



PERFORMING A STERILE MALE URINARY CATHETERISATION

A Video Guide

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Thesis

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Tekijä	Bor Brian ja Tumusiime Benson	Vuosi	2023
Ohjaaja	Anniina Tohmola		
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Opinnäytetyön toimeksiantajana toimi Lapin ammattikorkeakoulu, joka tilasi miesten steriilin virtsakatetroinnin opetuksessa käytettävän ohjausvideon. Opinnäytetyön tarkoituksena oli tuottaa ohjausvideo steriilistä miehen katetroinnista Lapin ammattikorkeakoulun kansainvälisille sairaanhoitajaopiskelijoille.

Opinnäytetyön tavoitteena oli antaa tuleville opiskelijoille taitoja ja tietoja steriilistä miehen katetroinnin suorittamisesta. Opinnäytetyöraportti sisältää kolme osaa : teoria, toteutus ja arviointi. Teoriaosan käsitteet sisältävät virtsajärjestelmän, virtsakatetriin tyypit, komplikaatiot, steriilin miesten virtsakatetrin merkityksen ja turvallisuuden.

Opinnäytetyön tuotoksena tuotettu video kuvattiin Lapin ammattikorkeakoulussa Kemissä ja editoitiin IMovie-nimisellä sovelluksella. Voiceoveria käytettiin videon selittämiseen yhdessä videoon liitettyjen kuvien kanssa. Video tallennettiin ja ladattiin koulun YouTube-kanavalle käytettäväksi opetusmateriaalina

Toimenpiteen suorittamisessa opiskelijoiden on tärkeää tietää turvallisuustekijät infektioiden välttämiseksi ja potilasturvallisuuden ja potilaan laadukkaan hoidon varmistamiseksi.

Avainsanat Steriili miesten virtsakatetrointi, ohjausvideo

Muita tietoja Työhön liittyy video.

Bachelor of Health Care
Nurse RN

Authors	Bor Brian and Tumusiime Benson	Year	2023
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This thesis was commissioned by the Lapland University of Applied Sciences with the purpose of making a video along with the thesis on performing a sterile male catheterization. The aim of the thesis was to produce a sterile male catheterization guiding video for the Lapland University of Applied Sciences international nursing students. The purpose of this thesis was also to provide skills and knowledge to future students on how to carry out a sterile male catheterization.

The thesis report has three parts the theory part, the implementation, and the evaluation part. The theory part addresses the urinary system, types of urinary catheters, complications, importance of sterile male urinary catheters, and safety. In carrying out the procedure, safety is the most important aspect for students to know to avoid causing infections. In addition, information is needed on how to carry out the procedure to ensure quality care and patient safety.

The video was shot at the Lapland University of Applied Sciences in Kemi and it was edited using an application known as iMovie. Voice over was used in explaining the video together with the pictures that were attached to the video. The video was saved and uploaded to the school YouTube channel to be used as a potential teaching material to other students.

Key words Sterile male urinary catheterisation, video guide

Other information The thesis includes a video.

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FOREWORD

We thank Lapland University of Applied Sciences for providing us with the simulation room to shoot our video and to have access to the instruments that we needed.

1. INTRODUCTION

Urinary catheterization process is one of the common processes that has been used to drain the urinary bladder since the ancient times. For example, ancient Egyptians used papyrus and reeds as a urinary catheter. However, later in 1937 Frederick Foley introduced a self-retaining catheter and since then it has changed the entire process of urinary catheterization (Holroyd 2016).

Urinary catheterization is an invasive medical procedure, which it involves an insertion of a single lumen urinary catheter into the bladder for urine drainage. It is a common procedure done by nurses in an outpatient setting, intensive care, during surgery or following trauma (Newman, Quallich, Hull, Powley & Wall 2021). This process should be done in the most aseptic way to avoid urinary tract infections and the insertion technique should always be considered while carrying out the process as this also contributes to the urinary tract infections. (Gonzalez & Sole, 2014). Male catheterization might be difficult because of the male urinary anatomy in terms of length and curves of the male urinary tract hence nurses should be well equipped with skills and knowledge in order to perform the catheterization in the safest way without causing injury or infection to the patient. (Nemes, Giomuso, Miller, Dirk, Kiefer, Rimac, & Burant 2022).

Catheterization as a topic of this study is quite relevant because it provides a visual presentation and facilitates understanding of the nursing students of the international group at Lapland University of Applied sciences. The main objective of this thesis is to teach and guide students of Lapland UAS on how to perform sterile male urinary catheterization. This project explains the process of the procedure, safety, patient guidance, long term care of the patient and patient guidance as well as complications that arises because of mishandling. On our side, this project will enhance our clinical skills and improve our confidence and ability to carry out sterile male catheterization. (Lengetti, Kronk, Ulmer, Wilf, Murphy, Rosanelli, & Taylor 2018).

2. PURPOSE AND AIM

The purpose of this thesis was to produce a sterile male catheterization video for Lapland University of Applied Sciences in English. This material can potentially be used by teachers and international nursing students at Lapland UAS. The main aim of this thesis was to equip students with knowledge and skills in carrying out sterile male catheterization in order to deliver quality care in their future nursing career and to enable them to practice their hand skills using the video.

The aim of this thesis was to develop the student clinical skills in sterile male catheterization, patient guidance and safety. The personal goal of the authors of this thesis was to carry out sterile male urinary catheterization in a skilled way and be able to provide patient guidance and address the complications that may occur.

3. THEORETICAL BASIS OF MALE URINARY CATHETERIZATION

The urinary system has two kidneys, two ureters, bladder and urethra. The main function of the urinary system is to filter blood, collect and remove waste products in form of urine. (Rogers, Scott, Warner and Willis 2011). The function of the kidneys is to remove waste products and drugs from the body, balance body fluids, regulate blood pressure and controls the production of red blood cells. Two ureter tubes carry urine from the kidneys to the bladder while the bladder hollow in shape and located in the lower abdomen. The bladder walls relax and expand to collect and store urine. It contracts and flattens to empty the urine through the urethra. (O'Callaghan 2016).

Urinary catheter is a flexible tube that is inserted through the urinary tract in order to collect urine for assessment or for drainage to empty the bladder into a drainage bag. (NHS 2023). The catheter is made of silicone coated soft latex and it is mostly preferred if the catheter is to be left for long without removal since it does not get coated easily with dirt or bacteria from the urine causing blockage, hence can be used for a long-time example 5 to 8 weeks.(Hora and Dolejsova 2021).

3.1 Types of urinary catheters

There are two main types of urinary catheters i.e. the indwelling urinary catheter and the intermittent catheter. An indwelling catheter is a type of catheter that sits on the bladder also known as the Foley catheter. This type of catheter is inserted through the urethra into the bladder and a tiny balloon at the end of the catheter is inflated with sterile water to prevent the catheter from sliding out of the body (Healthline.com 2022) The balloon is placed at the base of the bladder blocking the opening of the urethra to block the flow of urine instead the urine will be released through the urinary catheter. The balloons are between 10ml to 30ml in size. Saline water is not injected into the balloon because the saline solution may crystallize in the balloon causing urine blockage also it may be hard to deflate the balloon and to remove the catheter. (Newman 2021)

An indwelling catheter collects urine by attaching a urine bag into the catheter. The urine bag has a valve at the bottom that is opened to allow the urine to be drained out of the bag. It is always advisable to drain the urine once the bag is half full, and the urine bag should be place above the ground and valve should always be closed to avoid infections also the bag should be place below the abdomen to allow free urine flow. (MedicalNewsToday 2019)



Image 1: Indwelling catheter with an inflated balloon (MedicalNewsToday 2019)

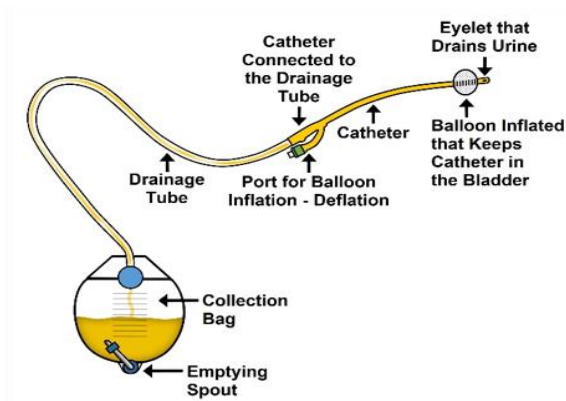


Image 2: Indwelling catheter illustration (MedicalNewsToday 2019)

An intermittent urinary catheter is a type of catheter where the catheter tube is lubricated and inserted to the bladder through the urethra to drain urine and each time it is withdrawn it must be disposed. It is a single type of catheter, and it cannot be left in place for longer periods of time. (Boyd 2013). It can be inserted several times in a day if needed to drain the bladder, using a new catheter for every insertion. The catheter is lubricated to avoid discomfort during insertion and one end of the catheter is left open unlike indwelling catheter where it is attached to a drainage bag. One end is left open to allow drainage into the toilet bag or a collecting material used. Once the urine stops flowing out the catheter is removed. (NHS 2023)

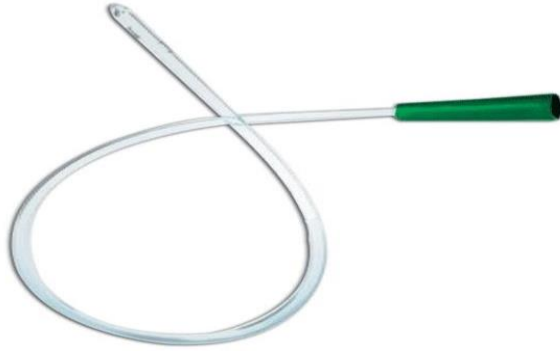


Image 3: Intermittent catheter. (Compact cath 2019)

Intermittent catheters are mostly used for short periods of time for example after surgery. They are usually used for patients who have urinary retention problems, urine incontinence. The catheter can be inserted by a nurse or patient under guidance from the healthcare providers. It can be inserted at the health centre or at home by the caregiver if the patient is unable to do it himself. (Healthline 2022)

The catheters to be used are usually chosen according to the material used in making the catheter and the duration of the catheter installed in the patient that is silver coated catheters are inserted up to 28days. The silver helps to reduce the expansion of bacteria. Hydrogel coated latex catheters can be used for up to 12 weeks and then they are replaced with new ones. They are resistant to bacteria hence can stay for a longer period of time while hydrophilic catheters are used for intermittent catheterization and come in variety of sizes, the male sizes are quite different from the female, male catheters tend to be long. (Boyd 2013)

Choosing a catheter depends on several reasons that is duration of the catheter and also the patient is taken into consideration in terms of what the patient prefers in agreement with the doctor. The external circumference and inside space of the catheter is usually considered to avoid injury and to ensure that the bladder is drained adequately. (Pomfret 2007). Catheters can also be chosen according to the lifestyle of the patient. Some of the patients would prefer to have privacy hence the catheter can be portable and have the features such as securing the catheter to the leg or using other catheter aids in order for them to use it confidently. (Pomfret 2007)

Catheters are measured by a French scale, which is only applicable to intermittent and indwelling catheters. The average size for an adult male ranges from 14fr to 16fr and that of an adult female ranges from 10fr to 12fr. The French sizes are colour coded to determine the size of the catheter for example in the image below. (Compact cath 2019).

3.2 Reasons for sterile male catheterization

Reasons that lead to sterile male catheterization include, bladder drainage, investigation and instillation. When it comes to drainage, a catheter is installed when the patient has the following conditions obstruction in the bladder caused by inflammation of the prostate or cancer, to allow urine flow in case the patient has a problem with urine retention, to drain the bladder during surgery, to measure the urine output in a patient and determine residual volume and to comfort terminally ill patients. (Boyd 2013)

In investigations urinary catheter is used in x-ray examinations, to obtain uncontaminated urine sample if unable to obtain such by non-invasive means, to deliver medications directly into the bladder during chemotherapy of bladder cancer. In instillation urinary catheterization is used to irrigate the bladder. (Boyd 2013)

3.3 Preparation of sterile table

When preparing a sterile table hand hygiene is always important to avoid contaminating the sterile field with microorganism that might be transferred to the patient during sterile male catheterization. The first step is to wash your hands with soap and water, dry them and disinfect them. The next step is to disinfect the table you are going to use with surface disinfectant and after that gather all the tools that are needed and set them ready. (BC campus 2015)

The equipment required during this procedure include, hand disinfectant, a pair of sterile gloves, sterile water filled syringe with 10ml sterile water, lidocaine used as an anaesthetic lubricating gel, male urinary catheter, catheter pack which includes cotton wool balls, absorbent pad, forceps or handling tool and sterile gauze, catheter bag and urine bowl. Always check the expiry date on the catheter, sterile water and lidocaine gel before using them and ensure the disposal bin is readily available to avoid too much movement during the procedure as this may tamper with the safety of the client. (Holroyd 2016)

Setting up the table involves the following steps, first start with the hand hygiene, grab the catheter pack and place it on the table, grab the outermost tip and open the flap away from you, grab the other side flap and open outwards and let it lie flat on the table, once it is set equipment can be added into the table which include a catheter whereby the cover is removed then placed on the already set sterile table, 10ml syringe, lidocaine, hand disinfect and the rest is made readily available that is the urine bag. (Holroyd 2016)

3.4 Patient preparation

The procedure starts with preparation of the patient by confirming patient's identification. Confirming if the patient is fit to undergo the procedure that is the patient is conscious or has any pain before the procedure. Check if the patient has any allergies for latex and explaining the procedure to the patient. Ask and checking the medical history of the patient in case the patient had previous urethral trauma or has had a urinary catheter before. Check for urinary tract infections, check if the patient has had urinary tract surgery before, blood clotting disorders and medications. Lastly check for urinary tract infections. (Holroyd 2016)

Urinary catheters do not prevent the patient from doing most of their daily activities, however, the patient should seek advice from the health provider before assuming their activities. Patients with intermittent or suprapubic catheter can have sexual intercourse without much complications while patients with indwelling catheters can have problems with sexual intercourse. (NHS 2023)

3.5 Putting on sterile gloves

When putting on sterile gloves make sure to choose the right size for the gloves, wash and disinfect your hands before opening the gloves package and before putting on sterile gloves. After washing and disinfecting your hands open the sterile package by peeling the package outwards and pulling down, place the inner package on a clean surface and you will see right and left gloves, start by putting on the dominant hand first. Pick up the glove for the dominant hand by touching the inner surface, avoid touching the outer surface to avoid contamination of the sterile gloves, insert the glove into the hand, pull the remaining glove on non-dominant hand and insert fingers and adjust to fit properly, once the gloves are inserted well, keep your hands raised above your abdomen and apart, your hands should be kept six inches away from your body. (Newman, Quallich and Hull 2021)

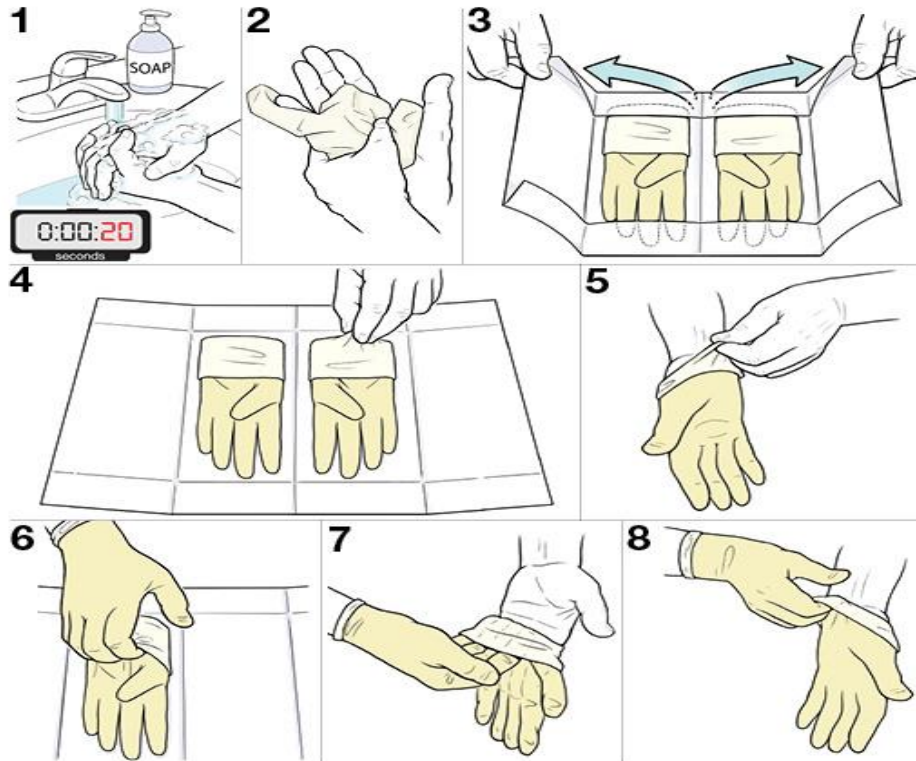


Image 5: Putting on sterile gloves' illustration (St Luke's 2020)

3.6 Sterile male urinary catheterization process

In carrying out the sterile male catheterization procedure, The first step after disinfecting the hands and wearing gloves is to ensure that all the equipment is ready, provide the patient with privacy by closing curtains or using other available privacy tools, position the patient to a supine position, cover from the abdomen upwards towards the chest area with a sheet. (Hora and Dolejsova 2021). Thereafter, place a sterile wrap around the penis without touching the inside part, lubrication of the tip of the catheter with xylocaine is recommended, inform the patient that you are going to the catheterization area and will feel a little bit cold, thereafter the nurse with the sterile gloves will then take over and with non-dominant hand grasp the penis and retract the fore skin if present, position the penis at a 90 degree angle hence the non-dominant hand will be non-sterile. . (Hora and Dolejsova 2021).

With the sterile dominant hand, the nurse will proceed to use forceps to pick cotton ball and clean the penis head in a circular motion from the centre to outwards while repeating this procedure three times using new cotton ball each time. Thereafter with the dominant hand pick up the sterile catheter and instruct the patient to take a deep breath and exhale slowly as the nurse inserts the

catheter slowly while, maintaining sterility until urine is noted. (Newman, Quallich and Hull 2021)

The catheter is inserted until urine is noted, once the catheter is inserted, the retention balloon is inflated with 10ml saline water, the syringe is then removed. The catheter is pulled slightly to confirm the balloon is in place, once confirmed, the urinary bag is attached to the catheter after putting on new gloves. The sterile draping and other tools used is removed away from the patient's bed. Dispose the gloves, wash and disinfect the hands. The catheter is secured with a securing device. (Hora and Dolejsova 2021).

The drainage bag should be placed below the level of the bladder and attached to the bed frame after that assist the patient to a comfortable position and dispose all the waste and used equipment. After the procedure, everything should be documented and always hand hygiene should be done. (Newman, Quallich and Hull 2021)

Complications that may arise include, difficulty in inserting the catheter due to inflammation in the urethra, blood in the urine caused by injury to the urethra or other infections, allergic reaction to the kind of material used in making of the catheter, infection of the urinary tract and bladder stones. (Healthline.com 2022)

3.7 Patient Guidance after catheterization

Patient guidance is important to ensure that the client maintains safety away from hospital. In patient guidance the client is given information on how to take care of the catheter as some might be new to catheterization. Patient guidance include encouraging the patient to take more fluids as this helps to prevent infections, the patient needs to also have a home care nurse who will be irrigating and changing the catheter bags also informing the patient the importance of personal hygiene especially after bowel movement and should constantly wash hands. (Healthline.com 2022)

In case of any signs of infections such as feelings of irritation, cloudy urine, strong odour in the urine, rise or drop in the body temperature, blockage in the urinary catheter, in this case the patient should contact the health care centre. Also, the client is given guidance on when the catheter should be changed the next time and doctor visits. (Healthline.com 2022)

4. THE FUNCTIONAL METHOD OF THESIS IMPLEMENTATION

4.1 Functional thesis process

A functional thesis is composed of two parts, which are the functional part and the thesis report. The goal of the functional thesis is to produce results that can be used to educate, instruct, or orient people and in this case nursing students on how to perform a nursing task. The functional thesis is started by writing a plan, followed by the functional part of the thesis, which is usually a video, which together with the final report must be supported by research. (Saastamoinen, Vähä, Ypyä, Alahuhta, & Puutalo 2018.)

The process for this thesis project includes actors, cameras, project materials, location and planning of the different video scripts. The video was shot from Lapland University of Applied Sciences, Kemi simulation room. The two authors played the nurses role and mannequin was used as the patient. The authors used their own knowledge and research to perform the bladder catheterization plus explaining the whole procedure. The equipment used included a mannequin, a bed, sterile table sterile gloves, aseptic gloves, sterile cloth, a catheter, sterile lubricant, sterile water, syringe, catheterization pack and drapes, curtains and two phones from the authors were used.

4.2 Cameras, acting and voiceover

Shooting a professional or study video does not necessarily mean spending a lot of money on equipment or attending lessons. There are several details one has to pay attention to and practice them in order to deliver the desirable outcome. Making research about the intended video, gathering the required equipment, keeping a simple background, have a story line for the video, consider good lighting, try different angles, expose the scenes evenly, plan for audio, avoid shaky shots and observe proper camera placement. (Thapa 2022.)

The thesis video was recorded using two phones both from the authors. The phones were chosen based on camera quality. It was going to be easy to edit using iMovie since both phones were an iPhone. Two angles in the shooting of the video one from the side and the other from the top were used.

From the guidance and discussions with the supervising teachers, the video was supposed to be shoot to seem real even though the mannequin was used as the patient. This meant keeping and doing all the procedures which included patient education and explanation.

Since it was an education and guidance video, the supervising teacher suggested not to keep the original voices of the video but rather make a voiceover explaining the whole procedure as this would be easy for those who were going to use the video for educational purposes.

The video was edited using iMovie which also has an option of adding voice overs and a soundtrack. No money was spent on the video because personal phones were used to record and do the editing, and the rest of the equipment was provided by the University. The video was shoot twice because the first video lacked some photos to show the needed equipment plus a proper way of putting on sterile gloves had to be clearly reflected. The video was shoot putting into considerations the comments from the guiding teacher, plus the advice from fellow students who had done the same project before.

4.3 Video effectiveness in learning

Most students and people in general prefer using videos to learn compared to reading and those who watch the video score and understand significantly compared to reading (Nelson 2018). Guiding or study videos are so significant in improving student learning and improves student engagement in the classroom. Students find them more engaging, well suited for experiments compared to theoretical lecture, and students always remain active in these classes. (Brame 2016.)

In the video, the whole process of urinary male catheterisation is explained, right from the preparation of the sterile table until the end of the procedure. However, the video was kept brief and targeted on the learning goals, used some pictures and signalling to highlight important concepts and ideas, and made it conversational and enthusiastic to enhance engagement.

5. RELIABILITY AND ETHICALNESS OF THE THESIS

Ethics can be seen as the rights and wrongs that humans are ought to do, and are usually in terms of obligations, fairness, rights, society benefits and virtues. (Velasquez, Andre, Shanks & Meyer 2010)

Thesis writing has several ethical issues that all writers must put under consideration, and these may include conflict of interest. A conflict of interest can be defined as a situation where the writer`s neutrality is influenced, thus providing biased results. This comes up in situations like having a deep relationship with a person or people involved in the research which is being conducted. (Arene 2015.) All writers should avoid conflicts of interest. This will help to preserve the authenticity and neutrality of the thesis.

In research, it is important to adhere to ethical norms and guidelines as these promote the goal and aim of the research that may include avoidance of mistakes, knowledge, and truth. In addition, research involves cooperation amongst different people of different backgrounds, thus the need for ethical values such as respect, fairness, and being accountable (Resnik 2020).

The ethicalness and reliability of the thesis is also guided by the responsible conduct of research (RCR), and that is according to the Finnish National Board on Research Integrity. (TENK 2023) The RCR involves the researcher being able to respect the work and achievements of other researchers through citing their publications appropriately, giving their work respect, and the deserving weight. (TENK 2023)

The researcher also makes sure that the research is in line with the principles agreed up on by the research community such as the accuracy in conducting research, evaluating, recording and presenting it, plus integrity and meticulousness. (TENK 2023)

Reporting or announcing conflicts of interest, sources of financing and other commitments regarding the conducting of research to project members and when publishing the research findings. (TENK 2023)

Our Functional thesis followed the ethicalness and reliability in research according to the Lapland University of Applied Sciences and the Finnish National Board on Research Integrity. We followed all the necessary ethical guidelines such as accountability, integrity, citing the publishers plus cooperation.

The information we read and used to shoot the video and write the report was from different sources from the school data base, online sources, and

in some cases, from the school lecture study material. The sources we used in research are reliable and most of the sources are up to date and not older than six years as it is important to use up to date information more so in area to with health. All the sources used are cited and can be looked at in case of issues to do with checking the authenticity of the report.

The video is very authentic and reliable. Latest information and research were used, plus up to date equipment, most of which was provided by the university. The video is very informative and educative, and it can be accessed through the link attached.

6. DISCUSSION

6.1 Meaning and importance in general

The catheterization process is one of the common processes that has been used to drain the urinary bladder since the ancient times for example ancient Egyptians used papyrus and reeds as urinary catheter (Holroyd 2016). With technology more advanced and less harmful catheters have been produced and are used nowadays. Nurses are often responsible for the catheterization process in patients.

Students of the Lapland UAS, especially the English speaking group, will be the main beneficiaries of the video made in this thesis. The video will be posted on the university YouTube channel and website, and it can be accessed by all Lapland UAS nursing students.

The fact that most catheterization procedures are being done by nurses, it is so important that the nurses are well equipped with knowledge and skills on carrying out sterile male urinary catheterization procedure. This thesis focuses on the procedure of carrying out sterile male catheterization procedure in the most sterile way. (Lengetti, Kronk, Ulmer, Wilf, Murphy, Rosanelli, & Taylor 2018).

6.2 Learning process

Through our research we were able to source a lot of useful information from the school library, e-articles and publications online, through that we were able to increase our knowledge on sterile male catheterization and were able to practice our hand skills and it enables us to be more confident and comfortable in carrying out the process in future working. Through our thesis we will be able to this kind of knowledge with future nursing students, this will really be helpful to them. In the future, the effectiveness of the study video could be researched and investigated to find out how helpful and impactful the video was to the students.

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