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SURGICAL GLOVING AND GOWNING

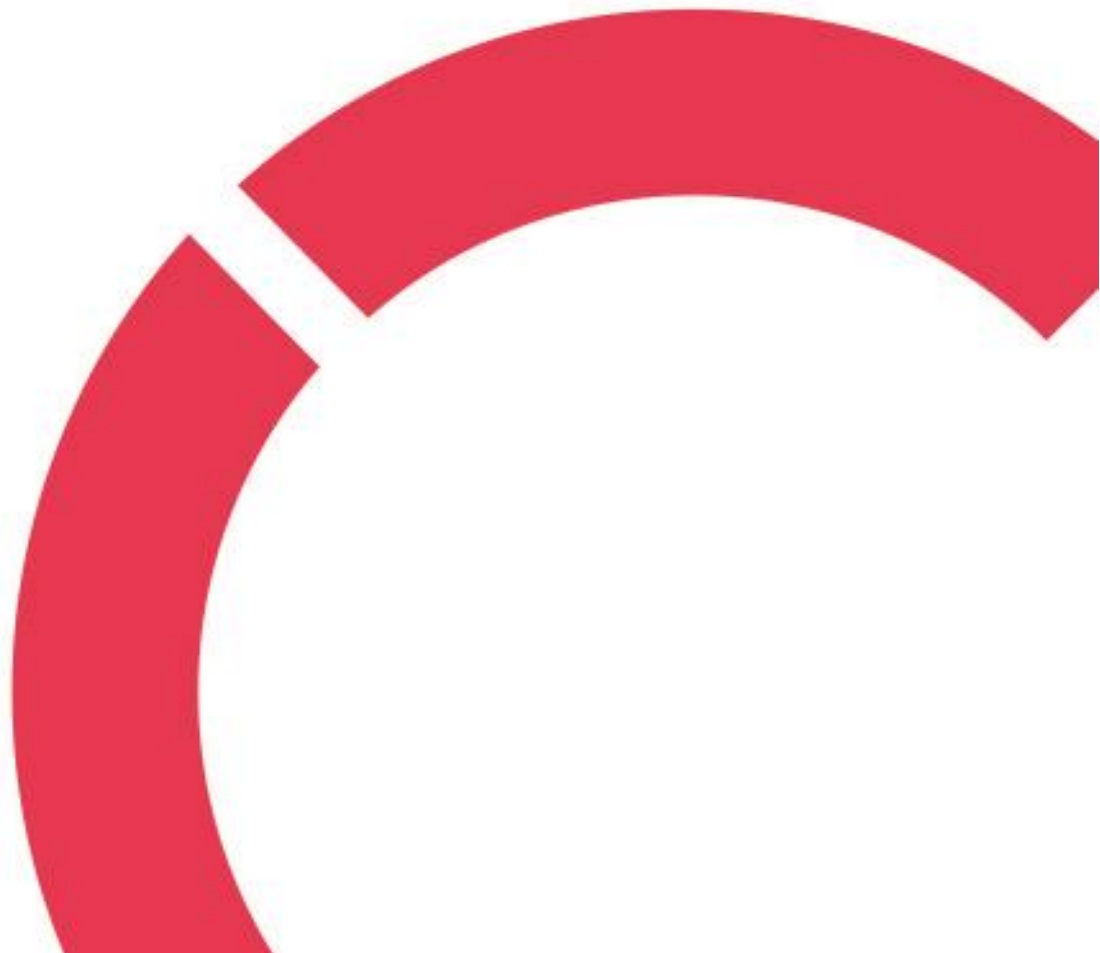
A learning video for nursing students

Thesis

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ABSTRACT

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| Centria University of Applied Sciences | Date December 2023 | Author Hilary Naadu Lartey Yvonne Ohene Budu |
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| Name of thesis SURGICAL GOWNING AND GLOVING. A learning video for nursing students. | | |
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| <p>This thesis project is centered on the education of nursing students on the topic of sterile dressing through the development of a tutorial video. This topic was authorized by Centria University of Applied Sciences. The aim of the thesis is to create an evidence-based educational video that demonstrates the process of donning sterile gowns and gloves aseptically. The objective of this was to promote infection prevention and control in the perioperative setting and reduce the risk of Surgical Site Infections (SSIs).</p> <p>The thesis is a practice-based thesis where the product to be developed was a learning video. The outcome of the project was an approximately five-minute video with a detailed description of the process of surgical gowning and gloving. The video was made particularly for the international nursing students of Centria University of Applied Sciences as part of their learning material.</p> <p>The thesis comprises of the theoretical framework which outlines topics under surgery, nursing competence, infection prevention and video learning. All information was gathered from relevant references that had the most recent evidence-based knowledge. Before concluding the project, a brief survey was conducted with some nursing students of Centria to give feedback on the video. The survey was based on a questionnaire and interview with some students from the international nursing group.</p> | | |
| Key words Sterile environment and techniques, perioperative nursing, infection prevention and control, video-based learning, project implementation. | | |

ABBREVIATIONS

SSI

Surgical Site Infection

WHO

World Health Organization

PACU

Post Anesthesia Care Unit

EBP

Evidence-based practice

OR

Operating Room

AORN

Association of Registered Nurses

IPC

Infection Prevention and Control

HAI

Healthcare Associated Infections

AMR

Antimicrobial Resistance

THL

Finnish Institute for Health and Welfare

SAP

Surgical Antimicrobial Prophylaxis

UAS

University of Applied Sciences

USB

Universal Serial Bus

PPE

Personal Protective Equipment

IT
Information Technology

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1 INTRODUCTION

Surgical gowning and gloving are considered a vital element in all stages of perioperative care, that is, preoperative, intraoperative, and postoperative care. Gowning and gloving in surgery are required to minimize the risk of infection spread in aseptic environments in healthcare. (Prie 2009, 207-208.)

Surgical gowning and gloving also help to reduce the risk of Surgical Site Infection (SSI). This goes a long way to prevent recurrence of the surgery, longer time of admission in the hospital and financial issues associated with it. According to the Finnish Institute of Health and Welfare, one of the major healthcare-associated infections is SSI. In addition, two main ways of preventing these types of infections include wearing appropriate protective clothing when necessary and proper hand hygiene. (Finnish Institute of Health and Welfare 2023.)

Prior to gowning and gloving, a standard of surgical hand asepsis is a necessity. Thus, surgical gowning and gloving is considered an aseptic technique. The term 'aseptic' comes from the word asepsis. Asepsis can be defined as the non-existence of dangerous organisms. Before the discovery of asepsis, surgical attires were not sterile. For instance, in 1846, business suits were worn for surgical procedures. (Adams, Aschenbrenner, Houle & Roy 2016.) The concept of asepsis, previously known as antisepsis, was developed by Joseph Lister, a surgeon from England in the 19th century based on previous studies of Louis Pasteur who discovered fermentation because of microorganisms. Thus, aseptic techniques in surgery have evolved over the past two centuries. Today, asepsis is very important as it plays an important role in surgical care and practice. (Encyclopedia.com 2022.)

The theoretical framework of the thesis encompasses evidence-based nursing education surrounding surgical gowns and gloves, as well as its importance in healthcare.

One important reason for gowning and gloving before surgery is to prevent SSI. Therefore, it is important for nurses to be competent in the skill as it is compulsory practice in the surgical setting. A research done in an academic medical centre in Indonesia revealed that the compliance of nurses to the standard procedure of donning surgical gowns and gloves was lower compared to the physicians. Averagely, nurses had a lower percentage of 81.39% as

compared to consultant surgeons and surgical residents with 86.39% and 83.12% respectively. Although the statistic difference was relatively insignificant, there is still the need for higher compliance in practice. (Handaya & Werdana 2019.)

Furthermore, sterile technique is a fundamental of patient safety that lessens the possibility of transfer of microbes to patients in the operating room. The conservation of a sterile environment is a basic competence requirement for all members of the perioperative team. (Spruce 2017.)

For this thesis project, the instructional material is in the form of a learning video. It will lay out the standard procedure for donning and removing surgical gowns and gloves in the sterile field in an aseptic manner. Aseptic hand disinfection will also be demonstrated in the educational video. Due to advancement of Information and Communications Technology, there is a rise in the utility of videos to teach clinical skills in nursing. The usage of videos in the teaching of clinical skills seems to be an encouraging and hopeful pursuit. As a result, a learning video was produced for nursing students of Centria. (Forbes, Oprescu, Downer, Phillips, McTier, Lord, Barr, Alla, Bright, Dayton, Simbag & Visser 2016.)

The thesis aims to promote the clinical competence of Centria's nursing students in surgical hand washing, wearing surgical gowns and gloves in an aseptic technique.

2 PURPOSE AND OBJECTIVES.

The purpose of the thesis project is to create a tutorial video about surgical gowning and gloving procedures for Centria University of Applied Sciences nursing students.

The objective of the thesis is to produce a written report and video that will provide a detailed step by step approach to wearing surgical gowns and gloves aseptically. In addition, nursing students understand the importance of the sterile process of surgical gowning and gloving.

3 PERIOPERATIVE NURSING

According to Bisholt, Bloomberg, and Lindwall, perioperative nursing can be referred to as, “A nurse anesthetist’s and operating theatre nurse's pre-, intra- and postoperative care for a patient who is undergoing surgery”. It encompasses all parts of the surgical nursing care process, structure, and guidance in perioperative setting. (Bisholt, Blomberg & Lindwall 2019.) In perioperative care, the nurse is an indispensable member of the surgical team. In accordance with Mathenge (2020), the main role of the perioperative nurse is to ensure that an aseptic environment is kept for the safety of the patient and the operating room team. (Mathenge 2020.) The World Health Organization (WHO) estimated that about 234 million surgeries are performed annually, thus making surgery a vital part of the healthcare system (Green, McGarry & Pope 2018).

The initial phase of perioperative nursing care is the preoperative stage. This period starts from the patient’s need and consent to surgery and concludes at the point where the patient is moved to the operating room for surgery. In preoperative care, the patient is mentally and physically prepared for the surgery. (Goodman & Spry 2014.) Clinical assessment of the patient is a vital part of the preoperative stage. The assessment is done to determine the status of the patient in relation to the surgery to be done. This includes the essence and type of anesthesia to be used, medical background, and health checks. (O’Donnell 2016.) Some nursing interventions prior to surgery inform them about the procedure as well as providing necessary support and guidance (Goodman & Spry 2014).

Successive to the preoperative stage is the intraoperative phase. It is known to be rapidly and often changing and consists of integrative teams that constantly change roles. (Blakeney, Kenner, Kim & Malley 2015.) This phase starts from the end of the preoperative phase and concludes when the patient is moved to the Post Anesthesia Care Unit (PACU) or the recovery room. During this stage, the patient is keenly observed, and vitals are followed. In addition, anesthesia is administered, and the patient’s body is well covered. Also, the surgical site is prepared and the procedure itself is performed. The rationale for the nursing interventions at this point includes ensuring patient safety and infection prevention. Ease and

success of the surgery as well as suitable patient response to medication form part of the goals of nurses in the intraoperative phase. (Goodman & Spry 2014.)

The perioperative process is finalized at the postoperative stage. It commences with the referral of the patient to the PACU and comes to an end with the decision of the surgical outcome. The postoperative period varies based on the type of surgery and the emergence of complications. However, many surgeries are done in an outpatient setting and the recovery period has significantly shortened over time. (Goodman & Spry 2014.) In postoperative care, prevention of complications is key. Additionally, early ambulation and movement, wound care, good nutritional status, and adequate pain management are taken note of. Corresponding to the World Health Organization, a surgical patient in recovery is suitable for the ward if they are conscious, extubated, have normal vitals and pain medication has been correctly administered. (WHO 2022.)

3.1 Competency In Perioperative Nursing

Competency as a perioperative nurse is defined as the collaboration of skills, attitudes knowledge, abilities, potentials, and norms that a surgical nurse attributes in a surgical environment or operating room. For example, using the correct clinical techniques and delivering proper care to the right patient. According to the organization of micro-management, a nurse's performance, skills, and abilities grow using the competency-based approach. This learning approach helps a surgical nurse master skills and work flexibly and efficiently in any condition at a particular point in time. Some of the objectives of clinical competence among surgical staff are effective communication, collaboration, and good performance. (Stobinski 2020.)

There are 5 essential competencies in perioperative nursing. these are teamwork and collaboration, patient-centred care, quality improvement, using evidence-based practice (EBP), and decision-making. Teamwork and collaboration are commonly applied in all aspects of life if a group of people are involved in achieving one goal and they apply in perioperative nursing. Professionals in the perioperative field achieve higher levels of productivity if they work in teams. Again, patient centred care in perioperative care is focused on how the patient wants health care needs to be done in collaboration with the surgical team. Thirdly, implementing quality initiatives and monitoring patient outcomes in

perioperative bring out a desired result. EBP is one of the significant competencies in surgeries. It also guides health professionals in decision-making in-patient care plan. (Tilley 2008.)

3.2 The Sterile Environment And The Sterile Technique

A sterile environment is an environment that is totally free from micro-organisms such as bacteria, germs, fungi, and viruses that normally cause diseases. Healthcare professionals normally use sterile techniques to maintain a sterile environment. These techniques reduce the dangers of infection transmission, that is, to protect the patient from pathogenic microorganisms and minimize cross- infection among health workers and patients. (Yu, Ji, Craig, McKee & Lalonde 2019.)

The sterile technique is an important technique that minimizes the risk of germs and other microbes during surgery. Maintaining a sterile environment is an essential skill for all perioperative professionals. Sterile techniques should also be used outside the surgical room when administering any procedure that can introduce germs to patients, for example, handling surgery equipment, putting foley catheter, arterial line, and central line. (Eske 2022.)

The difference between sterile and aseptic techniques is the fact that medically, aseptic techniques reduce germs from all infectious agents while the sterile technique completely removes all germs, pathogens, and microorganisms and is normally used during surgical procedures. There are two types of aseptic techniques which are the standard and surgical aseptic techniques. (Eske 2022.)

The standard technique is commonly used in the sterilization process, for example, during dialysis, and intravenous incisions. Basically, health personnel use handwashing, a small aseptic field, a mask, and gloves to keep this small area free from microbes.

Surgical techniques are techniques to eliminate pathogens and microorganisms before any surgical procedures. This normally includes sterilization of instruments and instruments that can possibly encounter the surgical field. (Lerner 2019.)

There are three main aspects of aseptic techniques. These are Barriers, Patient, and equipment preparation as well as environmental controls. Barriers are materials used to protect patients and health professionals from pathogens. Examples are sterile gloves, sterile gowns, and masks for patients and healthcare workers. These barriers must not touch a contaminated surface in others not exposed to germs. For patient and equipment preparation, health professionals use sterile tools to protect patients during the surgical process. They apply antimicrobial disinfectant on the patient's skin before a procedure. Furthermore, all sterile environments should be closed during and after surgery. Only health professionals should be at the operating room (OR). The higher the number of people present, the higher the spread of harmful bacteria. (Gould, Hawker, Chudleigh, Drey, Gallagher & Purssell 2021.)

There are rules guiding aseptic techniques. Surgical professionals must always remain within the sterile area because moving in and out of the sterile environment may encourage cross-infection. Talking must be kept minimal, so as not to release moisture droplets that may contain bacteria. Non-scrubbed personnel must not be on the sterile field. Gowns must be sterile from the mid-chest up to the waist and from the gloved hand to two inches of the elbow. Never lean on a sterile table in a sterile environment. Sterile hands may not be folded or must not come below the waist, and away from the face otherwise, it is considered contaminated. All sterile persons must be gloved and gowned. When wearing the gown, only the chest is sterile therefore if a sterile person turns back on a sterile environment, we cannot assure it sterility. (Eske 2022.)

3.3 Background On Surgical Attire

Garments used for surgery have been used for over a long period of time. The surgical apparel is made up of four fundamental parts. They are gloves, caps, gowns, and masks. Today, the use and evolution of surgical attire is due to the germ theory of disease that had been adapted as part of healthcare in the latter part of the nineteenth century. According to Britt (2019), surgical apparel has not been used for up to a hundred years. Before the development of surgical clothes, surgeries were performed in casual wear with rolled up

sleeves. It was normal for surgeons to don a stained dark suit for surgery as it was considered a “badge of honor.” (Britt 2019.)

Most of the historical information about surgical attire is known from pictures taken in that time. A new investigation of the old pictures revealed that the surgical gown was adapted first, and the gloves were accepted later. In the first half of the 19th century, hospitals were known as “houses of death”. This was due to the high mortality rate of surgical patients. In 1883, a German surgeon named Doctor Gustav Neuber was the first to wear a sterile gown to perform a surgery. In sterilizing the gown, he used mercuric chloride, a method known as chemical asepsis. However, Doctor Bergmann is accredited for the introduction of the sterile surgical gown. In the late nineteenth century, he used steam asepsis as the sterilization method for both gowns and surgical instruments. (Britt 2019.)

Although no one knows the first surgeon to don gloves for surgery, Doctor Halstead is known to promote the use of rubber gloves. The story of the use of rubber gloves was narrated by Doctor Halstead himself. The nurse he worked with during surgeries made a complaint about acquiring dermatitis on her hands due to the use of mercuric chloride at that time. Then, after pondering over the issue, made a request to a rubber-producing enterprise. He asked them to make two pairs of gloves made of thin rubber with gauntlets as a test. After using them for some time other members of his team also used them and preferred to have them on as they felt more skilful with them on. (Britt 2019.)

Although Doctor Halstead practiced with the principles of asepsis, the use of rubber gloves was not intended to prevent infection but rather avoid dermatitis. The rationale behind the hesitation of surgeons to don gloves for surgery is ambiguous. However, the general unwillingness to adapt and worries about the lack of tangible sensations in the hands were proposed as a reason. In addition, in 1894, surgical scrubs were initiated by Doctor Robber. He also expressed that, “It is safer and better that all should put on a complete change of costume rather than don a simply sterilized coat and pair of trousers over the ordinary clothing.” The development of the colour of the surgical apparel later came about because of the improvement in lighting systems in the operating room. (Britt 2019.)

Lately, theories about surgical garments have gained relevant attention. In 2014, the Association of Perioperative Registered Nurses (AORN) recommended instructions concerning the donning of the surgical attire. They based the guidelines on the fact that the skin and hair may have some harmful organisms that can expose the patient and the operating environment to infections. The historical information about surgical apparel is a captivating theory that captures both the reluctance to change and development in standard as a strive. (Britt 2019.)

The WHO has recommended the use of surgical attire as an intervention to reduce contamination in the intraoperative setting. In the guidelines stated by the WHO, the use of masks, gowns and gloves is a standard practice for every surgical team. (WHO 2009.)

Surgical gowns can be defined as, "Personal protective garment intended to be worn by operating room staff during surgical procedures to protect both the surgical patient and operating room staff from the transfer of microorganisms and bodily fluids and particulate matter" (United States Food and Dugs Administration 2022). They protect a larger part of the body of the surgical team member and provide comfort for focused performance in surgery. Surgical gowns are worn to prevent the transfer of bacteria from the surgeon's skin to the patient's body. The fabrics of surgical gowns differ in permeability to microorganisms, liquid, and gaseous substances. However, there is no evidence to prove that less permeable gowns get more contaminated in surgery. (WHO 2009.)

Surgical gloving is considered quality practice in healthcare. It is recommended to wear impermeable gloves for surgery. Unfortunately, up to 15% of surgical gloves are torn during surgery. However, SSI rates were not affected by using either damaged or functional gloves. Double gloving also did not affect the rate of SSIs. Although surgical team members who wore two gloves were observed to have more outer glove perforation. Thus, they had less contaminated hands. For instance, a survey showed that the use of double gloves in cerebrospinal fluid shunt surgery was known to reduce the infection rate by 50% compared to the single gloving method. (WHO 2009.)

3.4 Infection Prevention And Control And Surgical Site Infections

Infection Prevention and Control (IPC) can be referred to as “a practical, evidence-based approach preventing patients and health workers from being harmed by avoidable infections.” IPC is a vital part of patient safety and standardized care. This is because it is needed in every part of the healthcare system. Poor infection prevention and control can be dangerous and lead to death. Therefore, poor healthcare delivery can be attributed to inefficient infection prevention and control. IPC is used from all angles of healthcare. Some include injection caution, surgical site infection prevention, and proper hand disinfection. (WHO 2022.)

In the OR, IPC is vital and requires a “back to basics” method to warrant an ideal environment for surgery. First and foremost, the OR must be planned to make adequate room for the surgical team and the equipment needed for any surgery to be done. This is to avoid congestion in the OR. Congestion can lead to the spread of contaminants in the aseptic environment and equipment. Furthermore, the use of research-based methods minimizes the threat of infection. IPC is required in both professional and patient preparation for the procedure. For the patient, it involves the removal of jewellery and hair from the incision area. The healthcare team is required to take off all ornaments prior to surgery. They are obligated to also wear surgical apparel to protect themselves and the patient. In addition, they are to wash their hands appropriately before putting on their attire. (Weaving, Cox & Milton 2008.)

An abridged version of the core components of IPC outlined the importance of running an IPC program by trained and qualified healthcare professionals. It was also suggested to construct research-based guidelines to combat HAI and Antimicrobial resistance (AMR). In addition, there were recommendations to provide necessities for good hand hygiene at healthcare centres. (Storr, Twyman, Zingg, Damani, Kilpatrick, Reilly, Price, Egger, Grayson, Kelley, Allegranzi & the WHO Guidelines Development Group 2017.) Furthermore, the Finnish Institute for Health and Welfare (THL) highlighted some preventive methods against nosocomial infections such as SSI. A few include appropriate hand hygiene, rightly following protocol before surgery and wearing protective garments where and when needed. (Finnish Institute for Health and Welfare 2023.)

Hospital Acquired Infections (HAIs) also known as nosocomial infections are known to be one of the unfortunate incidents that occur in health care. The WHO estimated that about 10% of patient mortality rate is ascribable to HAIs. (Storr et. al. 2017). In surgical care, SSIs are also reported to be the most frequent nosocomial infections that have an influence on ill health and its expenditures. Furthermore, SSIs constitute about 15% of HAIs. It has been studied and reported that surgical site infections are more likely to occur when there is surgical glove perforation and a lack of Surgical Antimicrobial Prophylaxis (SAP). Therefore, it has been recommended that double gloving or regular change of gloves should be done as the preferred form of SSI prevention during longer surgeries. (Junkera, Mujagica, Hoffmanna, Rosenthala, Mistelia, Zwahlenc, Oertlia, Tschudin-Sutterb, Widmerb, Martid & Weber 2012) Nonetheless, HAIs are avoidable by the effective implementation of IPC program. (Storr et. al. 2017)

4 VIDEO-BASED LEARNING IN NURSING

Nursing studies can be complicated and require both literature and applied based details (Gregersen, Hansen, Brynhildsen, Grøndahl, & Leonardsen 2021). A study done in 2016 concluded that the use of interactive videos as teaching material helps to promote patient teaching competence in early nursing studies. (Blazeck, Katrancha, Drahnak, Sowko & Faett 2016.) In addition, an analysis done on a study of the preferred learning styles of professional nurses revealed that sensing and visual study methods were a better choice for them. A higher percentage had visual based studying as their best alternative. (Mangold, Kunze, Quinonez Taylor & Tenison 2019.) Therefore, it is safe to say that people who learn with visual style do better with the help of images and videos (Mediapharm 2019).

The use of videos is common in eLearning and is known to be of good standard. According to Pandey, videos help digital learners to boost their retentive memory. Again, they are suitable for users from different generations. Advantages of video-based learning consist of broad access to material and microlearning. (Pandey 2022.) Microlearning can be simply explained as small sections of learning content and periods (Andriotis 2018). Moreover, video-based learning is gradually becoming an essential method of studies. It is also possibly going to be more vital in education today due to the prevalence of the internet among the current and future generation. (Lacey & Wall 2020.)

The system of electronics being a tool for learning clinical skills is a new and more preferred one as opposed to the traditional ones. Amongst these electronic sources, video technology is the most effective method of learning. Based on a research done on nursing students in Korea, it was concluded that a mobile-based study with video helped the students to gain more confidence in application of the skill, a boosted sense of motivation and class contentedness with the video. (Lee, Chae, Kim, Lee, Min & Park 2016.)

Nursing students are required to know professional nursing expertise both theoretically and practically. Theoretically, nursing students can gain the fundamental knowledge and practically, they can learn from their clinical practices. Unfortunately, the timeframe of

learning practically to gain clinical skills is limited. Therefore, there is the need to incorporate other methods of teaching and learning for the nursing students to gain holistic education.

(Cao 2022.)

5 PROJECT IMPLEMENTATION

A project may be defined as a task that is carried out by one or more people to complete an objective. Projects are temporary; that is, they always come to an end. There are some essentials needed in a project. These include both physical and human resources and time. (Leavitt 2018, 9-10) In this thesis project, the human resources include the project managers, supervisors, and the target group for the project. Physical resources include the material needed to produce the learning video such as a video recorder and surgical apparel. Finally, the timeframe within which the project is to be completed, that is, by September 2023.

The project implementation stage begins after a project has been planned. In this phase the project plan is put in effect. Furthermore, the project managers control and supervise every level the project reaches. (Barron, Barron & Watt 2014) Due to this project being practical, the theoretical framework forms part of the written construction template with which the project is based on. (Centria Guide for Thesis and Academic Writing 2022). It outlines an evidence-based written text concerning literature surrounding surgical gowning and gloving. In addition, the importance of surgical gowning and gloving in healthcare is highlighted. The practical aspect involves the development of a product by the authors, that is, a learning video for nursing students of Centria University of Applied Sciences. The video will provide a detailed and systematic process of surgical gowning and gloving.

5.1 Operational environment

Centria University of Applied Sciences is the higher educational institution where the thesis project will be implemented, specifically at the nursing department. The campus is In Talonpojankatu, Kokkola. Centria UAS offers the nursing programme both in Finnish and English language. As a result of this, students taking the programme in Centria are both from Finland and other parts of the world. The nursing degree programme offers a culturally diverse environment for learning. This aims to produce nurses that are competent to work in

a multi-professional environment, be well equipped with clinical skills and be disciplined. (Centria University of Applied Sciences 2023.)

The target group for which the thesis is being done is the English-speaking nursing students of Centria as part of their studies. The nursing programme is a degree that requires hands-on training often. Thus, there is a need to learn more practically. (Centria University of Applied Sciences 2023.) The educational video is to help enlighten the students about gowning and gloving. The topic is learnt theoretically and practically in school through lectures and workshops with teachers. However, in Finland, all available videos to shed more light to understand surgical gowning and gloving are in Finnish. Therefore, a video in the English language to demonstrate the topic visually will improve the quality of education on the topic of surgical gowning and gloving in the nursing department of Centria University of Applied Sciences.

The nursing department of Centria provided the needed materials such as the surgical gowns, gloves, and hand disinfectant for the making of the video.

5.2 Project phases

The project phases refer to a group of events that have been planned to manage and control the development of a product in the thesis. The phases occur in a chronological order. Each phase consists of a task that is to be done, the expectations from the task and who is assigned to the task. In each phase, risks and financial costs are considered as well. (Ngoc 2010, 3.) The cycle of a project normally runs from the initiation phase and is completed at the closure phase where all the goals of the project are reached. (Barron, Barron & Watt 2023.)

In the initiation phase, the topic was selected from a list of projects proposed by the teachers of Centria. The project managers searched for relevant literature material related to the topic and began the collection of evidence-based information which was to be taken into consideration in the thesis. The thesis plan was written in May 2022. The references were taken between the years 2013 and 2023. However, a few older ones were used due to their

importance to the project. All reference materials were collected from the internet and Centria's online library with majority of them being published articles. Furthermore, the guideline used by Oulu University Hospital for sterile dressing and hand disinfection published in 2021 was used as a standard guide to develop the learning video.

A discussion was then held in September 2022 in Kokkola between the project managers and Timo Kinnunen, the head of the nursing department as well as the representative of Centria UAS. During the meeting, the aims and objectives of the thesis and what is expected in summary from the project was outlined. They planned to officially launch the thesis by September 2022. They also aimed to produce the learning video by August 2023 to have the project ready before the start of the spring semester in 2024. This is because the project will be used by the nursing students of Centria as part of the surgical nursing and acute care course material. By February 2023, background theoretical framework for the thesis was ready. The planning and discussion of the learning video production was discussed between the project managers and their supervisor, Timo Kinnunen in February 2023 and targeted it to be ready before the end of August 2023.

In March 2023, a research permit was granted by Jennie Elfving, the director of education, towards the thesis process.

5.3 Project organization

Project organization is defined as the interactions, obligations, and the connections among the organization teams (Ngoc 2010, 22.) This includes the project managers, supervisor and working life partner. The thesis topic was suggested by Timo Kinnunen from a list of thesis topics provided by Centria teachers. The thesis was written by the project managers themselves. It outlined all knowledge and clinical skills surrounding donning sterile gowns and gloves.

The members involved in the organization of this project are the two project managers, Yvonne Ohene Budu and Hilary Lartey. They are also the authors of the theoretical part of the thesis. The supervisor Timo Kinnunen was the overseer of the project and ensured every part of the thesis was done appropriately. The production of the video was arranged by the

project managers themselves. The organization board evaluated every step of the thesis writing process together with the production of the learning video.

In March, the project managers contacted Janne Torvikoski, a staff member at the Information Technology department of Centria UAS to provide video-making equipment for the project. He also gave guidance on video editing intermittently during the video-editing process. It was settled between Janne Torvikoski and the project managers to use the iMovie application for the editing process. A GoPro camera was used to produce high-quality clips and a Universal Serial Bus (USB) microphone was used to record the voice overs for the video.

The managers designed the script based on guidelines provided by the Oulu University Hospital on sterile dressing and Timo Kinnunen, the head of the nursing department of Centria. The script was begun with an introduction of the actors in the video and what the video was about. It was followed by a guide on what to do before gowning and gloving such as hand disinfection, wearing surgical masks and their importance. The surgical gowning and gloving procedure was then demonstrated step by step with important notes to follow up on intermittently during the process.

An agreement was also reached to create subtitles for the video in the English language. The project managers, Hilary Lartey and Yvonne Ohene Budu were the cast members for the video. Hilary played the role of the Scrub Nurse who would don the sterile attire and Yvonne played the role of the circulator nurse. Yvonne recorded the voice overs for the video as well. They also played the role of recording the video clips and used a tripod stand to record the videos where they both needed to be included in at the same time.

About four filming sessions were held to make corrections based on feedback received from Janne Torvikoski and the project supervisor, Timo Kinnunen. All video-recordings were held in the simulation room 92 of the Nursing Department at Centria UAS. After every filming session, the supervisor was contacted. He provided feedback on the clips recorded and

changes were made based on his suggestions and instructions. The voice overs were recorded in empty classrooms for calm background noise. Janne Torvikoski gave feedback from time to time on the editing process and guided the managers on how to deal with technical difficulties.

The editing process took about four months to get the final product which was finally accepted by Timo Kinnunen. The aims and objectives of the project supervisor and managers in the filming process was to develop and produce a high-quality, comprehensible and clear video to help the nursing students at Centria. By August 2023, the video was ready for final feedback by the supervisor and other nursing students.

6 ETHICAL CONSIDERATIONS

The project managers of the thesis were well abreast about the importance of considering the ethical issues that could arise during the thesis process. Ethics in this thesis was ensured by checking plagiarism of written reports, how to handle personal data before and after the thesis has been published. Also, the use of research publications and materials that have been kept under the copyright act was taken into consideration. What may have threatened the thesis included the financial risks taken into producing the learning video as well as the collection of data to be analysed to write the thesis report. These issues have been discussed between the project managers and Timo Kinnunen and the risks were minimized. (Arene 2020, 6-11.)

Ensuring proper scientific practices and research ethics was done in the data collection process. This is to ensure that all data collected are evidence-based and follow the right conduct of ethics in research work such as using good skills in research and editing original works. Ethical recommendations will be followed judiciously by the project managers of the thesis. There will be a supervisor overseeing the thesis process to ensure that it follows the right research ethics. The project managers and thesis supervisor will discuss and work out on the resources needed for the thesis process.

A research permit was applied from the Director of Education in Centria, Jennie Elfving and concluded between the project managers, supervisor, and Centria University of Applied Sciences, Kokkola.

7 DISCUSSION

In this thesis discussion, we explored the importance of surgical gowning and gloving, and the potential challenges associated with these practices. We also analyzed the importance of including the topic in nursing education. Surgical gowning and gloving are critical aspects of IPC and patient safety in the OR setting. It plays a vital role in preventing the transmission of microorganisms between healthcare workers and patients during surgery. This procedure is done to create a barrier that protects the patient and surgical team from sources of infection. Failure to follow proper techniques can lead to breaches of sterility and potentially compromising patient safety. (Handaya & Werdana 2019.)

7.1 Methodological considerations and limitations

The methodology used for this thesis is practice-based. Therefore, the thesis is made up of a theoretical report and a learning video by the authors in partnership with Centria University of Applied Sciences. During the development of the thesis project, there were limitations faced by the managers. However, with guidance from the project supervisor, the managers were able to develop and complete the project successfully.

First and foremost, one difficulty faced by the authors was the research done for current and appropriate theoretical knowledge on the topics of perioperative nursing and infection prevention which were relevant to the topic of gowning and gloving. The existing knowledge on these topics were so vast and some consisted of argumentative topics. Some also were difficult to search for and seemed scarce. Therefore, selection of the most relevant articles was a challenge. In addition, there was a search for already existing instructions on the gowning and gloving process used in Finland. This was needed to help the developers with filming the video in the most appropriate way for nursing students in Centria, Finland. Most of this information was found in the Finnish language and needed to be translated to get the right information. This also was a challenge for the authors as both have English as their mother tongue.

Another limitation faced by the authors of the thesis was the inability of the authors to edit videos. Due to this issue, there was a constant need for them to contact Janne Torvikoski from the Information Technology department of Centria. This also brought about regular travels to Kokkola campus for guidance on the editing process although the project managers had clinical practice at another location at that time. Furthermore, during the editing process, the managers faced a few technical difficulties with the computer used for editing. The clips that had already been filmed had to be transferred to a new computer which was not readily available for use all the time. This limited the flexibility of the authors' time to edit the video.

Another challenge faced by the authors was the limited use of materials needed for the filming sessions. The video making process required a camera, stand, hand disinfection, surgical gowns, gloves, facemasks, and surgical caps. Although all these materials were readily made available for the project managers to utilize, there was a limitation in the use of the surgical attire. This was a challenge for the managers since some clips had to be filmed more than once to have alternatives to make the perfect choice from. The aim of the project was to enlighten nursing students in wearing surgical gowns and gloves in a completely aseptic manner to bring about IPC In clinical setting. Therefore, the managers needed to demonstrate sterility in the video for nursing students to understand and learn from. Since there was a limited use of the surgical attire, there was not opportunity to film as many clips as possible. A couple of clips were filmed but had to be extensively edited to show the correct application of knowledge on surgical gowning and gloving.

Finally, a limitation of the project development was the use of only English language in the development of the video. This means that English was used as the language of instruction and as subtitles. Thereby, restricting the ability of Finnish-speaking nursing students in Centria to watch and learn from the video. Although this is a restriction for them, it was also considered that many videos on surgical gowning and gloving in Finland already exist and readily available for use. However, this is not possible for the English-speaking students as most of these instructional videos have no English translations. Therefore, by developing this video for nursing students in Centria, learning the gowning and gloving process becomes easier for them.

7.2 Relevance for nursing education

The aim of the authors of the thesis was to educate nursing students of Centria on the process of gowning and gloving through video learning. Sterility in donning of surgical attire is required to achieve asepsis and decrease the chances of SSIs (Rabbani, Khalil-ur-Rehman, Hussain, Fazli, Qadri, Manzoor, Cheema, Haq, Ismail & Saffi 2022). Therefore, the need for nursing students to receive education on donning surgical attire appropriately before entering the perioperative field.

To assess the significance of the project, some nursing students from Centria were asked to give feedback on the video. Three of them in their fourth year of nursing education and two of them had completed their second year of nursing school. A questionnaire was provided to them to answer questions based on the video they watched, and they were then interviewed to give any extra feedback they may have on the video.

The questionnaire included the following questions:

1. Have you watched the video on surgical gowning and gloving process?
2. Are you already familiar with the surgical gowning and gloving process? If yes, Is it practical, theoretical knowledge or both?
3. Is the main point of the video understandable?
4. Did you find the video interesting and easy to follow?
5. Are the subtitles easy to follow?
6. Does the video provide enough information about the gowning and gloving process? If not, what else could have been added or removed?

Out of all five of them, only one had only theoretical knowledge on surgical gowning and gloving. All five of them answered that the main point of the video was understandable, interesting, and easy to follow. They all had the same view on the subtitles being easy to follow as well. Four students concluded that the video was good enough and one suggested that the full three-minute hand disinfection process could have been shown in the video for better understanding and the opening of the sterile attires could have been demonstrated in the video as well. From the brief oral interviews, the authors had with the students, they

concluded that the video would be excellent learning material for the English-speaking nursing students of Centria UAS.

The authors then concluded from the feedback assessment that the learning video on surgical gowning and gloving is relevant for education in nursing and forms part of evidence-based practice in learning.

7.3 Conclusion

In conclusion, surgical gowning and gloving practices were analyzed and their importance was outlined. It was made evident that these procedures play a crucial role in maintaining a sterile environment in the operating room and reducing the risk of surgical site infections. The following conclusions can be drawn from the thesis project.

Surgical gowning and gloving aim to prevent the transmission of microorganisms between healthcare providers and patients during surgical procedures. Overall, the purpose and objectives of surgical gowning and gloving are to minimize the risk of infection, protect patients and healthcare providers, and maintain a sterile surgical environment. By following these practices, the likelihood of surgical complications and healthcare-associated infections can be significantly reduced. (Adams, Aschenbrenner, Houle & Roy 2016)

Adherence to standard precautions, including hand hygiene, proper disinfection of surfaces, and the use of personal protective equipment (PPE) in addition to gowning and gloving is necessary to create a comprehensive infection control strategy. These precautions should be followed consistently by all members of the surgical team. The correct technique for surgical gowning and gloving is of utmost importance to ensure optimal barrier protection. The process should be performed meticulously, adhering to established protocols and guidelines, to minimize the risk of contamination.

Competence in perioperative nursing involves basically acquiring knowledge, skills, and abilities that a nurse possesses to provide safe and effective care to patients before, during, and after surgery. Perioperative nurses are responsible for coordinating and managing the care of patients undergoing surgical procedures, and their competence plays a crucial role in ensuring positive patient outcomes. (Stobinski 2020.)

An educational video on surgical gowning and gloving was developed. In the video, the sterile way of donning gowns and gloves in the surgical setting was discussed. Key steps involved in donning surgical gowns and gloves, emphasizing the critical aspects of maintaining a sterile environment and preventing the spread of infections was also briefly included.

In conclusion, surgical gowning and gloving are fundamental components of infection control in the operating room. By following proper techniques, educating healthcare personnel, selecting appropriate materials, and emphasizing compliance with standard precautions, the risk of SSIs can be minimized, leading to improved patient outcomes and safety. Continuous monitoring and quality improvement efforts should be implemented to maintain high standards and adapt to any emerging challenges or advancements in the perioperative field.

7.4 Process management

The thesis project has been one that has given the authors the opportunity to learn about how the practical based thesis process works and what is involved in research writing and developing learning material. This subchapter outlines a reflection of the project managers on their project development from the beginning to the end.

Firstly, the authors decided to choose the topic of surgical gowning and gloving due to their interest in learning more about sterile dressing and the perioperative nursing process. There was very little learnt theoretically about surgical gowning and gloving in the operating room. Therefore, this gave them the opportunity to learn more about the topic. Again, the nurses got to learn more about the research method. Since the thesis was a practical one, there was a need to find evidence-based information on practical-based projects and how they are managed.

Secondly, the managers learnt about the process of creating video projects. They learnt that in making such projects, there was a need to make a script, subtitles, video editing, filming sessions and making clips suitable for the result. They also got to experience that the editing process was a demanding one and required a long time to do. Booking filming sessions with the supervisor and IT expert for guidance on editing was also a part of the process as the video was to be done in Centria. They learnt the method of creating videos of good quality for learning material as well as making videos that were easy to understand and use.

Furthermore, the project managers learnt about the importance of feedback assessment and its significance to managing and developing a thesis project. Throughout the thesis project, every stage was evaluated by the supervisor and feedback was given about what had been produced. As a result, each stage of the thesis project was edited a few times before moving on to the next stage. From the relevant sources, writing style, topic discussions, and video development, the authors received an assessment. This helped to improve the writing and filming processes. Again, the student feedback for the learning video gave the project managers insight into their strengths and weaknesses when making the video.

Finally, the authors of the thesis reflected and concluded that the thesis process was challenging yet beneficial one. Although they encountered a few restrictions during the process, they were able to work hand in hand together with their supervisor to come to a satisfactory result. This is because they got to learn the importance of teamwork, constructive criticism, project development and management. In addition, their goals for the thesis were realized.

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