

Safeguarding patient data privacy when using cameras in home-care

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Abstract

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<p>The use of surveillance cameras at home care enables families to keep track of the daily happenings and interactions of their family members or loved ones who are aging or have some disabilities that prevent them from carrying out their daily activities independently. However, the installation of cameras in the home care has arisen some critical ethical concerns; its obstructive and invasive nature. Surveillance cameras have been perceived as intervening into the privacy of the client thereby breaching the principle of confidentiality and data protection. This work therefore aims to address certain ethical issues that arise on safeguarding patient data privacy when using surveillance cameras in homecare.</p> <p>This bachelor thesis work is aimed at providing an educational material on the ethical issues relating to the use of surveillance cameras in home care. The purpose of the thesis is to promote knowledge to future nursing students, nurses and other healthcare professionals on the ethical issues associated with the use of surveillance cameras in homecare.</p> <p>The authors use practised based thesis method involving a commissioning party (NICCoLLa Project). Materials were collected from other reliable and credible sources. The research process was carried out in accordance with the guidelines laid down on ethical principles of Lab University of Applied Sciences. The PDSA (PLAN-DO-STUDY- ACT) model was used as a framework for this thesis. Feedbacks about the PowerPoint presentation were gathered through distribution of questionnaire in paper form to 20 different nursing students. The 5-point likert scale was used to collect and analyse the data.</p> <p>Even though surveillance cameras can be invasive, a well-grounded ethical thinking and proactive response help reduce the risk and ethical challenges associated with it use. Therefore, in examining the ethical issue associated with surveillance cameras, it helps to reflect and enhance the current legislation.</p>		
Keywords: Homecare, surveillance cameras, ethics.		

ABSTRACT IN FINNISH

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<p>Valvontakameroiden käyttö kotona antaa perheenjäsenille ja läheisille mahdollisuuden seuranta ikääntyvien ihmisten päivittäisistä tapahtumista ja vuorovaikutuksesta paikallaan tai joilla on jonkin verran kyvyttömyyttä, joka estää heitä suorittamasta päivittäisiä toimintojaan täysin itsenäisesti. Kuitenkin, Kameroiden käytön ovat kuitenkin kriittisesti nousut jonkin verran eettistä huolta sen soveltamisessa sen estävän ja invasiivisen luonteen vuoksi. Valvontakamerat ovat katsottu puuttuvan asiakkaan yksityisyyteen ja rikkovan siten luottamuksellisuuden ja tietosuojan periaatetta. Siksi tällä työllä pyritään puuttumaan tiettyihin eettisiin kysymyksiin, jotka liittyvät potilastietojen yksityisyyden turvaamiseen, kun kameroita käytetään kotihoidossa.</p> <p>Tämän oppinnäytö työ tarkoituksena on tarjota opetusmateriaalia valvontakameroiden käyttöön kotihoidossa liittyvistä eettisistä kysymyksistä ja ongelmia. Opinnäytetyön tarkoituksena on myös edistää tulevien hoitotyön opiskelijoiden, sairaanhoitajien ja muiden terveydenhuollon ammattilaisten tietämystä valvontakameroiden käyttöön kotihoidossa liittyvistä eettisistä kysymyksistä.</p> <p>Tämän oppinnäytetyön kirjavat ovat käyttänyt opinnäytetyömenetelmää, johon osallistuu toimeksiantaja (NICCoLLa Project). Materiaalit kerättiin muista luotettavista ja uskottavista lähteistä. Tutkimusprosessi toteutettiin Lab-ammattikorkeakoulun eettisistä periaatteista annettujen ohjeiden mukaisesti. The PDSA (PLAN-DO-STUDY- ACT) Tämän mallia käytettiin opinnäytetyön viitekehyksenä. Palautteet PowerPoint-esityksestä kerättiin jakamalla kyselylomake paperimuodossa 20 eri sairaanhoitajaopiskelijalle. 5 pisteen asteikkoa käytettiin tietojen keräämiseen ja analysointiin.</p> <p>Vaikka valvontakamerat voivat olla invasiivisia, hyvin perusteltu eettinen ajattelu ja ennakoiva reagointi auttavat vähentämään sen käyttöön liittyviä riskejä ja eettisiä haasteita. Siksi valvontakameroihin liittyvää eettistä kysymystä tarkasteltaessa se auttaa heijastamaan ja parantamaan nykyistä lainsäädäntöä.</p>		
Avainsanat: Kotihoito, valvontakamerat, etiikka.		

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1 Introduction

Home care service refers to housing care and maintenance of functional capacity, transactions as well as performing or assisting in other activities related to everyday life. The main goal of homecare service is to enable clients to continue living at home as long as possible. As part of homecare, nursing care provided to clients at home should be in accordance with the care and service plan in the client place of residence, home or comparable place or health and medical care. The decision to be placed under home service care is prescribed by the doctor after evaluation according to the needs of the client. (Finnish Advisory Board 2021.)

The use of technology in recent times has greatly improved the way health is being managed especially at home. Due to the growing nature of the demand for healthcare services and in order to maintain the quality of care, monitoring devices are being used for the support and management of clients. These devices also help to evaluate the performance of care and provide comfort to family members and caregivers. (Mondal & Mondal 2021.)

Data protection is also an important part in homecare nursing especially when using monitoring device(s). The management of client's data poses a lot of challenges. The issue of ensuring confidentiality and integrity of client data when using monitoring devices in home care needs to be taken into consideration. The use of monitoring devices in homecare affects the caregiver psychologically in performing his or her duty. It also interferes with the client's privacy even though it ensures a level of security between the client and the caregiver. (Mondal & Mondal 2021.)

To provide an insight to the use of monitoring devices in homecare, this work is aimed at providing educational material on data privacy and the ethical issues related to the use of monitoring devices in home care. The purpose of the thesis is to promote knowledge to nursing students, nurses and other healthcare professionals on the ethical issues associated with the use of monitoring devices in homecare. This will be achieved at the end of this thesis through the presentation of educational materials.

The aim and purpose of the thesis

The aim of this thesis is to provide educational material on data privacy and ethical issues related to the use of surveillance cameras in home care.

The purpose of the thesis is to promote knowledge to future nursing students, nurses and other healthcare professionals on data privacy and ethical issues associated with the use of surveillance cameras in homecare.

Description of commissioning partner

The commissioning partner for this thesis is the Network for Innovative Care Competence Learning (NICCoLLa) through LAB University of Applied Sciences (LAB). The NICCoLLa project is a European project consisting of four consortium partners and five associated partners. These partners have been included into this project because of their broad background knowledge and multiple experiences on technology and information computer technology (ICT) in wellbeing and the healthcare sector. The Network for Innovative Care Competence Learning through LAB is a client-centered innovation project that focuses on health care, wellbeing and related challenges such as ageing population and a shortage in healthcare professionals. (NICCoLLa.)

The NICCoLLa project is aimed at producing a modernized educational material for health care professionals in the field of technology and ICT. To meet up with the rapid advancement in health care technology, the project activities focus on improving the knowledge of health care professionals through the development of the educational content of the curriculum. The project also facilitates transnational and trans-disciplinary studies for educating students, teachers, and health care professionals on the effective use of technology and ICT solutions. This thereby improves their competence level. This is achieved using a quadruple helix approach as well as the direct involvement of the relevant partners and target groups into the activities of the project. (NICCoLLa.) This thesis work will support the NICCoLLa project by serving as a guide to future nursing student. It will provide background knowledge about the ethical issues associated on the use of surveillance cameras in homecare.

2 Homecare Nursing

2.1 Homecare

Homecare service is health care or support care provided by any professionals (that is domestic services and home nursing) to clients or patients in their individual homes where the client or patient is living. It is what is also known as “Domiciliary Care”. This is different from care provided in a group facility or nursing home. (Bolton & Wibberly 2013.)

Care is usually provided in shifts and can be up to 24 hours weekly depending on the needs of the patient. Homecare services are offered to people above 18 years old with chronic health issues and disabilities and to elderly persons whose physical and mental capabilities have deteriorated and are incapable to function by themselves. These groups of people can partially manage independently and require some assistance to stay at home. Some of these patients can be physically disabled, recovering from health issue or having chronic illnesses that require the assistance of professional caregivers. The professional support rendered to the patients helps to manage the administration of some medical assistance thereby preventing hospitalisation. (Allcot 2015.)

Home care services are rendered by the public or private sector. These services include assisting in daily activities like hygiene care, domestic duties and nutrition, therapy, providing medication and other health services like catheterisation and wound dressing, rehabilitation during recovery process, and overcoming loneliness or stress through companionship. Care can be for a short term or long-term depending on the health condition of the patient. (Vaartio-Rajalin et al 2019.)

2.2 Ethical principles in homecare

Ethics is a fundamental principle in everyday nursing practise/activities to make sure that patient safety is of the essence. These principles have been grouped into four. These are, the ethical principle of autonomy, beneficence, non-maleficence, and the principle of justice. With the guidelines from these principles, families have an idea about the caregiver’s roles and action in providing care. (Varkey 2021.)

The principle of autonomy states that the patient or the resident has the right to take control in their matters. Voluntariness (which is the ability of the patient to make his or her decision without any influence or force from a third party) is a very important rule in autonomy. Decisions taken should be in their best interest and not to satisfy anybody. The patients in homecare have the right to decide on whether they will receive their care at home or in another environment but whatever the decision it must be respected. During such assistance at home, for example during personal care, the resident continues to have a voice as per his/her decision. The nurses or caregivers provid-

ing homecare services do not have to impose on the patient. They can only advise or suggest on what they consider the right thing to do based on recommendation from Doctor's assessments. In case of any conflict on the decision, the nurse should redirect the matter to the agency or employer for the way forward. (Rosenberg 2021.)

Beneficence principle or the duty to do good states that, whatever activity the caregiver or nurse does to the patient must be done in the interest or benefit of the patient. This principle requires that the good done to the patient should outweigh the harm that can be caused. Caregivers require a high level of skills and knowledge or if possible, an ongoing training for this principle to be carried out successfully. This ongoing training or continuous education will give an up-to-date knowledge in patient care and new techniques and technology thereby reducing the occurrence of unwanted accident and promoting the end results of patient health and wellbeing. (Rosenberg 2021.)

On the other hand, the principle of non-Maleficence requires that, even if a decision is for the patient's benefit, it should not be harmful to another. This principle requires no harm in the performance of nursing care at home whether individually or collectively. As a matter of fact, employers and agencies are required to allocate certain safety rules and risk management strategies for its staffs to follow. (Blackham 2021.)

The principle of justice or fairness looks at equality in all aspect of healthcare decision and resources. There should be no bias mind or any form of discrimination. Patients with same needs should be treated equally without any bias as regards to whatever (for example sex, race, religion etc). Applicable laws and decisions should be laid down and followed rightly in decision making. Healthcare providers should therefore execute their duties in accordance with such regulations laid down. (Varkey 2021.)

2.3 Ethical dilemmas

The challenges faced can be looked at from two different points. Firstly, challenges faced in daily ethical activities such as autonomy, consent, restrained, denial to take medication to eat and to shower and some other behaviours that are offensive, cooperation and lack thereof between caregiver and residents/patients' family members. Secondly, challenges that are related to end of life, hospice care and decision such as deciding on whether to stop or discontinue the treatment and whether or not the customer should be hospitalised. (Henriksen et al. 2013.)

Protecting privacy is one of the core principles of nursing practices, especially when dealing with data obtained from the use of surveillance cameras in homes. Frequent challenges occurred when

patients' rights need to be protected, further care planning and in decision making. In some situations, family members might want certain critical information to be withheld from the patient. But the principle of autonomy clearly outlined that patients have the right to know or take control in matters that concern them. There are also certain decisions that can be taken for the benefit of the patient as per the principle of beneficence but on the other hand, it can be contrary to the patient's religion or belief. Respecting of patient's lifestyle, values and beliefs limit the use of medical intervention and techniques used in promoting health and wellbeing. The increased cost of certain medical facilities and instruments alongside shortages in staff also poses another challenge in home care nursing. (Mittelstadt et al. 2014.).

3 Data security and surveillance camera

3.1 Surveillance cameras for home care monitoring

Surveillance cameras are one of the assistive technological devices used in home care. It is used to video and record the activities of people living at home. The data obtained help to provide relevant information for continuous care and improve independent living at home especially for people aging in place. (Experian Health 2017.)

Patient health and wellbeing is of great importance in the medical field and therefore requires maximum privacy. It is unethical and unprofessional to disclose patient's information to a third party without the consent of the patient. Therefore, data protection is an essential part even in homecare. The data or information of patient need not be corrupted, compromised or lost as it will be used in any other further investigation when needed. Data are also protected to stop any financial gains by criminals by medical identity theft. The patient's information or identity must be protected to avoid fraud in purchasing or selling any medical item. These data can be protected through constant verification of patient identity, employer's education on how to protect data, patient should be aware of how data are kept safe. (Mondal & Mondal 2021.)

When people grow older, they desire an independent lifestyle which comes along with some risk. To help in their independent lives, the use of home technologies that have different types of sensors needs to be available to record and supervise their activities while at home. Some family members, for the sake of safety and comfort, prefer to use surveillance cameras most especially in the home of the elderly family members. These surveillance cameras enable families and loved ones to be able to communicate with the patient and caregiver, evaluate the appropriate care that is provided, and to have record of in and out movement. (Thorpe 2021.)

On the other hand, the use of camera is invading into the privacy of not only the patient but as well as of the caregiver. It can also make the patient to be uncomfortable when certain tasks are being performed, especially during bathing. Being filmed and recorded while having shower naked could somehow be uncomfortable to the client as well as to their family member(s). In all, it is always good to alert the use of a camera to the caregiver as it does not only infringe on patient's privacy but also that of the caregiver. (Mondal & Mondal 2021.)

3.2 Privacy protection in the use of camera

The concept of the right to privacy is hard to define with no universal definition. The approach to privacy is multidimensional; usually referring to private physical environment or space, and data

privacy. Privacy can be conceptualized in the light of choice, respect, autonomy, ownership, and personal preference. And the right to privacy must be balanced with other considerations including the risk of harm either to the client or other individuals. (Green et al 2018.)

Customers at home have a right not only to their personal /physical body, but also extending to their personal space, properties, and care. Any unauthorised recording or pictures of the customer is considered as a violation to patient's right of privacy. The use of surveillance cameras in home-care is diverse. However, it can be considered in two different ways, as security and as personal privacy violation. (Chaaraoui et al 2014.)

Most family members will love the use of camera in the resident of their loved ones for the sake of safety. With the recent happenings going on in the world, "Corona virus and it's no visit or limited visit policies", the wellbeing of home care customers can be monitored remotely through surveillance cameras. Having cameras at home does not necessarily go against the patient rights to privacy. These cameras protect the patient from certain harms that might occur when the nurse executes his or her duty (abuse, neglect, aggression). The cameras protect the nurses from certain offensive acts and provide evidence in case of any grievous harm. Nurses on duty will be very professional in carrying out their duties when they are aware that, their actions are being captured and filmed. It is a very disconcerting situation when one knows he or she is being monitored while at work. (Health Law 2016.)

Privacy in the use of camera is also an issue on who is viewing or monitoring the camera and not the camera itself. Though there is a law on privacy protection on customer's data, the law does not emphasise on the use of camera in patient's house. It is the state that regulates privacy by putting different barriers on the use of camera. For example, the positioning of the camera to restrict different captures position. Placing of camera in the toilet or bathroom is a serious breach of customer's right to privacy. No one can tell if the person behind this footage might have a personal or hidden agenda that will deter the safety of the patient. (Chaaraoui et al 2014.)

3.3 Effect of using Cameras in homecare

The use of cameras and other technologies in homecare nursing most often helps older people to age at home with greater assistance in their daily life, like risk management and general health condition. Used as a cognitive monitor for the safety of elderly customers with memory loss or dementia, it reduces their strength in deciding right responses to various situations. (Matthews et al 2015.) On the other hand, it is hard to have a clear understanding of how these elderly patients with dementia look at the benefits and risks of these cameras since it is difficult for them to rightly communicate their feelings to their family members. Despite this intrusion, the advantages, or

benefits of cameras at home have outweighed the short coming or disadvantages (Berridge 2017.) Older people assessed the use and benefit of monitoring technologies and cameras based on the following: Extent on which it assists them to an independent living, response in emergency cases and how their health status is being tracked. (Boise et al 2013.)

Benefits of surveillance cameras in home care

Homecare customers require constant assistance for their daily living activities and healthcare. This form of awareness increases, most especially as one grows older, to assist in the development and implementation of an efficient and cost-effective plan of action. Using cameras in this aspect provides more affordable and monitoring healthcare services commonly found toward the aging population. (Hall et al 2019.)

As one grows older or ages, the quality of life that one desires living in their home is of great advantage to the individual and to the sustainability of the general public health system. Assisting daily living therefore with technologies like cameras at home supports in independent living to the elderly for a safe and quality care. There is a constant monitoring of their daily activity, and any case of emergency will be detected as soon as possible. Emergency cases like fall or any change of activity toward the health status can be reported easily to the healthcare. (Hall et al 2019.)

The homecare nurses and other professional caregivers also benefit from the installation of cameras in the client's home as it provide protection against any unlawful legal action and encourages good behaviour in the execution of their duty since they are being monitored or recorded. In the occurrence of an incident or accident, recordings from the cameras will be considered important evidence in exonerating them from any suspicious act. Cameras give an insight of any occurrence since recordings from the cameras are important element in having evidence and lead extraction. Cameras therefore help in eliminating any happening that might arise as a result of employee or workplace violence or from an external intruder or 3rd party. (Green et al 2018.)

Family members also benefits from the use of cameras in the home of their loved ones as it help to reduce the burden of care. Other forms of technology with cameras inclusive have helped family members to jointly manage their jobs and responsibilities on care giving respectively (Matthews et al 2015.) Family members can monitor the safety of their loved ones from a distance without any geographical boundary. They are also able to react to any upcoming changes in their behaviours because of constant monitoring. (Lennon 2021.)

Short comings

On the other hand, the use of cameras at homes also comes with some adverse effects most especially on the issue of safeguarding customer's data and privacy protection. As a matter of confidentiality, data need protection from unauthorised user. Health information and medical history are sensitive information that needs concealment. (Draper & Sorell 2016.) It is illegal to place cameras where privacy is needed, for example in a bathroom. These cameras most often need to be updated all the time to avoid harm for example, cyber attacks. (Marston & Van Hoof 2019.)

It is however not an easy issue to evaluate if the older adults are aware of all the benefits and risk in the use of cameras at home. Older adults have been said to be familiar with health technologies but on the other hand do not understand the type or kind of assistance they get with the use of such monitoring technology. Nurses' competence on the use of technologies also affects the understanding of the older adults on advice given to them. Lack of knowledge on the use of technology also makes it difficult sometimes for the older adult to be fully informed about the application of the devices. (Mittelstadt et al 2014.)

Cameras and other surveillance technologies are seen as a means of overcoming some shortcomings associated with aging rather than the intrusive nature. (Pirhonen et al 2019). Most cameras are installed at home for family members to remotely watch over the safety of the older ones from a distant. But Health and medical history are sensitive information that needs confidentiality. (Draper & Sorell 2016.) It is illegal to place cameras where privacy is needed, for example in a bathroom. Moreso, these older adults sometimes feel discriminated because the use of camera has brought about some criticism to their behaviour and activities from monitor recordings rather than from their health status. They also regarded monitoring as a means of taking away their freedom of non-compliant, and an invasion of their social lives and interaction with others. Being independent and satisfied with the use of a camera at home comes at a cost. Successful installation of camera requires the use of cable and other expenses from labour. (Lennon 2021.)

3.4 Use of cameras at home and associated ethical issues

There's a compelling need for the healthcare sector to explore various ways to address the ever-increasing aging population and the vulnerable groups. The use of surveillance cameras helps in providing solutions to shortages of healthcare workers and the increasing healthcare and safety needs of the customers. (Rosenberg 2021.)

The use of cameras at home comes with benefits as well as some critical ethical issues resulting from the invasion and obstruction of its nature. These ethical issues will be looked at from the point

of view of older adults aging in place. (Matthews et al 2015.) Ethically, the principle of privacy and data protection should be respected in healthcare. But the available systems and the current use of cameras ignore this principle. Recordings done by cameras mostly concentrate on data storage and analysing which can lead to misuse of data. (Henriksen et al. 2013.) Regarding the principle of autonomy, patient need enough detail information before taking the rightful decision. But the informed consent most often is not that explicit suitable to the understanding level of the older adult. (International Council of Nurses 2012.)

Furthermore, there is a conflict of interest since the differences on need and interest of how the older adults and their family perceive the use of camera have not been addressed (Stacey 2021). Stigmatization and obstructiveness would arise when surveillance cameras are being used to monitor the activities of people aging in place. The older adult feels like using cameras in their homes means they are disabled and vulnerable. They might turn to rely more on family rather than care givers because they have the feeling of being less functional. Others include homogeneity among older adults, maintaining balance between duty of care and behavioural control, family influence in decision making, respect of values in the implementation of technology in elderly homes, behavioural change of older adults based on social norm. (Cook 2016.)

4 Methodology

4.1 Practice-based thesis

This thesis would be carried out as a practise-based work. A practise-based thesis is a form of thesis that is innovative and working life oriented where skills and professional knowledge are demonstrated. It also helps to develop practical action, instruction, or the rationalised organisation in a professional field. It provides an avenue where student can demonstrate their professional knowledge, skills, and education. The main aim of practise based is to develop the sector in question. Its objectives are well defined and clearly justified in a logically constructed manner. Practise -based thesis usually have a target group and a commissioning party depending on their need. These needs might be a guiding book, manual, a power point presentation or any tangible product or project. (Salonen 2013.)

This thesis form consists of two different parts: The functional part and the final report. The functional part includes the theoretical framework which is usually based on evidence. This theoretical framework formed the basis for developing the product. The final project report was developed in commission with the target group and cooperating party. (Salonen 2013.)

This practise-based thesis is aimed at producing an educational material. This educational material will promote nursing knowledge and improve the quality of care in homecare to nursing students. The product of this thesis will be achieved in corporation with the commissioning party-Network for Innovative Care Competence Learning through Labs (NICCoLLa) Project.

To achieve our end product-educational material, the study collected data which were based on the needs of the commissioning party. Data was collected using questionnaires. This was done according to the needs of the commissioning partner as well as meeting the requirement of LAB University of Applied Science. The educational material will provide new/updated information that will equip nursing students for the provision of suitable and quality healthcare delivery. (Salonen 2013.) An educational material about the use of cameras in homecare was produced as the final product of this thesis in the form of a PowerPoint presentation.

4.2 Criteria of good PowerPoint presentation

The PowerPoint presentation should be according to the educational level of the targeted group. It should be clear and concise for easy reading and understanding. The structure is well organised as well as logically presented containing reliable and useful content. (Davis 2019.) The PowerPoint slides contain only relevant information which is useful and necessary for the topic under discussion. It is very important to minimize the opportunity for any distraction by eliminating any irrele-

vant materials including background images, sound effects, animations, music. PowerPoint presentation with animations, colourful backgrounds and unrelated photographs can direct students' attention from the topic content. (Adel 2021.)

PowerPoint enhances fast information transferred and therefore information should be presented clearly in simple and short sentences for easy understanding. The PowerPoint uses signals (like guarded textbox, bolds, italics) to direct learners to important points or content. The materials on the PowerPoint can help to structure lectures for easy understanding. The PowerPoint uses visual aid images with the necessary educational content like pictures. (Smith 2021.) The font size and the number of slides should be at most 20 for PowerPoint presentations. Personnel and support staffs should be available to help in the education and transmission of information to the nursing students. There is also a need of a clear vision and objectives that could be evaluated at the end of the course work. By the end of the study, nursing students should be well equipped with updated knowledge and ideas. (Davis 2019.)

4.3 Developmental framework

The developmental stage of this thesis work was classified under three different headings: The planning stage, the implementation stage, the assessment, and action stage. In everyday nursing, there is a new and updated technological idea that arises for health and wellbeing improvement. One of such idea was also the use of cameras in homecare and other monitoring devices in home-care nursing. Most often, these ideas are developed without sufficient testing. The Plan-Do-Study-Act PDSA have been of great improvement in different campaigns and knowledge in healthcare as it strategically embodies a well outlined structure of development, trial, implementation, and improvements. (NHS 2021.)

The PDSA (PLAN-DO-STUDY- ACT) model was used as a framework for this thesis work. The PDSA model starts with the planning where the objectives are defined and also look at how data was collected to achieve the aim of the thesis work. The next stage of the model is the 'Do' stages where planning was done on how to collect the data, as well as analysing the data. The Do stage was then followed by the study stage. This stage included the collection and completion of data analysis. Furthermore, comparison of the analysed data was done with the objectives/prediction of the plan stage and the achieved objectives summarised. The final stage of the model was the Act stage which deals with the planning of the next cycle. During this phase, it was decided whether any modification can be carried out. (NHS 2021.) Table 1 below presents a summary of the developmental framework of this thesis work.

Plan	Do	Study	Act
<ul style="list-style-type: none"> -Group of 3 formed -Thesis topic -Recommended and accepted by teachers -Information search and knowledge building -Aim and purpose of thesis topic -Working in accordance with commissioning partner -Data collection - Finalising the plan 	<ul style="list-style-type: none"> -Putting plan into action - Preparing the PowerPoint Presentation -Recording of problems encountered -Documentation of unexpected observation -Sampling and data collection 	<ul style="list-style-type: none"> - Analysed collected data -Comparing data to prediction -Evaluate and summarise collected data 	<ul style="list-style-type: none"> -Implementation of any necessary changes - Finalising the PowerPoint Presentation -Next phase: Adopting, repeating or to abandon cycle

Table 1: Developmental framework for producing the PowerPoint

From the table 1 above, during the planning stage of the thesis work, reflection was made on question like “what if for example a satellite was used at home instead of surveillance cameras.” What then will happen, is it going to have the same benefit and shortcomings as the camera? Thought should always be drawn to mind about what will therefore happen if it was not A but say was either B or C. After carrying out our plan, the next will be the DO. Thereafter, the plan of action will follow leading to the STUDY phase. During the study phase, evaluation will be made with the question of whether the plan works or not by taking into consideration the STUDY components. Irrespective of the outcome, the next phase which is the ACT phase will come in. Under the ACT phase, thoughts have to be toward the question of what the next thing is to do. For example, if changes are to be made, ready to implement or moving to the next cycle. (Wharaurau 2018.)

Planning stage

The planning stage involves the formation of the basic hypothesis. It involves setting the objectives based on what needs to be improved and where or what kind of changes needs to be done. It also involves decisions on the type of data to be collected on how to send out information to the target group. (Reding 2021.)

At the planning stage of this thesis work, the group of 3 students were formed and came out with the topic about the use of cameras in homecare. This was accepted by the teachers while the students on the other hand had to work in collaboration with the NICCoLLa project as their commissioning partner. The end material of the thesis work was a Power Point Presentation with the target group of other or future nursing students. The knowledge based and the educational material of this thesis will be achieved by finding evidence-based research materials from different data bases including Lab-Primo, CINAHL, MESCH, Google scholar, Pub Med. The data research will be based on the defined concept and limited to the nursing field. Feedback from the educational materials will be collected through interviews from nursing students.

Implementation stage

The implementation stage here is the DO stage from the above table. The Do stage is the development and implementation of the plan. Proposed solution or changes are as well tested in this stage. Data collection is also done under the Do stage. (Reding 2021.)

Under this stage, the writers of this thesis work took what had been in the plan stage into action. The writers looked at the benefits derived when using cameras at home care and how these benefits will have an impact most especially to the older people who want to age in place and to their family members. Problems encountered were also another aspect investigated as the problems were recorded for further observation. The commissioning party was contacted at this point for the validation of the end product of the thesis to be presented in a clear and easy to read and understandable manner.

Assessment and action

This is the Study and the Act stage of the work. In this stage, actions are taken based on the results obtained. Data collected are analysed at this stage to know what was successful and or not successful. The cycle may continue based on the outcome. (Mcgowan & Reid 2018.)

Under the study stage, the use of cameras will be evaluated based on the data that has been collected and analysed. Feedback from the collected data will be grouped for evaluation. The next action will be to act on the feedback collected on used of cameras in homecare. From the collected feedback, decisions will be made on either to adopt, repeat or to abandon the cycle.

Questionnaires (as seen in appendix 1) were made on this work where feedbacks were collected on whether to act by repeating or adopting or abandoning the process. The response to the questionnaire was analysed using the Attitude scale which is a numerical score summarised from responses. These questionnaires were made based on a 4-point likert scale. From the questionnaires, the

views from respondents who were nursing students from other University of Applied Sciences in Finland were grouped under four different headings like 1=Strongly Disagree, 2=Disagree, 3 = Agree, 4 = Strongly Agree, 5 = Unsure. A total number of 13 questions were reached at: 2 open ended questions and 11 multiple choice questions. All the available questions were based on the criteria laid down in producing a good PowerPoint presentation. The likert scale questionnaires will be printed and distributed to other nursing students to help in the development of the product. The feedbacks related to the production of the PowerPoint from the nursing students is shown in table 2 below.

The questionnaire was aimed at collecting feedback on nursing students experience and viewpoint about a PowerPoint presentation as an end product for this practised based thesis. A total number of 20 questionnaires were distributed to nursing students who were on summer jobs and or placements in different care homes in the Uusimaa region of Finland. These students came from different universities of Applied Sciences in Finland and 2 from the Netherlands. The distribution and collections were done by the authors of the thesis work between 4th July to 27th of July 2022. From the distributed questionnaire 15 out of the 20 students responded to the questionnaires as presented in the table 2 below. Questions provided do not have any correct or wrong answers as the interest is on nursing student views and thoughts about the presentation of the end product. This piece of exercise will remain unanimous and confidential and used only for the purpose for which it is intended for.

		Strongly Disagreed	Disagreed	Strongly Agreed	Agreed	Unsure
1	The PowerPoint slides contain only relevant information about cameras in home care	0	1	9	4	1
2	The content of the material is useful for my studies.	0	0	10	5	0
3	The information on the PowerPoint is logically presented.	0	1	8	6	0
4	The PowerPoint enhances fast information transferred.	0	0	8	6	1
5	The materials on the PowerPoint are clearly simplified or presented.	0	0	11	4	0
6	The materials on the PowerPoint can help to structure lectures for easy understanding.	0	1	7	5	2
7	The PowerPoint uses images with the necessary educational content.	0	1	5	7	2
8	The number of slides is enough for PowerPoint presentations.	0	0	10	5	0
9	The PowerPoint uses the right font sizes.	0	1	8	5	1
10	The PowerPoint uses signals (like guarded textbox, bolds, italics) to direct learners to important points or content.	0	0	9	6	0
11	PowerPoint presentation with animations can direct students' attention away from the topic content.	3	6	1	3	2

Table 2: Feedback related to the PowerPoint presentation from 15 nursing students.

All the nursing students participated on the bases of informed consent. From the feedback, almost all the participants agreed that the study material met the criteria of a good PowerPoint presentation aligned in the questionnaire. For example, all participants thought the materials of the PowerPoint were clearly simplified or presented. 3 out of the 15 students strongly disagreed that PowerPoint Presentation with animation can direct student attention away from the topic content. On the other hand, 11 out of the 15 students strongly agreed that the materials on the PowerPoint are strongly simplified or presented.

Nine students out of the 15 collected feedback answered to the two open-ended questions. The students believed the contents of the materials were relevant to homecare nursing. This was because it helps in creating awareness on data privacy and ethical issues related to the use of surveillance cameras in home care. The content of the material will also help to improve patient safety and quality of care, improve patient's security and confidence. In response to the issues to be re-addressed in the power point presentation, most of the respondents raised concern about the font-

size. Many students believed the size can be increased. Some students were also worried that there was too much information in one slide. The respondents thought additional information was needed on the topic.

The authors of the thesis work after collecting the feedback from the questionnaire, sampled the opinions of the various students, analysed, and presented the results on the table. Feedback from the students and from the commissioning party-NICCoLLa was used in improving and achieving the aim and purpose of the thesis work. The commissioning party after reading through the PowerPoint presentation gave a motivating and encouraging comment. They were however impressed with the outcome of the final product. They were delighted that the ethical aspects of camera surveillance as well as security issues were nicely presented. Though there were some worries about the layout of the PowerPoint presentation, these were later corrected and updated as pointed out by the NIC-CoLLa project. Overall, they were impressed that the final product met the requirement of the NIC-CoLLa project.

The authors of this work had been working in close collaboration with the cooperating partner for the achievements of the aims and purpose of this thesis. Teamwork was the most important tool used in obtaining this success. Tasks were sometimes shared among the authors diligently. The authors created a feedback request on the PowerPoint presentation in the form of questionnaires. These questionnaires were printed out and handed to different nursing students. Worthy of note is the fact that not only nursing students from Lab University of Applied Sciences gave their responses to the questionnaires. Other nursing students from other Universities in Finland as well as Foreign University gave feedback.

On the one hand, the authors also had some challenges in the creation of the PowerPoint. There were differences in idea about the presentation of the PowerPoint: The type of template to be used, what font size will be best, design and outlook of the PowerPoint. Also, in giving out the questionnaires (face-to-face) was like revealing the idea of the respondent. But finally, a box was created where the questionnaire was printed and left there for respondents to take and return when done. The management of the nursing home provided this great idea which the other authors also used in the different Unit where other students were working and doing their clinical training during the summer. This thesis has essentially been achieved due to proper guidance and effective teamwork.

5 Discussion and conclusion

5.1 Ethics and trustworthiness

Ethics is an important aspect of a good research practise. A research must be carried out according to the appropriate conduct of research in order to be considered credible, reliable and ethically acceptable. In co-operation with the Finnish Research Community, the Finnish Advisory Board (TENK) has provided guiding principles for the responsible conduct of research, as well as ensuring that any violations are treated accordingly. TENK is appointed by the Ministry of Education and culture in Finland. It is aimed at promoting responsible conduct of research and preventing research misconduct. (Finnish Advisory Board on Research Integrity 2012, 30-31.)

This thesis process follows guiding principles approved by the Finnish Advisory Board of Integrity in recording and evaluating the results. Furthermore, this research process will be carried out in accordance with the rules laid down by the Lab University of Applied Sciences. Students are required to follow the guidelines laid down on ethical principles of Lab University of Applied Sciences. (Finlex 2020.) This thesis is a practice based thesis involving a commissioning party (NICCoLLa Project). The method to be used for this research process will be in conformity with scientific writing, reliability, easy to read and understand.

This thesis follows the trustworthiness of a practice based thesis. All the information analysed in this thesis are be selected from reliable data bases such as LAB primo, MESCH, CINAHL and professional journals published within the last ten years. More so, qualified nursing research materials would be used for knowledge base.

Data collection and analysis however was a challenging process to the authors of this thesis work. It was the very first experience of the authors to carry out a practice based thesis. Selection of good data source for the literature review was challenging as authors found it difficult in assessing the reliability and credibility of sources. Adequate level of confidentiality and privacy was respected during the process of data collection. The nursing students who were the target group of the final thesis work were also willing to have more time in answering the questionnaire due to their busy schedule.

One of the most daunting tasks the thesis writers encountered was choosing what to write about. Authors start with a topic which was too broad and thus difficult to search for appropriate materials. The theoretical foundation of this thesis was not easy to achieve. Searching data from reliable sources has been very challenging as the writers of this thesis work find it difficult at times to fully

appreciate the sources from which materials can be obtained. More so, finding the literature and theoretical bases to support the thesis topic was challenging. It was quite challenging in the beginning to get a comprehensive analysis of materials needed in relation to the thesis topic. After searching different materials from several reliable sources including lab-primo, Pub Med, CINAHL, MESCH, the authors of this thesis work were able to narrow down the topic based on the thesis aim and objectives as well as focus on a particular theoretical viewpoint. We were able to fine-tune and think critically about our topic with the support of the supervising teachers and the commissioning party.

The authors were able to achieve the aim of the thesis which was to produce a study material through PowerPoint presentation. Although this was realised through teamwork, time management was a hindrance as it was sometimes hard to find a common time and avenue to meet during the writing process. This issue of time would have been resolved easily if a consistent work routine was established early on with the right level of self-awareness.

The authors of this work ensured that the necessary research permit was acquired, and the participants were recruited on voluntary basis. All parties concerned in the process were treated with respect. Articles from other sources are properly acknowledged and cited. Any deviation or violation from the ethical principles due to conflict of interest was reviewed.

5.2 Response to challenges of camera surveillance at home

Using cameras in homecare does not only ensure the safety and security of the elderly ones living at home but provides the family members and other healthcare providers and caregivers the opportunity to monitor and follow up the movements of the loved ones in case of accidents. Though the use of cameras comes with benefits as stated above, there are some recommendations or rules to follow when considering the use of cameras in homecare. (Lennon 2021.)

Informed consent of the elderly in need must be considered. Although the primary reason for the use of cameras is safety and security for the elderly, it is important for their consent to be considered since the use of cameras can interfere with their privacy. It should be clearly explained to the elderly to be monitored the reasons for monitoring, the location of the cameras, the types of cameras and they should be allowed to decide if they are ok being constantly monitored or not. In a case where the elderly cannot decide, their legal guardians should be allowed to decide on their behaviour. (Intriago 2022.)

Also being under constant monitoring might sometimes affect quality of care for most caregivers as they usually become nervous and uncomfortable with the care environments. For these reasons

they should be told on the availability of cameras and the locations as not all healthcare workers or caregivers are ok with being constantly monitored. (Lennon 2022.)

The place and time to be monitored should be carefully considered. Monitoring an elderly client when being dressed up or during intimate care be seen as a violation to privacy which is not allowed. Also, installing for safety reasons especially when considering patients with falling risk, it is recommended to use cameras that can send out alerts incase a patient falls as this will be the only way to know the patient is in danger. Therefore, it is recommended to carefully choose cameras according to the patients' situations. The type of cameras to be used should be carefully considered based on the elderly need. For example, cameras that monitor movements should be used for patients with fall risk rather than fixed cameras. (Intriago 2022.)

Awareness should however be raised about the ethical issues involved on the use of cameras at home. Users of cameras in homecare should be assisted in learning and to understand the operating system of the camera that have been put in place to support their health and wellbeing. Such awareness should be increased most especially among the older people who want to age in place. Different available cameras have different operational systems making the older people not to recognise or understand it is worth in assisting them to age in place. Public campaign can also help in creating awareness about the advantages and disadvantages of using cameras at homecare nursing. Also, Cameras should be easy to operate with easy accessibility.

Also, a medium should be created for feedback from users which will help in solving issues raised. These feedbacks should be collected not only from the aging in place or other client, but also from the family members and nurses. Cameras need not be design only for the older people who want to age in place because other mainstream can be adapted to help meet up changing needs. A more accessible and universal design camera will be better as it will be used even by the older people without any feeling of stigmatization and or marginalisation. This helps to accomplish the objective of user centre design.

Furthermore, to meet up with the daily needs of some clients with different chronic and difficult condition and the ongoing cost in running the cameras, the use of cameras with different kind of functionalities at home might be costly for the family members and loved ones. Therefore, no limit should be placed on the type of cameras to be used at home as this will inhibit users' right of autonomy to take part in decision pertaining to the technology to be used.

Though the use of camera at home has some short comings especially on the issue of safeguarding customer data and privacy protection (Draper & Sorell 2016), future studies will be needed to evaluate the passive and active experience that users have about installing cameras at home.

Though the effect of the use of cameras have been discussed above, a comparison between camera monitoring and physical being or real-life monitoring will help to understand the changes that cameras can influence in human rights like the issue of trust and that of ethical risk. It is often believed also that the use of cameras in homecare is because of the influence of the behaviour and lifestyle of the older people who want to age in place. Future studies will be needed to examine and identify the type of cameras that will motivate older people to easily accept the use of cameras at home. (Vermeer et al 2019.)

5.3 Assessment and overview

The educational material on data privacy and ethical issues related to the use of cameras in this thesis work is shown in a PowerPoint Presentation. With the help and assistance via correction from the cooperating partner, the authors were able to fulfil the purpose of the work which is to promote knowledge to nursing students. Nursing students from Applied Universities in Finland and other nursing students from other universities as well as the caregivers and families of those aging in place will also benefit from this educational material. Any act of emergency can be reached at as soon as possible, and an immediate medical intervention will be carried on when necessary. For example, people aging in place or old people have an increasing number of fall injuries recorded daily. Fall injuries are detrimental to their health and can sometimes lead to dead, decreased mobility or daily activity and increased need for care and treatment. (Havulinna et al. 2017.) Availability of cameras will provide immediate medical intervention thereby preventing some further complications. Camera alertness will therefore help to promote the ability to function in daily life thereby improving the health and wellbeing of people aging in place and others. (Mondal & Mondal 2021.)

The feedback gathered from the questionnaire have however helped in the final development of the PowerPoint presentation. This final product was however design to assist the cooperating partner-NICCoLLa project to educate future nursing students. This material will help to create awareness on data privacy and ethical issues affecting the use of cameras in homecare not just to future nursing students but also to other organizations in need of. The content of the educational material was clearly design and presented based on the guidelines laid down by ethical principles of Lab University of Applied sciences as well as that of the NICCoLLa project. The presentation of the final product in the form of a PowerPoint will also help to ease learning and understanding.

Though the idea on the importance of the use of camera in homecare has been outlined, it is however difficult to precise the importance of it uses. This is because there is no binding legislation to put in place making it difficult for current and evidence-based materials to be used in corroborating the importance. In the future, a binding legislation should be legislated for the use of camera in

homecare which will make it easier for current and evidence based use. More research should also be carried out on the integration of cameras in healthcare.

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Appendix 1

Questionnaire on a study to evaluate the use of PowerPoint in the teaching-learning process of nursing students.

Please, we will appreciate if you help us complete this questionnaire. You will not be required to disclose your identify and your responses will solely be used for study purpose. From response lists, check that one response that applies best unless otherwise stated. For other questions, use the provided space to write out the response.

Demographic information

Gender:

- a. Female
- b. Male
- c. Others

Evaluate the following statements related to the power point by crossing (x) on the right response.

		Strongly Disagreed	Disagreed	Strongly Agreed	Agreed	Unsure
1	The PowerPoint slides contain only relevant information about cameras in home care					
2	The content of the material is useful for my studies.					
3	The information on the PowerPoint is logically presented.					
4	The PowerPoint enhances fast information transferred.					
5	The materials on the PowerPoint are clearly simplified or presented.					
6	The materials on the PowerPoint can help to structure lectures for easy understanding.					
7	The PowerPoint uses images with the necessary educational content.					
8	The number of slides is enough for PowerPoint presentations.					
9	The PowerPoint uses the right font sizes.					
10	The power point uses signals (like guarded textbox, bolds, italics) to direct learners to important points or content.					
11	PowerPoint presentation with animations can direct students' attention away from the topic content.					

In your opinion:

- i. How relevant is the content of the material to home care nursing?
-

- ii. What issues of the power point presentation needs to be readdressed?
-

THANKS!

Appendix 2**PowerPoint presentation**



Safeguarding patient data privacy when using cameras in homecare

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Autumn 2022





Learning outcome

At the end of this study, nursing students will be able to :

- Enhance their understanding on the use of surveillance cameras in homecare.
- Understand ethical issues related to the use of surveillance cameras.
- Know the effects of using cameras in homecare.
- Understand the scope of right to data protection and confidentiality.

Introduction

- Home care service refers to housing care and maintenance of functional capacity or assisting in other activities related to everyday life.
- The main goal of home care is to enable clients to continue living independently at home as long as possible.
- Due to the growing demand of healthcare services and to maintain quality of care, monitoring devices have been introduced to support clients' care.
- The monitoring devices used in homecare is surveillance cameras.
- Managing clients' data poses challenges when using cameras in home care.
- Data protection, confidentiality and integrity of client data are the major issues that need to be considered when using surveillance cameras in home care.



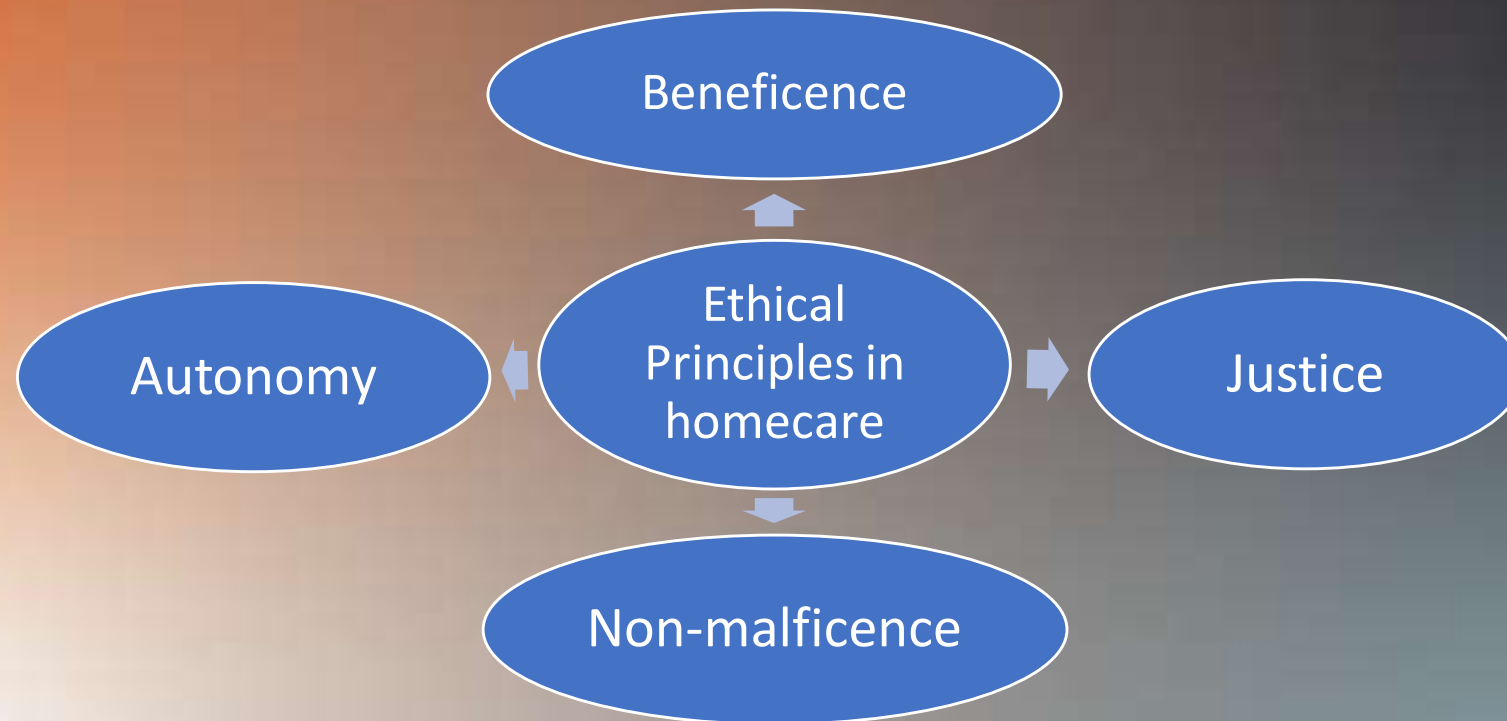
Homecare nursing

- Homecare – Professional support rendered to client at home to reduce hospitalisation.
- These clients can manage partially or may need some extra support.
- Services are offered to the elderly with functional inabilities, the chronically sick and people with disabilities above 18 years old.
- Home care services are rendered by the public or private sector.
- Care can be for a short term or long term depending on the health condition of the client

Pic 4



Ethical principles in homecare





Ethical principles in homecare

- Autonomy-the ability of the client to make his or her decision without any influence or force from a third party.
- Beneficence- Is the duty to do good. Whatever activity the caregiver does to the clients must be for the best interest of the clients.
- Non-maleficence-even if a decision is for the client benefit, it should not be harmful to another. This principle requires no harm in the performance of nursing care at home whether individually or collectively.
- Justice- Fair and equal treatment. No bias mind or discrimination.



Ethical dilemmas

These challenges can be looked on at two different points:

- Challenges faced in daily ethical activities such as autonomy, consent, restrained, denial to take medication, to eat or to shower, and some other behaviours that are offensive, cooperation between caregiver and recipients/family members.
- Challenges that can arise as a results of information from camera and data gathered from client's record.

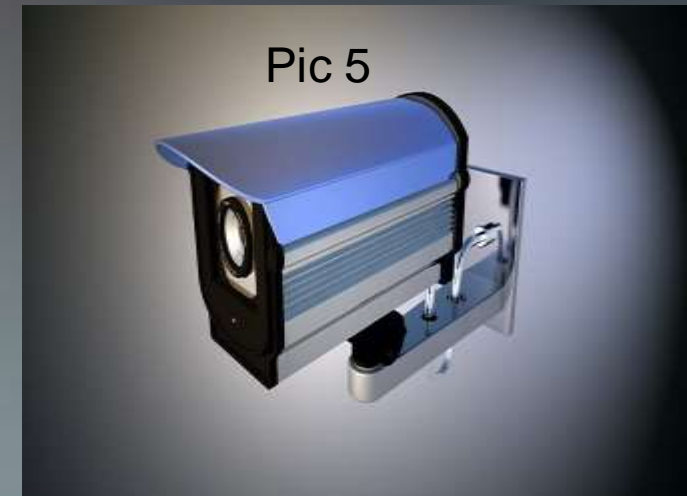


Data security and surveillance cameras

- Surveillance camera is an assistive monitoring device used in home care. It helps to observe and keep records of the activities of people at home.
- Data obtained helped to provide relevant information for continuous care and improved independent living especially for people aging in place. Pi 5
- Cameras may as well invade the privacy of both the client and caregiver.
- The data or information of patient need not be corrupt, compromised or lost as it will be used in any other further investigation when needed.

Data security and surveillance cameras

- Data are also protected to stop any financial gains by criminals through the use of medical identity theft.
- Data can be protected through constant verification of patient identity.
- Data protection policies should be respected.





Privacy protection in the use of cameras

- The approach to privacy is multidimensional.
- It refers to private physical environment or space, and data privacy.
- Privacy can be conceptualized in the light of choice, respect, autonomy, ownership, and personal preference.
- The right of privacy must be balanced with other considerations including the risk of harm either to the client or other individuals.
- Any unauthorised recording or pictures of the customer is considered as a violation to patient's right of privacy.

Privacy protection in the use of camera

- Having cameras at home does not necessarily go against the patient rights to privacy.
- These cameras protect the patient from certain harms that might occur in the nurse's execution of his or her duty (abuse, neglect, aggression...)
- It also protect the nurses from certain offensive acts and provide evidence in case of any grievous harm.





Benefits

Effects of using cameras in homecare

- Used as a cognitive monitor for the safety of elderly customers with memory loss or dementia
- Provides more affordable and monitoring healthcare services commonly found toward the aging population.
- Emergency cases like fall or any change of activity toward the health status can be reported easily to the healthcare.
- In the occurrence of an incident or accident, camera recordings will be considered important evidence in exonerating professionals from any suspicious act.
- Family members can jointly manage their jobs and care giving.



Pic 7



Effect of using cameras in homecare

Short comings

- It is also difficult to have a clear understanding of how these elderly patients with dementia looks at the benefits and risk of these cameras since it is difficult for them to rightly communicate their feelings to the family members.
- Health and medical history are sensitive information that needs confidentiality. It is illegal to place cameras where privacy is needed, for example in a bathroom.
- Older adults sometimes feel discriminated because the use of camera has brought about some criticism to their behaviour and activities rather than from their health status.



Use of cameras at home and associated ethical issues

- There's a compelling need for the healthcare sector to explore various ways to address the ever-increasing aging population and the vulnerable groups.
- Surveillance cameras helps in providing solutions to shortages of healthcare workers and the increasing healthcare and safety needs of the customers.
- Ethically, the principle of privacy and data protection should be respected in healthcare. But the systems and current use of cameras ignores this principle.

Pic 8





Use of cameras at home and associated ethical issues

- Recordings from cameras mostly concentrate on data storage and analysing which can lead to misuse of data.
- As per principle of autonomy, patient needs enough detail information before taking the rightful decision. But the informed consent most often is not that explicit to suit the understanding level of the older adult.

The Ethical Dilemmas Facing Nurses

Even with a code of ethics in place, nurses may still encounter scenarios that make adhering to these principles difficult. It's important for nurses to recognize the potential for the following situations, so they're prepared to make the most ethically sound decisions possible:



Protecting a patient's rights



Receiving fully informed consent to treatment



Patient confidentiality breaches



Respecting a patient's cultural or religious beliefs



Life event decision-making

Sources: American Nurses Association, BMC Nursing



Response to challenges of cameras surveillance at home

- Informed consent of the elderly in need must be considered.
- Due to constant monitoring from camera, caregivers can be nervous. They should however be informed of availability and location of cameras in patient's home.
- Any illegal recording from the cameras for third party use will be regarded as breach to the principle of confidentiality and autonomy.
- Awareness should however be raised about the ethical issues involved on the use of cameras at home.
- Users of cameras in homecare should be assisted in learning and to understand the operating system of the camera that have been put in place to support their health and wellbeing.



Appreciation

Thank you



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