learning tasks relevant to SSI prevention in the ORs. Participants, who were healthcare workers from different professions, viewed a video on good SSI prevention practices, took part in role-play exercises, and discussed case scenarios.

Together, they reflected on these scenarios and on their daily care practice in the hospital.

The evaluation of this training (Chapters 3 and 4) revealed that participants perceived the learning tasks as realistic. They also felt that the joint learning experience had helped them to develop the communication skills they needed when collaborating to prevent SSIs. According to participants, they were able to apply in practice what they had learned about preventing infections. The use of authentic tasks representative of daily clinical practice, as well as the interprofessional approach and reflection sessions, were considered to promote the transfer of learning to the workplace. Finally, inChapter 5, we evaluated stakeholder perspectives of a master training plan designed to enhance long-term sustainability and produce lasting behavioral change regarding SSI prevention. Stakeholders held the view that the training plan was well-designed, improved their understanding, and facilitated the transfer of skills to the workplace. Because implementation costs were low, they considered it particularly practicable in and suited to their resource-constrained context.

Research contribution to science and society

In conducting the present research, we took a design-based research approach by first developing an educational and training program and consequently evaluating it. During this process, we applied insights from our theoretical analysis in practice, for instance by using instructional design principles of authentic, interprofessional, and reflective learning as the foundation for the training design. The outcomes suggest that the instructional strategies we used are suitable for teaching infection prevention in ORs located in LMICs in a manner that is both effective and efficient. Moreover, those who work in ORs place a high value on real-world experience and collaboration among professionals. Participants confirmed that they were able to use what they had learned from this training about infection prevention in their specific LMIC context.

SSIs being the most common postoperative complication in these countries, it is of utmost importance that they are prevented to ensure that surgical patients receive safe medical care. Naturally, avoiding such infections is a fundamental component of standard medical care, and all OR personnel must therefore acquire the appropriate knowledge and skills. This dissertation has demonstrated which innovative training strategies can be used to reduce the risk of such infections and how they can be used in a resource-constrained context. To prevent and control infections, the World Health Organization has placed a strong emphasis on task-based interprofessional training. In

doing so, however, the organization did not provide explicit guidelines as to how professionals should be educated and trained to accomplish this goal. Hence, other healthcare institutions might use our training and master training plan as an example, especially those in LMICs as the training programs are both comprehensive and cost-effective compared to other interventions that use expensive equipment (e.g. for simulation). By improving education on infection prevention, the proposed strategy will help to produce better-educated medical professionals in the surgical domain, thereby diminishing the incidence of SSIs in LMICs and improving patient care in the process.

To whom the results might be of interest and relevance

The findings of this dissertation are significant for hospital leaders and managers, regulatory bodies, academic institutions, and healthcare workers in LMICs who are seeking to implement a training program for healthcare workers to prevent infections and who wish to provide patients with safe, high-quality, compassionate care within local health systems. Not only do our findings demonstrate the value of applying the educational tenets of authentic task-based, interprofessional and reflective learning in practice, but they may also serve educators and researchers in the field of health professions educators who are interested in developing, implementing, and evaluating educational interventions in LMICs to raise awareness of infection prevention among healthcare workers.

Ways to involve the target groups and inform them about the research

There are many different ways to involve the diverse target groups (hospital leaders and managers, regulatory bodies, academic institutions, and health care workers) in the research and to disseminate the lessons learned from the research at hand. The first stepis to incorporate training into the orientation program for newly hired staff members and to include it as part of the continuing education of medical professionals. The secondand third steps are to publish the findings in peer-reviewed journals and to present themat scientific conferences, both domestically and internationally, which we have done andwill continue to do. Our final suggestion is to persuade key people and regulatory authorities to support or lead a program; working with national and internationalorganizations that focus on infection control and prevention as well as with groups that are seeking to improve patient safety is another way to increase the prevention of SSIs in LMICs and to make a societal difference.