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Taking and observing the vital signs of an adult patient

An educational material for nursing students

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Title of publication Taking and Observing vital signs of an adult patient: An educational material for nursing students		
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Abstract Observing vital signs is an essential skill for every nurse. A nurse must know how to correctly observe vital signs and what to do in situations where one or more vital sign is abnormal. Vital signs are part of patient care whether the nurse is working at the emergency room or at bedside ward. The purpose of this thesis was to produce an educational material about how to observe and take vital signs of an adult patient in power point form for nursing students studying at Satakunta University of Applied Sciences (SAMK). The objectives are that the educational material is reliable and easy-to read and contains knowledge that students can use as a support material in their studies. Educational material is about how to take and observe vital signs of an adult patient. This thesis contains 4 major parts. Those parts are theoretical background, purpose and objectives, project plan and implementation and evaluation. In theoretical background all key concepts were explained. Purpose and objectives part tells the purpose and objectives of this project to the readers. In project plan and implementation, the all-important thing related to thesis making were explained. In the final part called evaluation ethics, risks and resources were evaluated. The method used in this project was waterfall method. In waterfall method the project is fully planned and then executed through phases. The method was easy to follow, and it had a clear structure. This project had 5 phases, initiation stage, planning stage, execution stage, monitoring stage and closure/final stage. One phase was fully finished before starting a new phase. All the information in this thesis is reliable and gathered from reliable and scientific sources.		
Keywords Vital signs, Blood Pressure, Pulse, Oxygen saturation, Temperature, Respiration rate, Consciousness, Power point as an educational material		

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1 INTRODUCTION

Vital signs are crucial when monitoring patients in the hospitals. With the help of vital signs any early clinical deterioration can be detected and prevented. Vital signs should be monitored regularly because if there is several hours between the monitoring or they are monitored incompletely clinical deterioration can go unnoticed. (Vincent et al., 2018.) Especially in emergency rooms and hospital wards vital signs are important since they provide information about patient's condition to the nurses. Observing them needs to be done in a correct way.

The importance of this topic is important in nursing and healthcare field is big. Monitoring vital signs is an essential part in the determination of patient's health. (Brekke, Puntervoll, Pedersen, Kellet & Brabrand, 2019.) A nurse must understand the normal and abnormal changes in vital signs and should know when to do necessary measures. Monitoring vital signs is one the basic nurses task to do in the hospital. (Valvira, 2015.)

The purpose of this project thesis is to produce an educational material about taking and observing vital signs of an adult patient for international nursing students studying in Satakunta University of Applied sciences (SAMK). SAMK is an international higher education institute in Satakunta with different faculties including health and welfare, Logistics and Maritime Technology, Service Business and Technology. (Satakunta University of Applied Sciences 2020.) The educational material will be in English language. The authors chose this topic based on the importance of the topic.

The objective of this project thesis is that the educational material is reliable and easy-to-read material for nursing students. The educational material will be in power point form, and it will include multiple slides with educational text. With the help of this educational material nursing students will gain new knowledge about vital signs, how to observe and take them correctly.

2 THEORETICAL BACKGROUND

Theoretical background includes the most important part of the thesis. In theoretical background the authors will explain the key concepts and the most important principles when monitoring patient's vital signs. Theoretical background includes also pictures and charts related to the key concepts. Key concepts are the words that describe the content of the thesis. (Vinz, 2015.) The key concepts in this thesis are vital signs, blood pressure, pulse, oxygen saturation, temperature, respiration rate, consciousness, and power point as an educational material. All of these key concepts will be explained below.

2.1 Vital Signs

Vital signs are an important measurements of human body's function and they are one of the simplest measurements in hospitals (Kellett & Sebat, 2017). "Vital signs are considered vital to the rapid assessment of the client when is it necessary to determine major changes in the client's basic physiological functioning" (Registerednursing, 2021). They provide information for the healthcare staff about patient's condition and also provide information about any abnormalities patient may have. Based on vital signs patient's urgency of care can be decided. Vital signs include blood pressure, pulse, oxygen saturation, respiration rate, temperature and level of consciousness. (Long, 2022.) If patient has abnormal vital signs and those abnormalities are detected and the necessary treatment is started, death can be avoided (Karjalainen et al., 2018). When observing vital signs, all values should be documented to the patient records (Valvira, 2015).

2.1.1 Blood Pressure

Blood pressure is the pressure in the arteries. With the help of blood pressure, blood flows through the whole body. Blood pressure includes systolic and diastolic pressure. Systolic pressure means that the heart contracts and the left ventricle pushes blood into

the arteries. During systolic pressure the blood pressure is at its highest. Diastolic pressure means that the heart is resting before its next contraction. During diastolic pressure the pressure is at its lowest. When expressing blood pressure, it is expressed in millimeters of mercury unit (mmHg). Blood pressure is constantly changing. It can be elevated in completely normal situations e.g., in stressful situations. (Ahonen et al., 2019, p. 181) The optimal rate for systolic pressure is under 120 and normal rate is between 120-130 in adults. If the systolic pressure is 140 and over then it's elevated. The optimal rate for diastolic pressure is under 80 and the normal rate is 85 and under. If the rate is over 90 or 100 it is elevated. (Ahonen et al., 2019, p.185) When blood pressure is elevated it is called hypertension. According to World Health Organization (WHO) hypertension is a severe medical condition. When blood pressure is high the heart has to pump blood harder into the vessels. The risk of heart, brain, kidney, and other diseases can be increased due to hypertension. Most people don't know that they have hypertension. Hypertension can be managed so that is why it is important to monitor blood pressure. (WHO, 2022.)

A sudden drop in blood pressure is a serious condition because body is not getting enough blood flow (MedlinePlus, 2022). In a shock the blood flow suddenly drops and tissues don't get enough blood (Mustajoki P., www.terveyskirjasto.fi, 2022). It will lead to cellular and tissue hypoxia and it's a life-threatening condition. Early recognition of shock is important since in the early stages the effects of shock are reversible. (Brealey & Webb, 2021.)

Blood pressure is one the most important vital signs and when observing and measuring it healthcare professionals needs to be careful. Blood pressure gives information about patient's hemodynamic condition. If blood pressure is measured incorrectly then patient's underlying disease can go unnoticed. (Sapra, Malik & Bhandari, 2021.) Blood pressure is usually measured either from left or from the right upper arm. If needed a blood pressure can be taken from the thigh with a thigh cuff. (Muhonen, 2021.) The environment needs to quiet and peaceful, the patient should not have taken any alcohol or caffeine drinks or smoked any nicotine product at least 15 minutes before measuring the blood pressure. The cuff size needs to be correct and decided based on patient's arm size. Wrong cuff size gives false blood pressure reading. Too small cuff makes the blood pressure reading falsely high and too large

cuff gives a falsely low blood pressure reading. It is also recommended that patient sits at least five minutes before the measurement of blood pressure. Patient's arm should be well rested, and legs should not be crossed during the measurement. Healthcare professionals should make sure to all of these are considered and checked before taking patient's blood pressure. (Sapra et al., 2021.)

Blood pressure can also be observed by using an artery cannula. It is called arterial pressure monitoring. This kind of method is usually used with critically ill patients. Patient with an arterial pressure monitoring is always connected to the monitor. When patient is connected to the monitor it shows the current blood pressure in real time. Blood pressure can be observed continuously and sudden changes can be seen immediately. Sudden drop in patient's blood pressure can also be seen when using arterial pressure monitoring. (Nguyen & Bora, 2022.)

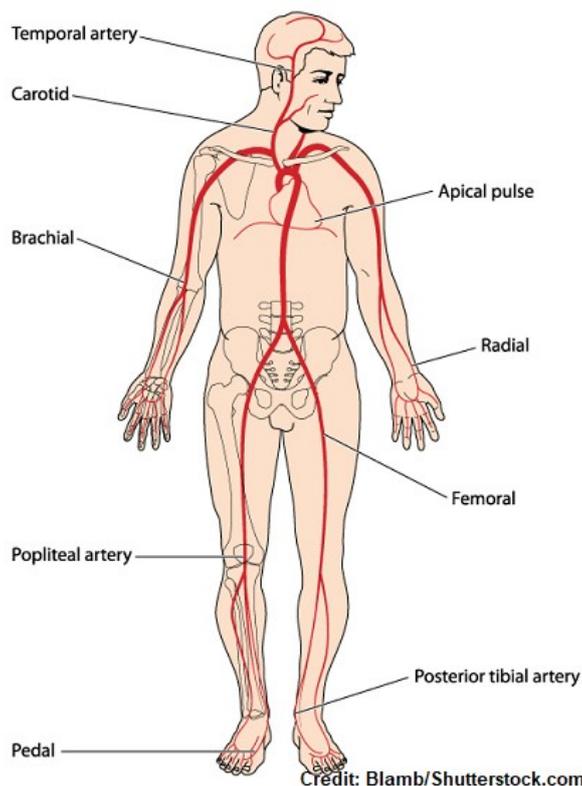
MAP also known as mean arterial pressure tells the average arterial pressure through one cardiac cycle, systole, and diastole. MAP can be calculated by reducing the diastolic amount from systolic, then dividing it by 3 and adding the diastolic amount to the results. Vital organs require enough blood and this can be observed by using MAP. The value needs to be at least 60mmHg. Under that organs are not receiving enough blood. If the value suddenly drops or if the value is significantly low after calculation it will cause a patient deterioration. (DeMers & Wachs, 2022.)

In emergency situations a palpation method can be used for observation. In this method a radial artery is palpated. When patient's systolic pressure is at least 80 then radial pulse can be felt. If the pulse can't be felt then systolic pressure is under 80. Carotid artery can be palpated after this. If there is a pulse in the carotid artery then systolic pressure is at least 60. If there is no pulse then the systolic pressure is under 60. Patient might be having irregular pulse so palpating long enough is important. (Cohen, 2020.)

2.1.2 Pulse

Pulse and also known as heart rate tells the number of times the heart beats in a minute. Pulse varies from person to person. (WebMD, 2020a.) When a pulse is normal it is regular and strong. Normal pulse for adults is 60-90. Many different medical conditions such as anxiety, pain and fever can raise the pulse. Some medications can lower the pulse. (Pickering, 2013.) Autonomic nervous system controls the heart rate. Autonomic nervous system has two parts, sympathetic nervous system, and parasympathetic nervous system. Sympathetic nervous system speeds up the heart rate and parasympathetic nervous system slows it. (Ahonen et al., 2019, p. 249) When the heart rate is greater than 100 beats per minute it's a condition called tachycardia and if left untreated it can cause severe symptoms e.g., myocardial ischemia, hypotension, cardiac arrest, and death. Reason for tachycardia should be examined. (Gopinathannair & Olshansky, 2015.) Symptoms for tachycardia are chest pain, heart palpitations and lightheadedness (WebMD, 2019b). Heart rate less than 50-60 beats per minute is defined as bradycardia. It can cause symptoms like fatigue, dizziness, and dyspnea. Reason for bradycardia should be examined. Nurse should also take an electrocardiography (ECG) from the patient. (Sidhu & Marine, 2020.)

There are nine pulse points from where pulse can be observed and measured. "The pulse points are temporal pulse, carotid pulse, apical pulse, brachial pulse, radial pulse, femoral pulse, popliteal pulse, posterior tibial pulse and dorsalis pedis pulse". (Nurseship, 2021.) The pulse points can be seen in the Picture 1.



Picture 1. 9 Common pulse points (Registerednurses, 2019).

Pulse can be observed by putting two fingers on radial artery and counted the pulse for 30 seconds and then doubling the counted pulse rate (Pickering, 2013). Radial artery is the most common place to measure pulse. If patient has any problems with the heart, pulse is measured for 60 seconds. Possible arrhythmias can be detected during those 60 seconds. Patient needs to be at rest and calm when the pulse is measured. Patient might have extra heartbeats which are normal. If an arrhythmia is detected ecg should be taken and nurse inform the doctor. (Rautava-Nurmi, Westergård, Henttonen, Ojala & Vuorinen, 2016, p. 359-361.)

Arrhythmia means that patient's heartrate is irregular. Earlier mentioned tachycardia and bradycardia are arrhythmias. Other possible arrhythmias patient might have as an example is atrial fibrillation where the heart rate is uncoordinated and rapid and atrial flutter where heart rated is still uncoordinated but more organized. Ventricular fibrillation is a serious arrhythmia where ventricles are quivering and ventricular tachycardia is also a serious condition where rapid heart rate doesn't allow the ventricles to fill with blood properly. (Mayoclinic, 2022.) Arrhythmias can be observed

by palpating radial pulse. If patient has any arrhythmia ongoing the pulse will be irregular and unstable. (Nursingtimes, 2015.)

At hospitals pulse is usually measured and observed by using patient monitors and the sensors attached to it (WebMD, 2019a). There are also other equipment's that are used for measuring and observing the pulse. Pulse oximetry meter and blood pressure meter are electrical devices that measures patient's pulse. With the help of these electrical devices, it is easy to monitor patient's pulse multiple times a day. (Dall'Ora et al., 2021.)

When observing patient's pulse rate, strength and rhythm should also be observed and documented. Palpating is a good way to observe the pulse. Pulses are usually easy to feel and palpate. Normal pulse can be easily felt since it is strong and regular. If patient pulse is weak and irregular or unstable it should be observed more often and referred to a doctor. (Nursingtimes, 2015.)

2.1.3 Oxygen saturation

Red blood cells deliver oxygen through blood stream. Oxygen saturation tells the body's blood oxygen levels. (WebMD, 2021a.) Oxygen saturation is measured by using pulse oximetry (Jubran, 2015). It is a simple and reliable way to measure saturation levels and also detect any signs of low oxygen levels (Laakso, 2021). Oxygen saturation is a crucial vital sign in patient care. Many organs such as heart, brain and kidneys need enough oxygen and if these organs are not getting enough oxygen it can lead to many adverse effects. (Hafen & Sharma, 2021.) Normal oxygen saturation levels are 100%-95%. If the level is under 90% it indicates a condition called hypoxemia. (Janet M. et al., 2022) Hypoxemia means that oxygen levels in the blood are low. It can be a sign of problem in the circulation or related to breathing. (Mayoclinic, 2018.) If patient has chronic obstructive pulmonary disease also known as COPD then in that case normal oxygen saturation levels are 88%-92% (Pilcher & Beasley, 2015). Oxygen saturation levels and measures in hypoxemia can be seen in the Table 1.

Table 1. Measures in hypoxemia (Laakso, 2021).

Oxygen saturation 90-95%	<ul style="list-style-type: none"> • Observe saturation regularly, especially at night • If this value is new to the patient rule out any sources of error and determine causes of hypoxemia • If patient has COPD this is a normal level
Oxygen saturation 80-90%	<ul style="list-style-type: none"> • Do as above and give oxygen to the patient until saturation is at least 90%
Oxygen saturation below 80%	<ul style="list-style-type: none"> • Inform the doctor • Do as above and start continual monitoring • If needed assist ventilation.

When observing patients oxygen saturation, a pulse oximeter needs to be attached to patient's finger. An ear lobe pulse oximeter can be used if a finger pulse oximeter can't be used. It is also important to check is the patient receiving any oxygen or not. If patient is receiving oxygen the flow rate need to be checked. (OSCE, 2020.) Hypotension, cold fingers, moving fingers, shaking and badly placed oximeter cause errors when observing oxygen saturation. By making sure that patient has warm fingers, loose clothes, the pulse oximetry is placed correctly and telling patients to stay still errors in observing can be avoided. (Laakso, 2021.)

Oxygen saturation can also be observed by looking at patient's skin. When oxygen saturation levels are very low patient's skin and lips are bluish. Bluish skin is a condition called cyanosis. When saturation levels are dropped by only a small amount then cyanosis is hard to detect. (MedlinePlus, 2021.) By listening patient's breathing saturation can be observed as well. Low saturation levels can cause rapid breathing and shortness of breath. Patient might also be sweating so palpating the skin is also important. (WebMd, 2020b.)

Observe also patient's behavior. Low saturation levels can also cause restlessness, dizziness and lack of coordination. Patient's might also be confused. (MedicalNewstoday, 2021.)

2.1.4 Temperature

Temperature tells the temperature of patient's body (WebMD, 2021b). By measuring body temperature it provides information of the core temperature of body tissues (Ostendorf, Perry & Potter, 2016, p. 100). Normal temperature is 37°C on the average but it varies from person to person between 35,8-37,8°C. Usually in the morning temperature is little bit lower than it is in the afternoon. (Mustajoki P., www.terveyskirjasto.fi, 2019.) When temperature is under 35°C patient is having condition called hypothermia. Hypothermia is a medical condition where body temperature is between 32-35°C and in severe hypothermia it's between 28-32°C. Hypothermia needs immediate medical care. (Saarelma O., www.terveyskirjasto.fi, 2022.) When temperature is over 37,8°C then patient is having fever. In fever body temperature higher than normal. (Saarelma O., www.terveyskirjasto.fi, 2022.) A fever over 40°C causes dehydration and fatigue but it isn't critical for an adult patient. When the fever is 42°C or more it is critical, and it causes damages to the organs. (Matilainen et al., 2020.)

There are many different places to measure patient's temperature. Axillary (under the arm from the armpit), rectal (from rectum), oral and tympanic (from the ear) membrane are common places to measure temperature. (Sapra et al., 2021.) Most common device used to measure temperature is digital thermometer. When temperature is taken from the armpit it will be slightly lower than the temperature taken from the mouth and when temperature is taken from the rectum it will be slightly higher than temperature taken from the mouth. (Registerednursern, 2018.)

Patient's temperature can be observed by palpating the skin. Fever causes skin to become hot. If patient has fever their skin might be hot. (Healthline, 2019.) Patient skin might also be dry when they have fever and the face might be flushed. If patient has a catheter the temperature can be observed by checking the urine output. Urine output might be low when patient is having fever. (Hopkinsmedicine, 2022.)

2.1.5 Respiration rate

“Respiration is a vital process for the normal function at every level of organization from a cell to an organism; oxygen, supplied by local circulation at the tissue level, functions at the mitochondrial internal membrane as an essential mediator for the energy release” (Chourpiliadis & Bhardwaj, 2021). Respiration rate tells the numbers of breaths taken in a minute. The normal rate for an adult is between 12-20. A rate lower than 8 and higher 25 might be a sign of patient deterioration and should not be ignored. (Rolfe, 2019.) Also patient can speak full sentences and doesn't use respiratory muscles. When patient's is breathing normally, breathing is light, automatic, and silent. Any abnormalities in these can indicate troubles in breathing. (Rautava-Nurmi et al., 2016, p. 323-324.) Normal and abnormal respiratory rate values in adults can be seen in the Picture 2.

Table 1. Normal and abnormal respiratory rate values in adults	
Count the respiratory rate for one full minute. An increasing respiratory rate is a marker of illness and a warning that the patient may deteriorate suddenly	
Normal range for adults	12–20 breaths per minute (bpm)
Bradypnoea	<12 bpm
Tachypnoea	>20 bpm

Source: Dougherty and Lister, 2011; Royal College of Physicians, 2017; Resuscitation Council UK, 2019

Picture 2. Normal and abnormal respiratory rate values in adults (Hill & Annesley, 2020).

When observing respiratory rate, the depth of breathing should also be observed. Hyperpnea means that depth of breathing is increased. This condition can be seen in anxiety states and lung infections. Also, in congestive heart failure hyperpnea can be seen. Hyperventilation means that the rate and depth of breathing is increased. This condition can be seen in anxiety states but also in diabetic ketoacidosis and in lactic acidosis. If the rate and depth of breathing is decreased, it indicates condition called hypoventilation. Hypoventilation can be seen when patient is excessively sedated or if patient has metabolic alkalosis. (Sapra et al., 2021.) The reasons for increased and decreased respiratory rate can be seen in the Table 2.

Table 2. Reasons for increased and decreased respiratory rate (Hill & Annesley, 2020b).

Reasons for increased respiratory rate	<ul style="list-style-type: none"> • Fever • Dehydration • Asthma, COPD • Hyperventilation • Other lung conditions such as lung cancer and pulmonary emboli • Infections • Respiratory acidosis • Drug overdose • Heart conditions
Reasons for decreased respiratory rate	<ul style="list-style-type: none"> • Use of narcotics • Alcohol • Abnormal metabolic processes • Sleep apnoea • Neurological conditions such as stroke and head injuries

Observing respiratory rate can prevent poor outcomes. Patient should be at rest when respiratory rate is observed. Nurse should check that is the patient using respiratory muscles to breathe, is patient oriented or confused, does patient seem uncomfortable and are they anxious or in pain. Respiratory rate should be counted in 60 seconds. Using shortcuts may give wrong results. (Hill & Annesley, 2020.)

When observing respiration rate patient's overall breathing should be observed. Observe if patient's breathing is regular or irregular. Listening if patient has any kind of cough and if they have cough are they able to cough by themselves is also important. Observe also possible sputums and the color of the sputum. Also listening the breathing sounds is essential. Normal breathing sounds are equal when patient is breathing in and out. Rhonchi like sound might indicate some infection in the lungs. If breathing sounds like wheezing there is something obstructing the breathing. Observing the smell of breath is also important. In diabetic ketoacidosis the breath smells like acetone and in intoxication breath smells like alcohol. Palpating patient's skin can also give information about patient's breathing. Cold and sweaty skin might be a sign that patient is too tired to breathe. (Ahonen et al., 2012, p.432-433.)

2.1.6 Consciousness

Central nervous system controls consciousness. Abnormalities in the level of consciousness can be only temporary or momentary or it can be long-term. When observing patient's level of consciousness, it is important to check will it deepen or will it get better. (Rautava-Nurmi et al., 2016, p. 89-90.) Observing patient's level of consciousness is one of the most important parameters to measure. Level of consciousness helps nurses to determine a possible deterioration. (Cristina Pires et al., 2021.) When patient has a normal level of consciousness they are alert, aware of themselves and the environment. (Aivovamma ja tajunnantason arviointi, Terveyskylä, Aivotalo.) When a patient who has a normal level of consciousness is woken up from sleep they are oriented and alert. (Ahonen et al., 2012, p. 346.) Many medical conditions and drugs affect patient's level of consciousness. When patient is conscious, they are either awake or they can be awakened if they are sleeping. When patient is unconscious they are either partially awake or they are not awake at all. (Morrow, 2020.) Unconscious means that patient doesn't have awareness. Before patient goes unconscious, they are sleepy, unable to stay awake and they don't respond to sensory stimuli. Patient might respond to some sensory stimuli by moving and bending their limbs. When patient goes unconscious pupils, pulse, skin, muscle power, color of the skin and mouth should be checked. (Ahonen et al., 2012, p. 347.)

Level of consciousness can be observed by using Glasgow Coma Scale also known as GCS. GCS is a method that is used to describe patient's consciousness. There are 3 different responses in GCS. Those responses are eye-opening, motor, and verbal responses. From there responses a score is calculated and store is used to determine the level of consciousness. (Jain & Iverson, 2021.) Picture of GCS can be seen in the Picture 3. When observing patient's consciousness the gcs score should be counted. The higher the score the beter patient's consciousness is. The score of 3 indicates that patient is unconsciousness and doesn't respond to any stimulis. The score of 15 indicates that patient is fully alert and conscious. (Jain & Iverson, 2021.)

Glasgow Coma Score	
Eye Opening	
Spontaneous	4
Open to verbal command	3
Open to pain	2
No eye opening	1
Verbal Response	
Oriented	5
Confused	4
Inappropriate words	3
Incomprehensible sounds	2
No verbal response	1
Motor Response	
Follows commands	6
Localizes to pain	5
Withdrawals from pain	4
Flexes to pain	3
Extends to pain	2
No Movement	1
Total score	3-15

Picture 3. Glasgow Coma Scale (GCS) (Kostiuk, 2021).

2.2 Power point as an educational material

PowerPoint is a software where electronic presentations can be created and displayed (Stacy & Thiel, 2017). In PowerPoint different kinds of slides are created and designed (Microsoft, 2022). PowerPoint can be used as an educational tool for teaching and giving materials. In PowerPoint a presentation can be structured in a professional way. By using multiple slides, styles, templates, appropriate front size and pictures in

presentation the quality and clarity can be improved. Because PowerPoint is in electronic file format it allows distribution and adjustment for different types of students. PowerPoint also comes with a free viewer programme so that the reader doesn't need to have PowerPoint in their personal system. Editing files and slides is easy and the all the slides can be printed. (Hashemi, Azizinezhad & Farokhi, 2012.)

PowerPoint has multiple different templates. PowerPoint template is a group of slides with a theme. A theme is a layout with colors and fonts that are predefined. When starting a new project using PowerPoint an existing template can be chosen or a completely new template can be created. (Microsoft, 2021.) When making a PowerPoint that used in education it should be effective. Text on the slides shouldn't be too long. Short text that is limited and simplified that includes only crucial information. Text also should be in a good color. In a good PowerPoint presentation high-quality pictures are used. Pictures will complement the text and presentation. Number of the slides shouldn't be too long or too short. (NCSL, 2017.)

3 PURPOSE AND OBJECTIVES OF THE PROJECT

The purpose of this thesis is to produce an educational material in power point form for English language speaking international nursing students in SAMK about how to observe vital signs of an adult patient. Educational material is going to be an easy-to-read material. The project teaches the importance of vital signs and why it is important to take and observe them.

The objective of this thesis is that the nursing students gain useful and educational knowledge about vital signs and how to take and observe them. Educational material will serve as a good self-study material. In process of the projects authors will learn skills about how to create an educational material. The educational material will be in power point form. It provides reliable and valuable information for nursing students. The educational material will include few pictures and multiple slides with educational and easy-to-read text.

4 PROJECT PLAN AND IMPLEMENTATION

4.1 Methodology

Waterfall methodology was used in this project. In waterfall methodology the project is fully planned and then executed through phases (The digital project manager, 2021). Waterfall method has five to seven phases, and those phases follow a strict specific order. One phase needs to be completed before another phase can be started. This method is detailed and structured methodology. (Project manager, 2020.)

Authors searched for different project methods and studied them. After some time and thinking authors chose the waterfall method for this project. Authors chose this project methodology because it has clear structure, and it is easy to follow. The authors wanted to use methodology that easy and simple to use and the project seems easier with waterfall methodology. With this project methodology authors were able to fully focus at one phase at a time. One phase was fully finished before another phase and none of the phases were unfinished when starting another phase.

4.2 Stages of project and schedule

According to Planview there are five stages of project. These stages are initiation stage, planning stage, execution stage, monitoring stage and closure/final stage. (Planview, 2021a.) The initiation stage of the project commences the project and involves turning the idea of the project into a goal. The initiation phase is the phase that precedes the planning stage. (Valdellon, 2015.) In the initiation phase of this project the authors completed tasks that provided familiarity to the chosen topic and the process of making a project.

The Planning stage is the second stage in project management, the success of the entire project relies on adequate planning. The project plans are written in a clear, communicable manner and the requirement and schedule of the project is laid out.

(Donato, 2021.) The authors wrote and presented a project plan which was approved to pave way for the next stage of the project, the execution phase.

The execution stage is the longest stage of the project where all the planned activities are implemented. This stage entails making the product and delivering it for approval or first feedback. The purpose of the execution stage of the project is to manage every aspect of project delivery to assure the project is successful. (Martin, 2021.) The main bulk of tasks involved in this project was done in this stage. The tasks done included finding appropriate materials to use in building an evidence based theoretical background. In the monitoring and closing stage authors completed PowerPoint and thesis. During those stages final thesis and PowerPoint will be submitted.

Table 3. Project timeline

Initiation stage November 2020- March 2021	<ul style="list-style-type: none"> • Choosing topic for thesis and choosing to do a project thesis • Choosing thesis pair • Choosing that final product will be PowerPoint • Making a plan for thesis plan writing and deciding time schedule
Planning stage March 2021-October 2021	<ul style="list-style-type: none"> • Writing a plan for thesis • Getting thesis plan accepted • Writing an agreement for thesis
Execution Phase November 2021-April 2022	<ul style="list-style-type: none"> • Theory research • Writing and completing thesis • Doing a PowerPoint • Taking pictures for the power point
Monitoring stage April 2022 -May 2022	<ul style="list-style-type: none"> • Submitting thesis and power point • Getting feedback
Closure/final stage May 2022	<ul style="list-style-type: none"> • Getting feedback and submitting final thesis

4.3 Literature retrieval

All the sources and information used in this project were gathered from reliable and scientific sources such as PubMed, TerveysPortti, Researchgate, Google, CINAHL, Google Scholar and ScienceDirect. School books and other websites such as Terveyskirjasto, Lääkärilehti and WebMd were also used. Key words such as vital signs, observing vital signs, blood pressure, pulse, oxygen saturation, gcs, temperature and monitoring were used when searching sources and articles. Most of the articles were found in this way. Timeline for articles was limited to 2011-2022 so that information provided is still reliable and not outdated. Timeline for books was also limited to 2011-2022.

Authors didn't plan to use any financial resources in this project. Some of the articles had a paywall but authors were able to access these articles by finding a free pdf version of these articles from Researchgate. If the article didn't have any free pdf version, then authors didn't use that article. Mostly English research materials were used but since both authors can understand Finnish, also Finnish research materials, books and articles were used. Authors chose 4 most relevant and useful literature. That relevant literature can be found from Appendix 1.

4.4 Target group

The target group for this project was SAMK English language speaking nursing students. At SAMK nursing is taught both Finnish and English language. Although target group being English language speaking nursing students, also Finnish speaking nursing students can benefit from this project. Educational material can be used in teaching in simulations and at class during lectures. SAMK also has exchange students every year and those students can also benefit from this thesis and the educational material.

5 EVALUATION

The thesis process started with a meeting where authors chose the topic. This project was a good learning experience for the Authors. New things were learned and authors knowledge were deepened while doing this project. Authors skills in doing research and educational material were getting better. Authors made a plan for the process but it didn't go as it was planned. They made a project timeline in spring 2021 and it was included in the project plan. The first plan was the project would be finished in the winter 2021-2022 but it took more time than authors had planned. The timeline changed a lot and in the end authors made a new project timeline. The new timeline was included in this thesis because it is how the thesis process went.. There were problems with finding constant motivation to write and do research and also had a different time schedules. There were breaks in writing. At first authors planned to get feedback from the target group but it was changed. Authors decided to get a feedback from the supervisors and from the teachers since they a good knowledge about educational materials. At some point authors thought of doing a simple pamphlet instead of an PowerPoint as an educational material but then decided that the original idea is better and easier. Authors realised that producing a pamphlet would cost money and it would be little bit difficult. After the thesis and the educational material were done it sent for the teacher for feedback. After getting feedback from the teacher authors gathered again and a quick plan how to do those changes. The workload was divided and both authors worked hard to do those changes. After the changes were done, thesis was sent to the teacher for final evaluation.

The thesis and educational material will give nursing students at SAMK a good information about observing vital signs. An educational material that is in PowerPoint form is an easy-to read and it can be easily used during lectures. Both the thesis and educational material has reliable information found from scientific sources. Both the thesis and educational material will serve as a good self-study material.

5.1 Resources

All projects have resources. People, equipment, place, financial and any other thing that is needed in a project is a resource. (Planview, 2021b.) People, equipment, and place were needed in this project. The people were the authors who wrote this thesis. Books and laptops were also needed in order to complete the project. Equipment were needed for the educational material. Authors were able to borrow the material from a workplace. A break room at authors workplace was used for taking pictures. Also databases used to find information were also one of the resources. Authors didn't need any financial resources. Articles that were found were free, books were borrowed from library and laptops authors already has beforehand.

5.2 Risks

Any unexpected thing that might happen during project is a project risk (Projectmanagement, 2022). Before authors started the project all possible risks were considered. Although authors thought all the possible risks and made a plan how to avoid them it was impossible to avoid some risks. First risk was time management. Both authors had very different time schedules. Authors had planned to finish this project earlier but due to the busy and different schedules the plan didn't work. Another risk was lack of motivation. Authors gathered and discussed about that risk and made a plan how to overcome it.

5.3 Ethics

Before starting this project authors had to complete a research ethics assignment and attend a lecture related to ethics. This lecture and assignment is mandatory for all students at SAMK. Authors learned about ethical principles of research and development methods while doing the assignment and attending the lecture. These ethical principles of research authors found from the website of Finnish National Board on Research Integrity (TENK). The project was done by following ethical

principles of research. Before starting this project authors wrote an agreement on the preparation of thesis and read the terms of agreement.

Only scientific and reliable sources were used in this project. All the sources found were cited correctly with the help of SAMK's latest reference guide. When doing research authors made sure that the sources are reliable by reading the guidelines for responsible conduct of research from TENK. According to those guidelines research must be ethically responsible and reliable. Spreading false data and plagiarism must be avoided. (TENK, 2012.)

After the thesis is concluded it will be sent for plagiarism check. Plagiarism check is done before final evaluation. All of thesis go through this plagiarism check.

5.4 Powerpoint production

The powerpoint production was an easy part. Both authors had a good knowledge and skills on powerpoint making. Authors gathered all the necessary information for the PowerPoint and made a small plan how to do it. Before authors started doing the PowerPoint, tips how to make a good and effective PowerPoint presentation was studied. Information used in the PowerPoint is reliable and scientific. Scientific articles and books that are used in school were used as an evidence-based information. Powerpoint also includes pictures that are useful and related to the topic. The template used in this production was SAMK PowerPoint template. Educational material is done in English language. Evaluation about the quality of this educational material is given by supervisors. Authors also evaluate the educational material. One slide was done and finished at a time.

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APPENDIX 1

Table of some literature used in this thesis.

Author of research, publication, year, country	The purpose of research/project/literature review	The target group, number of participants, data collection method, analyzing method/project method	Results/ Product of project
The value of vital sign trends in predicting and monitoring clinical deterioration Brekke et al., 2019	To evaluate the ability of vital signs trends to predict clinical deterioration in patients hospitalized with acute illness.	Method: A systematic review Target group: Healthcare workers	The review illustrated a lack or research in intermittently monitored vital signs
How long do nursing staff take to measure and record patient's vital signs observations in hospital? Dall'Ora et al., 2021	To estimate time taken to measure and record one set of patient's vital signs.	Method: Time – and – motion study Target group: Healthcare workers	The study showed the time taken when taking vital signs
Instruments for assessing level of consciousness in adults and the elderly Cristina Pires et al., 2021	To identify, in the literature, scientific evidence on the instruments that assess level of consciousness in adult and in the elderly.	Method: Literature review Target group: Healthcare workers	884 articles were reviewed and 19 of those met the inclusion criteria. The scales were found to share similar domains and evaluation

			mechanisms and to be reliable and effective for measuring level of consciousness in adults and the elderly.
Acute use of oxygen therapy Janine Pilcher, Richard Beasley 2015	To give information about oxygen therapy	Method: Article Target group: Health care workers	A major shift is occurring in the use of oxygen therapy