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ATTITUDES OF PERIOPERATIVE PERSONNEL:
A comparative research on safety culture and usage of surgical safety checklist

ABSTRACT

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This research investigated the perioperative personnel's attitudes on safety culture and usage of surgical safety checklist in Central Ostrobothnia Central Hospital and Oulu University Hospital. Furthermore, the challenges in the utilization of surgical safety checklist by perioperative personnel in these two hospitals were also investigated.

This research was conducted by utilizing a quantitative descriptive research design. In this research, data was collected with questionnaires that included 29 close-ended statements with multiple choices. The questionnaire was administered to approximately 360 perioperative personnel working in both respective hospitals. Approximately 91 respondents participated in this research which represented 25,3% of the total population.

This research indicated numerous findings in regards to safety culture as well as utilization of surgical safety checklist. The overall perception and attitude of perioperative personnel towards safety culture and teamwork were positive in both hospitals. The most significant finding in this research was insufficient time and resources invested in patient safety. Even though respondents' attitudes towards the checklist were positive, this research revealed that observing the time-out phase by team members was perceived to be difficult.

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Tutkimuksessa tutkittiin leikkaustiimin asenteita turvallisuuskulttuurista ja leikkaustiimin tarkistuslistan käytöstä Keski-Pohjanmaan Keskussairaalassa ja Oulun Yliopistollisessa sairaalassa. Lisäksi tarkistuslistan käyttöön liittyviä haasteita kuvattiin ja sairaaloiden henkilöstön asenteita vertailtiin tässä tutkimuksessa.

Tutkimus toteutettiin määrällisen kuvailevan tutkielmamallin mukaisesti. Aineisto kerättiin sähköisellä kyselylomakkeella, joka sisälsi 29 strukturoitua monivalintakysymystä. Kysely lähetettiin arviolta 360 leikkaustiimin jäsenille, jotka työskentelivät ko. sairaaloissa. Kyselyyn osallistui yhteensä 91 tiimin jäsentä, mikä vastasi 25,3% koko populaatiosta.

Tutkimus toi esiin useita turvallisuuskulttuuriin ja leikkaustiimin tarkistuslistan käyttöön liittyviä löytöjä. Perioperatiivisen henkilöstön asenteet turvallisuuskulttuurista ja tiimityöstä olivat positiivisia molemmissa sairaaloissa. Tutkimuksen tärkein löytö oli ajan ja resurssien riittämätön investointi potilasturvallisuuteen. Huolimatta siitä että tarkistuslistaan suhtauduttiin positiivisesti time out vaiheen noudattaminen koettiin vaikeaksi.

Asiasanat
Asenteet, leikkaustiimin tarkistuslista, perioperatiivinen henkilöstö, potilasturvallisuus ja turvallisuuskulttuuri

ABBREVIATIONS

EBSCO	Elton B. Stephens Company
GDP	Gross Domestic Product
HSE	Health and Safety Executive
ICU	Intensive Care Unit
KPKS	Central Ostrobothnia Central Hospital
OYS	Oulu University Hospital
PubMed	Public Medicine
SAQ	Safety Attitude Questionnaire
SPSS	Statistical Package for Social Sciences
SSC	Surgical safety checklist
WHO	World Health Organization

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ABBREVIATIONS

1   INTRODUCTION

Globally, more than 235 million surgeries are conducted annually (WHO 2008.). According to careful estimations, approximately seven million injuries and one million deaths result from these surgeries (Ikonen & Pauniaho 2010.). In Finland, approximately 400 000 surgical operations are conducted annually (The National Institute for Health and Welfare 2011, 2012). The injuries and deaths in Finland estimated from the global statistics can result up to 12 000 injuries and 1700 deaths annually. The financial impact cannot be ignored as compensated patient injury cases accounted for 35,3 million euros in 2011 (Finnish Patient Insurance Centre 2013.). In addition, the actual cost of complications is considered to be higher (Ikonen & Pauniaho 2010.).

After the introduction of World Health Organization's (WHO) surgical safety checklist for utilization in operating rooms in 2008, most studies have reported enormous reduction in postoperative complications, morbidity and mortality rates (Haynes, Weiser, Berry, Lipsitz, Breizat, Dellinger, Herbosa, Kibatala, Lapitan, Merry, Moorthy, Reznick, Taylor & Gawande 2009; De Vries, Eikens-Jansen & Hamersma 2011.). WHO surgical safety checklist is a 19-point checklist created to reinforce accepted practices and improve teamwork and communication in the operating units (WHO 2008.).

Even though there are diverse evidence of its effect on morbidity, mortality and its accelerated application globally, the acceptability of the surgical checklist as a universal safety tool in all surgical procedures has been criticized by some studies and surgical professionals (Laurenance & Peter 2009; Vats, Vincent, Nagpal, Davies, Darzi & Moorthy 2010.). Some studies have challenged the additional benefit of the use of the checklist in developed healthcare setting (Takala, Pauniaho, Kotkansalo, Helmiö, Blomgren, Helminen, Kinnunen, Takala, Aaltonen, Katila, Peltomaa & Ikonen 2011.). Moreover, most surgical training and practice had been geared towards technical skills and technological improvement whereas limited attention is paid to the benefits of non-technical skills (human factors) (Weinbroum, Ekstein & Ezri 2003.). However, majority of the errors that may occur

during surgery can be attributed to failures in these non-technical skills such as situation awareness, decision-making, communication teamwork and leadership that checklist aims to improve. (Weinbroum et al. 2003.)

This research attempted to investigate the attitudes of perioperative personnel (nurses, anesthesiologists and surgeons) on communication, collaboration, teamwork, safety culture and the use of surgical safety checklist. In addition, the purpose of this research was to compare the attitudes of perioperative personnel of Central Ostrobothnia Central Hospital (KPKS) and Oulu University Hospital (OYS).

Furthermore, this research also attempted to investigate and describe the challenges encountered in the checklist usage. In addition, it enumerated possible recommendations based on the results achieved and to help improve the adherence to checklist usage.

2   THEORETICAL FRAMEWORK

The theories and conceptual models explored in this research attempted to explain the humanistic process in adopting new technologies and interventions. Environment and institution safety theories were also reviewed. Categorically, the theoretical framework is a carefully constructed approach tailored to offer perioperative personnel and operating unit heads as a subjective method of improving attitude of perioperative personnel expertees in the usage of the checklist.

2.1   Patient safety

The focus in this theoretical background is four main categories of sosiotechnical systems (Moray 2000) and within them, ten human factors most relevant for patient safety. The main categories are: organizational factors, team factors, individual factors and work environment. According to Parush, Hunter, Campbell, Calder, Frank, Ma, Worthington & Abbott (2001), a human factor is:

> A discipline addressing human behaviour, abilities, limitations, and relationship to the work environment, and applies it to the design and evaluation of safer and more effective tools, machines, systems, tasks, jobs, and environments. (Parush et al. 2001.)

2.1.1   Organizational factors

Organizational factors such as safety culture, manager's leadership and communication influence workers' behaviour and thus, affect patient safety. Dimensions of organizational safety culture described by WHO (2009) are for instance, adherence to safety rules, safety related work practices and reporting of errors and incidents. WHO (2009) argued that the safety culture in institutions must change in order to improve patient safety rather than economic interests.

WHO (2009) found that transformational leadership is most beneficial leadership style for health care field and is associated with better patient outcomes.

According to Lai (2011), transactional leadership is characterized with hierarchical structure where leader offers rewards in exchange for met objectives. On the contrary, transformational leadership demonstrates more collegial or mentor like relationship, motivating and inspiring subordinates. Transformational leadership has been found to produce more positive outcomes than any other leadership style thus, suggested for use in operating units. (Lai 2011.)

Simplified explanation of Shannon's model of communication includes a source encoding a message that is later decoded by a receiver. The message can be sent through three different mediums, in written, oral or non-verbal form. Any disturbance in the transmittance is referred as noise (Shannon 1948). The dynamic surgical procedures in the operating units are intricate and require several interactions between members of the team. It is very essential for surgical team members to be united and have common attitude in communication in order to function effectively, create common goals in improving patient safety and enhancing team performance. (Wauben, Dekker-Van Doorn, Van Wijngaarden, Goossens, Huijsman, Klein & Lange 2011.)

Failures in communication such as misinterpreting a written prescription can lead to patient harm. Shift or patient handovers, quality of patient file information and hierarchy that inhibits junior personnel from speaking up are few problems areas identified by WHO (2009). As a result, WHO (2009) recommended pre-task briefing with surgical safety checklist as well as task debriefing sessions in order to perform better as a team as well as reflect on performance and learn from both well and poorly managed situations.

Communication in theatre units includes exchanging of information between team members. Anesthetist or anesthesia nurse should always communicate to surgeon about administered medications during surgery and in turn surgeons must also inform the other team members when the surgery has deviated from the original plan. It is vital to have common understanding especially before and after the surgery. Surgeons and anesthesiologists have the responsibility to inform team members about planned procedures and actions prior to and during surgery. Pre-operative briefings and debriefings with the entire is an intervention which seeks to

enhance effective communication in theatre units. Co-ordination of team activities is usually improved with good communication between perioperative personnel. For instance, nurse anesthetist and nurse circulator checks whether the entire team is ready for the procedure to go ahead. Communication is vital asset in the function of a team and improving patient safety and the entire safety culture in theatre units. (Wauben et al. 2011.)

2.1.2 Team factors

Currently, the field of health is dominated by collaborative team or group effort. A single healthcare provider cannot accomplish the continuous and daunting care process unassisted. As a result, cooperation, communication and coordination of resources are important for efficient and effective care (Salas, Wilson, Murphy, King & Salisbury 2008).Teamwork is an essential and integral part of operating unit performance, care quality, and patient safety. Lack of effective communication and cooperation among perioperative team members over the past have culminated in errors such as retained sponges after surgery, mismatched blood transfusions, and extremity nerve blocks. (Gawande, Studdert, Orav, Brennan & Zinner 2003; Edmonds, Liguori & Stanton 2005.)

Kozlowski & Bell (2003) defined team as an identifiable group comprising of two or more individuals collaborating with each other in an institution to achieve a common objective through distinct interdependent duties and work boundaries. There are numerous crucial and important behaviours and attitudes that influence the effectiveness of teamwork, namely: effective leadership, team orientation, efficient communication, adaptability, trust, shared mental models, mutual performance monitoring, and back up of one another (Salas, Sims & Burke 2005). Undoubtedly, team size is one of the most common external factors that may or may not hinder the efficiency of the team players. The average number of individuals in a team across industries and countries is 5 to 12 people. (Kalisch, Begeny & Anderson 2008.) In surgical setting, a team involves nurses, anesthesiologists and surgeons and commonly consists of five or more professionals.

An effective team is determined by the level of members' collaboration, inter-acting and ability to obtain shared-goals. The major challenge in theatre units encountered by perioperative personnel and individuals working as a team has been attributed to time-honoured hierarchical nature of organization that exists in this environment. (Stokowski 2007.) The significant benefit of teamwork includes decreased Intensive care unit (ICU) mortality and increased patient safety and satisfaction. Moreover, effective teamwork and communication has been associated to essential results for instance decreased job stress and job satisfaction. (Weaver, Rosen, Diaz-Granados, Lazzara, Lyons, Salas, Knych, McKeever, Adler, Barker & King 2010.)

There are several means of supporting and assisting healthcare professionals and administrators with new skills, current scientific based information and instilling better attitudes towards work as effective team members or players. This is mostly conducted in many professional fields in the form of team training and education. Complex organizations and institutions, for instance aviation, nuclear power plants and so forth view team or staff training and education as a method of improving safety in work place. (O'Connor, Campbell, Newon, Melton, Salas & Wilson 2008; Salas, Burke, Bowers & Wilson 2001.)

2.1.3 Individual factors

Non-technical skills generally viewed as part of individual factors in human factors are: situation awareness, decision-making, leadership, teamwork, stress and fatigue. (WHO 2009.) These psychological and physiological factors affect individual's behaviour and thus, contribute to patient safety outcomes.

In order to have good situation awareness, one must acquire and understand the relevant information as well as make appropriate anticipation for the future (Parush et al. 2011.). In addition to situation awareness, decision-making skills are essential for workers in health and medical fields. Nurses and doctors decide on several complex care issues that may affect patients for their lifetime. Wrong

decision in patient care may have drastic effects and can lead to adverse effects or even death.

Naturalistic decision-making identifies two stages in decision-making (WHO 2009.). In the first stage, one has to analyze the situation; the persistent problem, risks involved and time available. In the second stage, one must choose the course of action by utilizing the following methods: recognition primed, rule based, choice through comparison of options or creative decision-making. Utilizing recognition primed method, one must recall a similar event from memory and utilize recalled course of action. In rule based method one follows set rules and guidelines. Various alternative actions are identified and compared in choice through comparison of options method. Lastly, in creative method, one creates a new course of action to a situation. (WHO 2009.)

In their research of nurses Natviga & Gundersenba (2007) argued that there is a direct correlation between stressful work environment and patient safety. WHO (2009) further explained that failures to cope with stress can result for instance in work errors, poor decision-making and poor team performance thus compromising patient safety.

According to Health and Safety Executive (HSE) (2013):

> Fatigue is a decline in mental and physical performance that results from prolonged exertion, sleep loss or disruption of the internal clock. (HSE 2013.)

They reiterated that poorly designed shift-work with inadequate time for recovery can cause fatigue, thus may also cause ill health, injuries and accidents (HSE 2013). Similarly to stress, fatigue affects decision-making, induces decreased awareness, slower reactions and underestimation of risk hence risking patient safety. (WHO 2009; HSE 2013.)

2.1.4 Work environment

Health care setting as a work environment presents many defences that aim to prevent adverse safety events. However, decisions of designers and top level management enhance these defences or compromise them by enabling latent conditions such as outdated guidelines, remain in the work practices. (Royal College of Nursing 2013.)

Humans are prone to mistakes and failures and as such can deliberately violate patient safety. Instead of attempting to make humans less susceptible to failures it is more effective to make the work environment less susceptible to human behaviour and active failures (Reason 2000). Royal College of Nursing (2013) enumerated several defences such as personnel training, alarms and care protocols. These defences protect potential victims and assets from safety hazards or accidents. However, these layers are not intact and should be periodically monitored and evaluated. (Reason 2000.)

2.2 Technology Adoption theory

Nurses and health care professional have critical and important duty in deciding effectively independently or as a group in every department of their working environment. Their task demand stress tolerance and ability to solve mitigating problems. High standard of care and competency is always expected from nurses and other health care personnel. In addition, there are constant varieties of new technologies and equipments that nurses and health care workers need to master and utilize in their line of duty. However, this necessitates for constant and continuous training and education of health professionals to achieve desired professional growth. (Nursing and Nurse Education in Finland 2011.)

Rogers (2003) postulated and described the decision-making process as an information-seeking and processing activity in which an individual is impelled to decrease unpredictability about the benefits and disadvantages of an innovation. According to Rogers (2003), the innovation-decision is a five step process and

occurs in a time-ordered sequence. The five steps are (1) knowledge, (2) persuasion, (3) decision, (4) implementation, and (5) confirmation. Generally, every individual is motivated to inquire knowledge about a new innovation and requires convincing in utilizing it. After introduction of a new technology, an individual decides to adopt or refuse it. Initially, conscious effort is made to ascertain the benefit(s) of the innovation and finally the individual fully utilizes the technology or intervention if the technology is useful and beneficial. Graph 1 presents the overall illustration of the decision-innovation process.
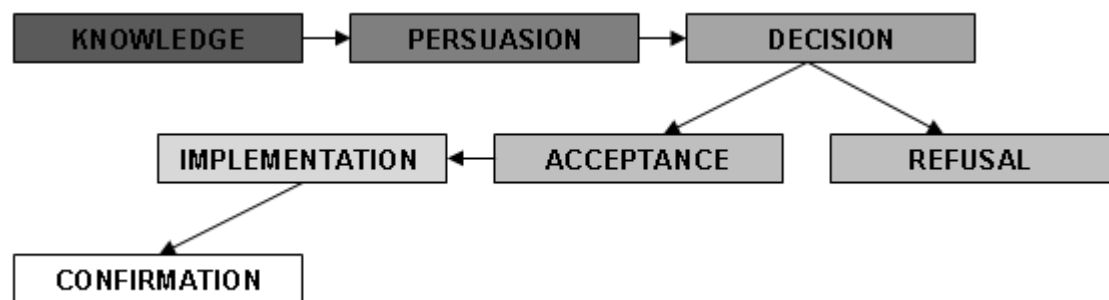
GRAPH 1. Stages of Decision Innovation Process (Adapted from Rogers 2003.)

2.2.1 Knowledge

The innovation-decision sequence commences with the knowledge or awareness phase. An individual acquires information about the presence or availability of an innovation. The most common and important questions during this stage may include "What?", "Why?" and "How?''. These are critical questions when an individual strives to investigate the purpose of the innovation and its functions. (Rogers 2003, 21). For instance, lack of knowledge by the perioperative team members, support personnel, and management of the "why" and "how" of the debriefing process can result in a lack of understanding and enthusiasm in its implementation. (Conley, Singer, Edmondson, Berry & Gawande, 2011; Borchard, Schwappach, Barbir & Bezzola 2012.)

The type of knowledge that represents determination whether an innovation exists is connoted as awareness knowledge. It is knowledge that motivates people to

learn more about new innovations or apply new findings or methods. The second type of knowledge is known as How-to-knowledge. It harbours information regarding to the proper utilization of an innovation. Consequently, new technologies and new innovations may not be optimally utilized due to lack or insufficient knowledge on efficient utilization (Spotts 1999.). The individuals' attitude also models the adoption or rejection of an innovation.

2.2.2 Persuasion

The persuasion stage usually occurs when the individual or groups of individual have opposing or positive attitude concerning the new technology or innovation. It should be noted that the formation of affirmative or un-affirmative attitude towards a new innovation does not necessarily result in to adoption or rejection (Rogers 2003, 176.). Generally, an individual creates his or her own perspective or impression after information regarding the innovation has been received.

Rogers (2003) lamented that the knowledge stage is characterised mostly by cognitive behaviour whilst on the contrary the persuasion stage is dominated by affection. Hence, the individual is committed more passionately and sensitively to the technology or innovation after education on the use of it. The individuals' opinions and attitude about the innovation is affected by the innovations functioning (benefits) and the social environment (friends, family members, peers, team mates and so on). Continuous information search by individual in assessing and evaluating the innovation assist in informed decision. (Sherry 1997, 70.)

2.2.3 Decision

The decision stage offers an individual or groups of individual to accept or reject the technology or innovation after deliberate consideration and evaluation. According to Rogers (2003), adoption is the total utilization of a technology as the suitable choice of action accessible where as rejection is the refusal in using a technology or innovation. The likelihood of adopting a new innovation increases

when it is tested or trials are initially initiated prior to full implementation. Generally, individuals experiment or test new methods and technology to ascertain it feasibility and benefit before deciding.

There are two major types of rejection: namely active and passive rejection. When an individual tries a technology and considers accepting it for usage but later concludes not to adopt it, it is termed as active rejection. In addition, when an individual discontinues using an innovation after previously adopting is also an active rejection. However, in passive rejection or non-adoption the person or individual does not even consider or think of accepting or adopting the new technology at all. In cultures where collectivism is dominant, group or team may influence the acceptance of an innovation and can translate personal innovation decision into a group or collective innovation decision. (Rogers 2003.)

2.2.4 Implementation

The implementation stage is the action or execution phase as the technology or innovation is put into use. In this stage, the individual expects new findings or risks regarding the use of the technology. The unknown benefits and the end result are of prime concern and a challenge at this stage. Technical assistance and support maybe offered by a change agent or supervisor to the implementer to decrease the uncertainties. The typical feature at this stage of the model is the process of reinvention. The definition by Rogers (2003) best describes the actual meaning of reinvention quoted as:

> Reinvention is the degree to which an innovation is changed or modified by a user in the process of its adoption and implementation. (Rogers 2003, 180.)

2.2.5 Confirmation

At this stage of the model, the individual has decided and seeks for support to strengthen the decision. One may change his or her stance on accepting an

innovation when conflicting information about the technology is presented (Rogers 2003, 189.). Undoubtedly, most individuals inquire about messages and information that support and endorses their chosen decision. As a result, individual's perception and attitude becomes paramount during this stage.

Future adoption or continuous adherence or rejection of an innovation depends on the attitude of the individual and the adopting support. In case there is discontinuance of an innovation, the individual may replace it with a better innovation available (replacement discontinuance) or the individual totally discontinues the use of the innovation due to unsatisfactory results or performance (disenchantment discontinuance). When the specific need of the individual is satisfied, it may result in the rejection of the technology or innovation. This stage enforces planned human behaviour especially attitudinal behaviour. (Rogers 2003.)

3   SURGICAL SAFETY CHECKLIST IN OPERATING UNITS

In 2007, World Alliance for Patient Safety initiated a global program 'Save Surgery Saves Lives' in order to reduce surgical adverse events (WHO 2008). The initiative aims to minimize surgical risks by utilizing a checklist. The utilization of 19-point checklist (APPENDIX 2) ensures that the perioperative team consistently follows a few critical safety steps. (WHO 2008.)

3.1   Overview of WHO surgical safety checklist

The effect of WHO surgical safety checklist on reduction of adverse events has been studied excessively in recent years. In one of the most comprehensive global research by Haynes et al. (2009) revealed that deaths declined from 1,5% to 0,8% and other complications from 11,0% to 7,0% after introducing the checklist. In high GDP countries the deaths declined from 0,9% to 0,6% and other complications from 10,3% to 7,1% (Haynes et al. 2009). Pauniaho, Lepojärvi, Peltomaa, Saario, Isojrvi, Malmivaara &Ikonen (2009) lamented that when the checklist is utilized 31 times it prevents at least a complication and when it is utilized 333 times a patient death is averted.

On the basis of the numerous benefits of the checklist, WHO recommended the use of the checklist in all operating units globally (Pauniaho et al. 2009). In 2009, the surgical checklist was translated into Finnish language and re-modelled for domestic hospital utilization in collaboration with Finnish health authorities. The success of it also depends on the modification of the checklist to fit local standards and routines. Conscientious commitment of institution leaders and heads of theatre units is important for effective implementation of the checklist. In addition, nursing staff, anesthesia personnel and medical doctors must prioritize patient safety as very essential in the unit and the checklist acts as a safety intervention. (WHO 2008.)

World Health Organization's surgical safety checklist consists of three distinct phases, namely: sign-in, time-out and sign-out. These phases present sets of activities that are to be implemented before moving to a next phase. All these activities are meant to be confirmed aloud with simple short responses that describe the situation briefly, such as "yes" or "over 500ml, noted". When an item of the checklist is not confirmed, it must be completed before moving on to the next phase. However, if check is not confirmed, the item in the checklist must be left as unmarked. The perioperative team members responsible for the following phase are to be notified of any unconfirmed items of the checklist in the previous phase. (WHO 2008.)

3.1.1 Sign-in

Sign-in phase is implemented before induction of anesthesia. Ideally, the anesthesiologist or nurse anesthetist requests the sign-in check when the anesthesia preparations are ready. The checklist coordinator would then verbally review with the patient or the perioperative team following issues: patient identity, correct procedure and site, visually confirm site marking, pulse oxymeter is on the patient and functioning, risk of blood loss, airway difficulty, allergic reaction and completions of full anesthesia safety check. (WHO 2008.)

3.1.2 Time-out

Time-out is implemented immediately before skin incision and would ideally be requested by the operating surgeon when he is ready to start. The items to be checked in this phase are: Team members know each other by name and role, team pauses shortly prior to surgery commencement, confirm audibly that they are performing the correct operation on the right patient and surgical site, and ensuring that the prophylactic antibiotics have been administered. (WHO 2008.)

3.1.3 Sign-out

Sign-out is implemented during or immediately after wound closure. Ideally, anesthesiologist or nurse anesthetist requests the sign-out check when instruments are counted and the operation is ending. In this phase, the perioperative team reviews together the operation that was performed including following items: completion of sponge and instrument counts, labelling of any surgical specimens, checking for equipment defects or concerns that requires attention, and vital plans and concerns in respect to postoperative management and recovery prior to transfer of patient from the theatre unit to the postoperative anesthesia care unit. (WHO 2008.)

3.2 Challenges in the implementation

The implementation of the surgical safety checklist hinges on several structures of an organization and socio-cultural disposition. Several studies have outlined and described the different types of challenges affecting the successful implementation of the safety surgical checklist (Vats et al. 2010.). This part of the framework involves reviewing literatures pertaining to pressing barriers and problems during the utilization of the checklist.

A research conducted by Vats et al. (2010) lamented and deliberated on the practical challenges confronted in the usage of the surgical checklist in hospitals in United Kingdom. The most common and serious challenge posed to the usage of the checklist was hierarchy in the operating unit. Majority of hospitals in United Kingdom have steep hierarchy system as an organizational structure. A steep hierarchy is an organizational structure with more management personnel compared to subordinates (Anderson & Brown 2010.). The research also revealed that the safety surgical checklist has higher probability of successful completion with significant support from the anesthetists and surgeons as well as increased motivation and confidence of the leading nurse.

Moreover, timing of the checks contained in the list was perceived as a major obstacle (Vats et al. 2010). In the research, some anesthetisiologists revealed that majority of the items contained in the time-out section needs to be transferred to the sign-in part of the checklist also. Surgeons should also be present during the sign-in phase. Some perioperative personnel also revealed the difficulty of checking the identity of a patient after draping. Checking the name bands after draping can compromise the sterility. Inappropriate timing could also be perceived in situations when sample are transported to the pathological laboratory during the surgery without proper check. The checklist was also considered to be time consuming especially during busy and emergency situations. (Fourcade, Blache, Grenier, Bourgain & Minvielle 2012.)

In addition, some personnel usually the perioperative personnel reported the problem of duplication of the checks in several stages of the list. This may generate the problem of irritability and nuisance despite the fact that repetition in the different stages of the checklist helps to improve the overall safety in the process (Degani & Wiener 1993.). It recommended that reduction of duplicated checks would improve usage of the surgical safety checklist. Language ambiguity in the checklist is also a major challenge in the utilization of the list. For instance, ticking 'yes' for response to allergies means that the patient has had allergy or that the risk for allergy had been checked. Majority of the theatre nurses did not understand part of checks contained in the surgical safety checklist. This posed as a major obstacle in completing the checklist (Fourcade et al. 2012.).

Finally, numerous pertinent issues and problems such as misuse of the checklist, patient's attitude towards answering the questions, unaccounted or omitted risks and poor communication between the surgeons and the anesthesiologists could also pose as challenges during the implementation of the checklist (Fourcade et al. 2012.). In the world of aviation where the checklist originated from, it is well-noted that a poorly conducted checklist can offer false feeling of safety. Thus, the checklist should be appropriately and duly conducted prior to surgery (Degani & Wiener 1993.).

The consequences of poor implementation of the checklist tend to increase existing teamwork and cultural divisions and weaken the inter-professional dynamics of the perioperative personnel. The lack of proper introduction of team members and senior surgeons during completion of the checklist has resulted in discord between anesthetists and surgeons during time-out phase. There is a problem of isolation and neglect of some team members usually when surgeons and anesthesiologists decide to conduct the checklist without involving other team members.(Lingard, Espin, Rubin, Whyte, Colmenares & Baker 2005.)

4   PREVIOUS STUDIES

Numerous studies and researches pertaining to WHO Surgical Checklist have been widely conducted in Europe after its inception in 2009. Various authors have conducted studies on the effects it has on teamwork, communication and patient safety in totality. Some researchers also focused on the challenges associated with the utilization of surgical safety checklist. Out of these findings, few researches have revealed disparities in the attitude of surgical professionals towards the surgical safety checklist. Whereas other studies have lamented significant support for the utilization of the checklist by perioperative nurses and anesthesiologist other studies have proven otherwise. (Vats et al. 2010.)

Literatures and articles were reviewed from various disciplines including, nursing, field of medicine and anesthesiology with a time lap of 2005 to current date. The databases from which article search was conducted comprises of PubMed, SAGE journals, Science direct and EBSCO. The key words or search terms included compliance, barriers, surgical safety checklist, teamwork and patient safety.

Approximately 630 results were received and were limited to about 40 research articles based on the year of publication, language and availability of the article. The research articles utilized for this research were limited to six current and significantly important articles that reflect the goals and objectives of this research. Scandinavian articles were emphasized. However, only few related researches had been conducted in Finland and other Scandinavian countries. Thus, most of the articles obtained were from other countries (APPENDIX 1).

A research conducted by Wauben et al. (2011) investigated the difference in attitude of surgical team members in regards to non-technical skills. This research was conducted in The Netherlands. An open-ended questionnaire was employed in this research based on current state or quality of communication, teamwork and situational awareness in the operation theatre. The result revealed that there was significant difference especially between surgeons and other team members (p=0.001).The rating for teamwork was significantly different between all team

members (P= 0.005). Situational awareness was viewed differently especially in gathering information between surgeons and other team members (p=0.001). Approximately, 72-90% of anesthesia nurse, anesthesiologist, and operating room nurses view the routine debriefing and team briefing as inadequate. The research showed numerous differences in several aspects in attitudes between surgeons and other surgical team members regarding communication, situational awareness and teamwork.

Haynes, Weiser, Berry, Lipsitz, Breizat, Dellinger, Dziekan, Herbosa, Kibatala, Lapitan, Merry, Reznick, Taylor, Vats & Gawande (2011) carried out a research to investigate the correlation between safety attitude of clinicians and decreased morbidity/mortality after the implementation of a surgical safety checklist. The design was pre- and post-intervention quantitative survey carried out in eight different hospitals in Boston, United State of America. There were 281 experienced preoperative clinicians involved in the research and they had a mean safety attitude questionnaire score of 3,91 out of 5 (5 represents the best form of safety attitude).

Subsequently, there were 257 experienced postoperative respondents with a mean of 4.01 out of 5. The increased degree of attitudinal awareness in the SAQ score at every section correlated to a reduced complication postoperatively. Approximately 80% of the respondents considered the utilization of the checklist to be easy in their code of work whereas 19.8% of the participants viewed it as time demanding to complete the checklist. In general, 78% of the respondents perceived that the checklist prevented both major and minor errors and 93% of the respondents preferred the checklist to be utilized in case they have surgery. In conclusion, it revealed that postoperative improvement in the operating unit was linked to in the boost in attitude towards teamwork and safety climate among perioperative personnel. The implementation of the checklist was linked to improvement in teamwork and safety culture in the theatre units. (Haynes et al. 2011.)

Taylor et al. (2009) compared the opinions of nurses, anesthesiologists and surgeons on the actual effect of surgical safety checklist in sustaining team work

and safety culture in the perioperative setting. This quantitative research was conducted in Ireland. Questionnaires were administered to respondents eighteen months after the introduction of a modified surgical checklist based on World health organization. The most significant finding was the improvement in team culture associated with the introduction of the surgical safety checklist. Respondents highly ascertained that the checklist had improved the overall patient safety in the operating unit. Respondents univocally agreed to the statement that the checklist offered convenience and moreover, limited time was required during checklist completion. All respondents preferred that the checklist should be used when they assume the situation of a surgical patient.

Takala et al. (2011) studied the assimilation and possible advantages of the surgical checklist in different operating units. This was a pilot research conducted on national level in Finland. This was a survey to collect information for improving and endorsement of the national surgical checklist. The questionnaire was similar to the WHO checklist and it is also composed of questions pertaining to patient safety, teamwork and communication in the perioperative setting. Teamwork and cooperation were measured by the knowledge of names and roles among team members during surgery. In the anesthesia group, it increased from 65.7% to 81.8%, amongst the surgeon it increased from 71.1% to 83.6% and also improved from 87.7% to 93.2% among nurses which was statistically significant.

There was considerable improvement in communication and fewer communication errors reported between anesthesiologists and surgeons as they duly discussed critical events preoperatively and during the time out stage. The results of this studies reiterated that the checklist significantly improved surgical team's recognition of patient safety related matters, the procedures and expected outcomes. These findings buttress the benefit of the usage of WHO surgical safety checklist in diverse surgical fields. (Takala et al. 2011).

A follow-up research was conducted by Nilsson, Lindberget, Gupta & Vegfors (2010) to investigate the effect of the surgical checklist on patient safety and personnel attitudes after one year of introduction of the checklist. The research was conducted in Sweden. The research included surgeons, anesthetic and

perioperative nurses, anesthesiologists, and nurse assistants working in the operating room. It comprised of 147 surgeons, 30 anesthesiologists, 63 anesthetic nurses, 44 operation nurses and 47 nurse assistants. Approximately 93% of the respondents considered the time out phase of the checklist contributed significantly to the increased patient safety where as 1% viewed it otherwise. There was no significant variation between the various perioperative professionals. Approximately 86% of the respondents viewed the time-out phase as a platform and chance to determine, evaluate and solve problem as a team. As part of the safety checks confirmation of patient identity, correct procedure, correct surgical site and allergies or contagious diseases confirmation was seen as very important by 78-84% of the responders. Personnel attitude to surgical checklist was positive and approximately 72-99% agreed to the various items contained in the checklist. In conclusion, perioperative personnel showed a positive adherence and acceptance of the usage of the checklist after a year of introduction in two main hospitals in Central Sweden.

Rydenfält, Johansson, Odenrick, Åkerman & Larsson (2013) researched into the actual implementation of the checklist in operation units in order to outline the anomalies with the aim of determining improvements. This research was conducted in Sweden both quantitative and qualitative approach was employed as research design. The compliance was explored quantitatively whilst the amount of effort channeled into the time out stage and the nature of deviation was explored qualitatively descriptively. The result revealed that there was high compliance rate during the research period. Out of the 24 surgeries the checklist was used in 23 of them representing 96%. However, when critical investigation was carried out it was observed that out of the total 240 checks only 130 were properly investigated which accounts for 54% of the actual compliance.

It was concluded that the checklist was most often not followed in its actual or intended utilization process. Most important checks which facilitate communication were usually neglected. The conduction of the time-out stage most often lacked team work and effort. Personnel's perception of risk and the recognition of the importance of the different checks contained in the list significantly influence the utilization. The author recommended continuous training and education geared

towards addressing the concept of risk and benefits of the checklist items in order to improve compliance and team work in the operation theatre. (Rydenfält et al. 2013.)

5   RESEARCH QUESTION

The main aim of this research was to investigate the attitudes of perioperative personnel towards safety culture and surgical safety checklist in the operating units in KPKS and OYS. In addition, the aim of the research was to investigate team work climate, quality of communication and collaboration that exist between different perioperative staff in both institutions. Moreover, the aim was to determine the challenges encountered by perioperative personnel during utilization of the checklist. This research will enlighten measures to improve assimilation of the checklist into work activity can be enhanced more effectively. Hence, the research problem seeks to provide answers to the following questions:

1. What were the differences in attitudes of perioperative personnel towards safety culture in KPKS and OYS?

2. What were the differences in attitudes of perioperative personnel towards the use of the surgical safety checklist in KPKS and OYS?

3. What were challenges encountered during the implementation of surgical safety checklist in KPKS and OYS by theatre personnel?

4. How can the implementation of surgical safety checklist be developed more effectively?

6   RESEARCH METHODOLOGY AND DATA COLLECTION

The research was conducted in two regional hospitals in Finland. The research setting included perioperative personnel from the OYS and KPKS. In KPKS, perioperative personnel from the day surgery unit (PÄIKI) as well as the central operating unit were involved in this research. The central operating unit perioperative personnel in OYS were also involved in the research.

6.1   Comparative descriptive research

This research was conducted using the descriptive quantitative research design. A simple questionnaire was developed and utilized in the data collection process. Questionnaire survey is the most common used design in quantitative research. The questionnaire was guided by safety attitude questionnaires in the operating unit (Centre for Health Care Safety and Quality 2002.).The questionnaires included 29 closed-ended questions with multiple choices.

The first section of the questionnaire consisted of demographic information. They provided information of the participant's hospital, respondent's age, work experience, role in operation unit and type of employment. Question one pertains to quality of inter-personal communication of team members in the operating unit. Statement two to nine seeks to retrieve information about the quality and efficiency of the teamwork and cooperation in the operating room. Statement 10 to 15 seeks to obtain respondent's information about safety culture in the operating unit. Statement 16 to 28 aims to retrieve information about respondents' attitude about the safety surgical checklist. The last item 29 is a conclusive question about respondents' acceptance to the surgical safety checklist assuming the role of a surgical patient.

The closed-ended statements are simple to compute statistically, however it also limit the participant's scope of response. As a result, majority of social science researchers adopt the Likert-type scale as it can be effortlessly analyzed using

statistical tool (Jackson 2009.).The questionnaire was first developed in English language and later into Finnish by the researchers .The questionnaire was reviewed and modified with the assistance and support of researcher's supervisor in correcting any ambiguity.

6.2   Data collection

According to Moule & Goodman (2009), data collection is a procedure of preparing and gathering data with the aim and objective of obtaining information for further analysis (Moule & Goodman 2009.). Simple random sampling was employed in order to achieve unbiased result during the research. This basically involves selecting respondents from population without predictable or definite method of choosing them. This implies that all the respondents have equal likelihood of been selected from the same research population and thus, the total population should be known (Houser 2008).

The research targeted all perioperative personnel in KPKS and OYS. The questionnaire was initially test piloted prior to distribution. A pilot research was undertaken by the researcher using six sample questionnaires (n=six) in English and Finnish. The target group for the English version was student studying to be registered nurses and the Finnish version was administered to three perioperative nurses. The total number of respondents set by researchers was approximately 70 perioperative personnel but ultimately 91 respondents voluntarily participated in this research. None of the returned questionnaires were rejected and thus, all were suitable for further statistically analysis.

The total population of respondents in the catchment area was an estimated 360 perioperative personnel that consisted of registered nurses, nurse anesthetists, surgeons and anesthesiologists working as either part-time or full-time. The respondents (n=91) represented 25,3% of the total perioperative personnel in both OYS and KPKS. Approximately 52 respondents from OYS and 39 respondents from the KPKS participated in this research. Seven physicians from

KPKS participated in this research. Subsequently, 17 physicians from OYS also participated in this research.

Data was collected electronically through Webropol. Electronic based questionnaires were sent to random perioperative personnel by e-mail with the heads of the operating units in the respective hospitals as our contact persons. Questionnaires were distributed in the form of web link which respondents completed and were automatically received by the researchers. Data collection was conducted between 15 May and 5 June 2013.

6.3 Data analysis

The data was analyzed using both Webropol and SPSS software. The Webropol generated basic report and detailed analysis was achieved by utilizing SPSS. The respondents answered to statements on teamwork, safety culture and attitude of health professional towards the checklist. A 4-point Likert scale was adopted for this research, where one indicated strong disagreement and four indicated strong agreement. In addition, the questionnaire included an alternative X that indicated no experience. Comparative approach was employed by the researchers to analyze the data obtained from the two hospitals. The use of diagrammatic and pictorial aids for instance, tables and graphs were employed in this research to demonstrate the actual representation of the obtained results.

6.4 Ethics and reliability

The research benefited the participating institutions by providing information about the personnel's attitudes of WHO surgical safety checklist. However, the intention of this research is not meant for prediction and forecasting purpose but rather to investigate and describe the situation in these two hospitals.

The reliability of the research was maintained by utilizing current studies. Hence, the previous studies utilized in this research were published not late than 2008. In

addition, limitations were set to utilization of only scientific researches and official reports. All reference material was cited accurately and plagiarism and misinterpretation were avoided.

The data was collected with questionnaires (Webropol) was handled with utmost confidentiality to protect the anonymity of the participants (Parahoo 2006). The e-mail including the cover letter and an electronic link to the questionnaire was sent to respondents through a contact person in the facility. These contact persons were nurse managers and secretaries. In addition, the participants were provided opportunity to contact researchers by e-mail with any concern they may have had about the questionnaire.

Questionnaires were tested by sample respondents to eliminate any ambiguity. However, some inconsistencies were unnoticed until the publication of the questionnaire. The necessary corrections were made and corrected questionnaire was sent to respondents. The responses to the earlier version of the questionnaire were decided to be kept as the inconsistencies were however noticeable, easily and logically disregarded as the latter part of the questionnaire followed a pattern that was followed until the last section's error.

The collected data was handled fairly and accurately to avoid misinterpretation and modification of results to researchers' benefit. The participation to this research was voluntary and participants were provided with cover letters explaining the ethical considerations including their rights to privacy and anonymity. In addition, the questionnaires and information distributed to participants were unambiguous and understandable to all participants. Jargons and uncommon terminologies were avoided in the questionnaire (Parahoo 2006.).

7 FINDINGS OF THE RESEARCH

This section presents results of the research. It entails the analysis of the returned closed-ended questionnaires. The research computed and compared the attitudes of perioperative personnel towards safety culture and surgical safety checklist in two hospitals in Finland. It also highlighted the level of constraints and challenges encountered during the implementation of the checklist in both hospitals. The period of data collection was two weeks. The demographic characteristic of the respondents was critical to this research due to comparative nature of the research. The comparison of perioperative personnel was categorized into nurses and physicians.

7.1 Frequency distribution of demographic data of the respondents

The total number of respondents from KPKS was 39 health professionals representing 42.9%. They included seven physicians and 32 perioperative nurses. However, in OYS the total number of participants was 52 respondents also representing 57.1%. It consisted of 17 physicians and 35 perioperative nurses. The perioperative nurses comprise of nurse circulators, anesthesia nurses and scrub nurses. The average age of the total respondents in this research was 43.7 years. The maximum age of the participants was 64 years whilst the minimum age was 24 years. The average of respondents in KPKS was approximately 46.5 years. The minimum and maximum age range of the respondents in KPKS was between 27 years and 64 years respectively. The mean age of respondents in OYS was 42.1 years. The age range of respondents in OYS was 24 years and 59 years respectively. Out of the 91 respondents, 24.2% were male and the remaining 75.8% were women.

Among the respondents in this research, permanent worker were 87%, part-time workers 3% and substitute workers 10%. Regarding the respondents years of perioperative experience, the mean of the respondents was 14.5 years with the minimum and maximum years of experience in the perioperative field as one year

and 35 years respectively. The minimum and maximum year of experience in OYS was one year and 30 years respectively. In KPKS, the respondent's year of experience in the area of perioperative ranges between two years to 35 years. The mean year of experience of respondents in KPKS was 14.5 years and that in OYS was 12.9 years.

The important and relevant demographic characteristics of the respondents have been presented in tables in this section of the research. Information deemed relevant and useful to our research have been outlined in this part of the paper. The means, standard deviations and the range of demographic features of respondents reported in Table 1.

TABLE 1. Detailed statistical analyses of demographics of the respondents.

Demographic Characteristics	Total Respondents (N)	Minimum	Maximum	Mean	Standard deviation
Age	91	24	64	43,7	9,91277
Duration in Perioperative field	91	1	35	14,9	9,92394
Duration in current work	91	1	36	13,8	9,76801
Duration in medical field	91	2	36	18,4	9,92708

The rationale behind the selection of the statistical tool is explained in this paragraph. Normality test of variables was conducted in this research before suitable statistical method was selected. The Mann-Whitney U-test was utilised to compare the difference between the variables. The Mann-Whitney U test is similar to t-test but the difference is that the Mann Whitney U-test is only applied to non-parametric data. The data complies with all the four assumptions underlining Mann-Whitney U test. The data from the Likert scale was ordinal (ranked scale) and deviate from the assumption for T-test (normality). The normality of the data was checked by using the histogram and the Kolmogorov-Smirnov test. This explains the rationale in utilizing this statistical tool. This was employed to determine if there were significant attitudinal differences towards safety culture and the checklist between perioperative personnel from both hospitals.

The significance of the difference between the groups was determined by using output file which is relatively convenient to use. The computed probability (p) when it exceeds 0.05, it implies that there is no significant difference between the two groups under analysis. On the contrary, when the computed probability (p) is less than 0.05, then there is significant difference between the two groups. This statistical method fails to predict which group is better than the other.

7.2 Perioperative personnel attitude towards safety culture in the operating units

Table 2 presents the attitude of respondents towards safety culture in the unit. The research statements are presented in the first column from left. The second column presents the respondent groups, namely KPKS Nurses, OYS Nurses, KPKS Physicians and OYS Physicians. The response percentage to each Likert scale value: disagree strongly, disagree, agree and agree strongly, are presented in the next four columns. The last column presents the computed probability (p) value. Table 2, Table 3, Table 4 and Table 5 follow this same formula. However, a number of research statements varies between tables.

There is widespread adherence to rules and clinical guidelines among respondents in both hospitals. Approximately 97% of the nurses in KPKS agreed to adherence to safety rules and guidelines as to 86% of the nurses in OYS (p<0.05). Thus, there is significant difference among the nurses between the hospitals. Approximately 94% of the nurses in KPKS and 91%of nurses in OYS agreed to the statement that there is mutual responsibility for patient safety (p>0.05). As a result, there was no significant difference between nurses' responses.

Significant difference (p<0.05) between nurses' responses were identified in the following statements: "There is sufficient time put into safety" and "there is sufficient resources put into safety". Furthermore, 94% of the nurses in KPKS agreed to the statement that sufficient time was invested in patient safety whilst 68% of the nurses in OYS were of the same opinion. Similarly, concerning the

investment of resources 72% of the nurses in KPKS against 52% of the nurses in OYS agreed to the statement (p=0.039). Despite the significant differences, the majority of the nurses in both hospitals agreed to these statements and believed that there is sufficient time and resources put into safety.

TABLE 2. Attitudes of respondents towards safety culture in the unit.

SAFETY CULTURE	Respondents	Disagree strongly	Disagree	Agree	Agree Strongly	Asymp. Sig.
Widespread adherence to rules and clinical guidelines	KPKS, Nurses	0%	3,1%	18,8%	78,1%	0,036
	OYS, Nurses	2,9%	8,6%	37,1%	48,6%	
	KPKS, Physicians	0%	14,3%	28,6%	57,1%	0,533
	OYS, Physicians	0%	0%	47,1%	52,9%	
All the personnel take responsibility for patient safety	KPKS, Nurses	3,1%	3,1%	21,9%	71,9%	0,069
	OYS, Nurses	2,9%	5,7%	42,9%	48,6%	
	KPKS, Physicians	0%	28,6%	57,1%	14,3%	0,223
	OYS, Physicians	5,9%	11,7%	29,4%	52,9%	
Haste compromises patient safety	KPKS, Nurses	9,4%	21,8%	34,4%	34,4%	0,766
	OYS, Nurses	2,9%	28,6%	42,9%	25,7%	
	KPKS, Physicians	0%	57,1%	28,6%	14,3%	0,689
	OYS, Physicians	5,9%	41,2%	47,1%	5,9%	
Patient safety is a high priority	KPKS, Nurses	3,1%	3,1%	9,4%	84,4%	0,37
	OYS, Nurses	2,9%	0%	22,9%	74,3%	
	KPKS, Physicians	0%	0%	28,6%	71,4%	0,079
	OYS, Physicians	5,9%	0%	35,3%	58,8%	
There is enough time put into safety	KPKS, Nurses	0%	6,3%	71,9%	21,9%	0,003
	OYS, Nurses	2,9%	28,6%	62,9%	5,7%	
	KPKS, Physicians	0%	14,3%	42,6%	42,6%	0,1
	OYS, Physicians	5,9%	11,7%	58,8%	23,5%	
There is enough resources put into safety	KPKS, Nurses	3,1%	25,0%	59,4%	12,5%	0,039
	OYS, Nurses	11,4%	37,1%	48,6%	2,9%	
	KPKS, Physicians	0%	14,3%	85,7%	0%	0,999
	OYS, Physicians	5,9%	17,6%	6,7%	5,9%	

NOTE! Percentages may not tally to 100% due to rounding and absence of "no experience" responses.

Physicians in both hospitals were identified to share similar views on safety culture. Some slight differences in the distribution of answers on the Likert scale were evident but not significant. Generally, physicians viewed the safety culture in their hospital as positive.

Table 3 consisted of eight statements pertaining to respondents' attitudes towards teamwork. Significant differences (p<0.05) between nurses were identified in all statements except two; "Appropriate feedback is received about performance" and "Physicians and nurses work together as a well-coordinated team". Majority of

nurses from both hospitals agreed to these statements; 84% in KPKS and 89% in OYS on feedback (p=0.109) and 78% in KPKS and 74% in OYS on team coordination (p=0.88) respectively.

TABLE 3. Attitudes of respondents towards teamwork in the unit.

TEAMWORK	Respondents	Disagree strongly	Disagree	Agree	Agree Strongly	Asymp. Sig.(p)
Appropriate feedback is received about performance	KPKS, Nurses	0%	15,6%	53,1%	31,3%	0,109
	OYS, Nurses	0%	11,4%	82,9%	5,7%	
	KPKS, Physicians	0%	14,3%	85,7%	0%	0,695
	OYS, Physicians	0%	29,4%	52,9%	17,6%	
Disagreement can be expressed in a constructive manner	KPKS, Nurses	0%	18,8	62,5%	18,8%	0,001
	OYS, Nurses	0%	31,4%	60%	5,7%	
	KPKS, Physicians	0%	14,3%	85,7%	0%	0,619
	OYS, Physicians	0%	29,4%	52,9%	17,6%	
Staff members know each other by first and last name	KPKS, Nurses	0%	0%	34,4%	65,6%	0,001
	OYS, Nurses	0%	25,7%	48,6%	25,7%	
	KPKS, Physicians	0%	42,6%	42,6%	14,3%	0,013
	OYS, Physicians	11,7%	47,1%	41,2%	0%	
There is generally a good team spirit among the staff	KPKS, Nurses	0%	0%	31,3%	68,8%	0,032
	OYS, Nurses	0%	5,7%	77,1%	17,1%	
	KPKS, Physicians	0%	0%	85,7%	14,3%	0,167
	OYS, Physicians	0%	0%	52,9%	47,1%	
Team members make sure their comments are heard	KPKS, Nurses	0%	12,5%	56,3%	31,3%	0,026
	OYS, Nurses	2,9%	20%	68,8%	8,6%	
	KPKS, Physicians	0%	14,3%	85,7%	0%	0,373
	OYS, Physicians	0%	11,7%	82,4%	5,9%	
	OYS, Physicians	0%	5,9%	76,6%	17,6%	
Team members appear eager to help one another	KPKS, Nurses	0%	6,3%	46,9%	46,9%	0,021
	OYS, Nurses	2,9%	22,9%	68,8%	5,7%	
	KPKS, Physicians	0%	14,3%	85,7%	0%	0,999
	OYS, Physicians	0%	5,9%	76,6%	17,6%	
Physicians and nurses work together as a well-coordinated team	KPKS, Nurses	0%	21,9%	75,0%	3,1%	0,88
	OYS, Nurses	0%	25,7%	68,8%	5,7%	
	KPKS, Physicians	0%	0%	100%	0%	0,283
	OYS, Physicians	0%	5,9%	64,7%	5,9%	
Staff is encouraged to report any safety concerns they may have	KPKS, Nurses	0%	12,5%	65,6%	21,9%	0,012
	OYS, Nurses	11,4%	20,0%	62,9%	5,7%	
	KPKS, Physicians	0%	14,3%	71,4%	0%	0,741
	OYS, Physicians	5,9%	17,6%	47,1%	23,5%	

NOTE! Percentages may not tally to 100% due to rounding and absence of "no experience" responses.

The questionnaire statements pertaining to communication divided views between these two hospitals. The attitudes of the nurses in KPKS on communication were identified to be more positive than their OYS counterparts. Nurses in KPKS agreed to the statements with following percentages; "disagreement can be expressed in a constructive manner" 82%, "team members ensures that their comments were

heard" 87% and "staff is encouraged to report any safety concerns they may have" 87% whereas percentages for these statements of nurses in OYS were 66%, 77% and 69% respectively.

Majority of the respondents perceived teamwork and team culture to be positive however a number of significant differences in response were identified in this section. Approximately 100% of the nurses in KPKS agreed to staff members knowing each other by first and last name whereas same figure for OYS was only 74% (p=0.001). Good team spirit was identified by 100% of KPKS nurses and 94% of OYS nurses (p=0.032). Team members also appeared eager to help each other according to 94% on KPKS nurses and 75% of OYS nurses (p=0.021).The statement that "staff is encouraged to report any safety concerns they may encounter" was perceived differently by nurses (p=0,012).

Unlike nurses, the physicians shared similar views in both hospitals and not much diversity was present in their responses. Even though there was a diverse distribution of responses on Likert scale, a great majority of physicians (>70%) in both hospitals viewed the teamwork positively and agreed to the research statements. However, one statement divided their views; whereas majority of KPKS physicians (57%) agreed to team members knowing each other by first and last name, majority of OYS physicians (59%) disagreed with this statement.

The questionnaire also attempted to examine the quality of communication and collaboration between perioperative personnel. Graph 2 presents the responses by nurses on the quality of communication and collaboration with perioperative personnel. Approximately 26% of the nurses in OYS viewed the quality of communication and collaboration with staff surgeons as inferior where as in KPKS approximately 37% of the nurses perceived it as inferior. Slight majority of nurses in KPKS viewed the collaboration and communication between them and staff surgeons as high whereas in OYS it was 74%. A vast majority of nurses in KPKS 84% viewed communication and collaboration with anesthesiologists as high where as in OYS it was 100%. There was high quality of communication between nurses and their colleague anesthesia nurses (100% of KPKS nurse and 94% of OYS nurses). 6% of OYS nurse did not have previous contact. In OYS, 95% of the

nurses viewed their communication with other OR nurses as good and 3% of the nurses' perception was low. In KPKS, all the nurses were of the same opinion that quality of communication and collaboration was high between them and OR nurses.
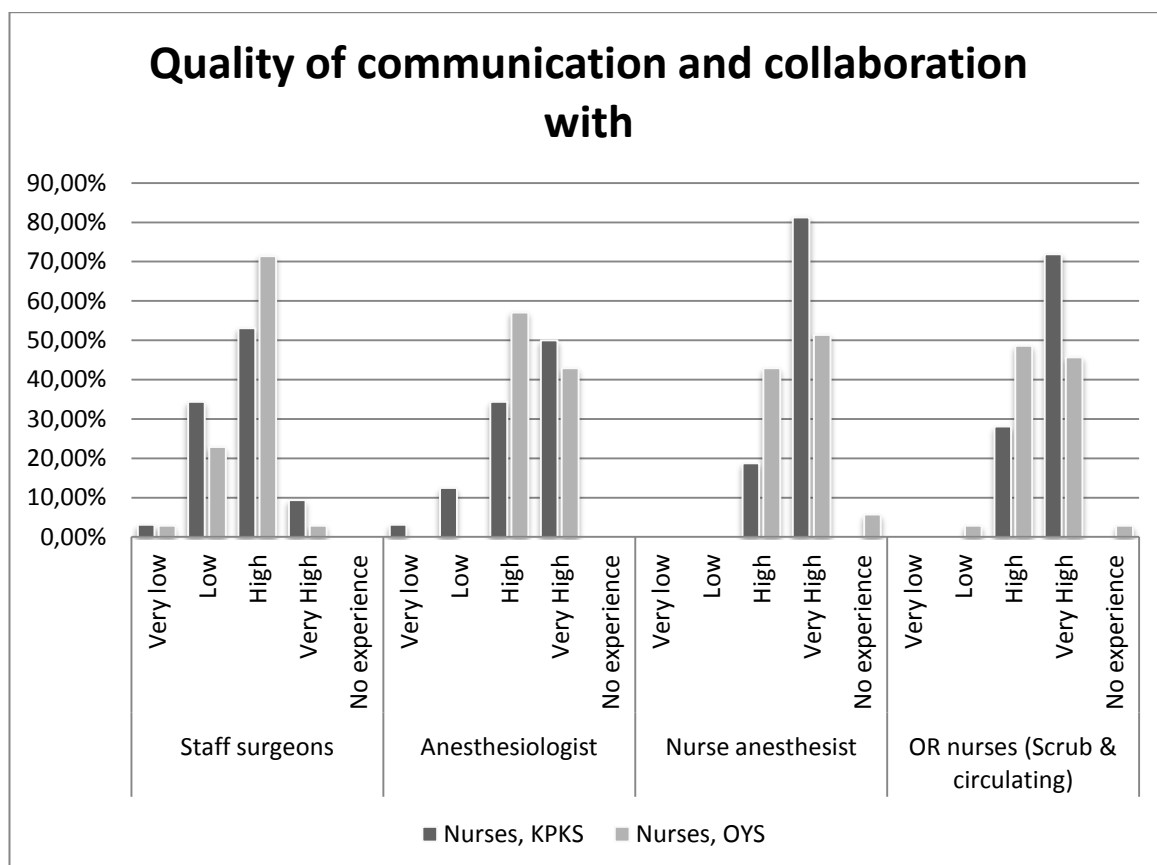
GRAPH 2. Quality of communication and collaboration perceived by nurses.

Graph 3 presents the responses on quality of communication and collaboration by physicians with the perioperative personnel. All physicians in KPKS and OYS viewed the quality of communication and collaboration with their colleague phycisians as high. They also perceived that the quality of communication and collaboration with nurse anesthetists whereas high with 12% of OYS physicians had no experience. All the physicians in OYS rated the collaboration and communication between them and OR nurses (scrub and circulating nurses) as of high quality. Approximately 86% of physicians in KPKS perceived their collaboration and communication with OR nurses as high whereas the remaining 14% viewed opposite.
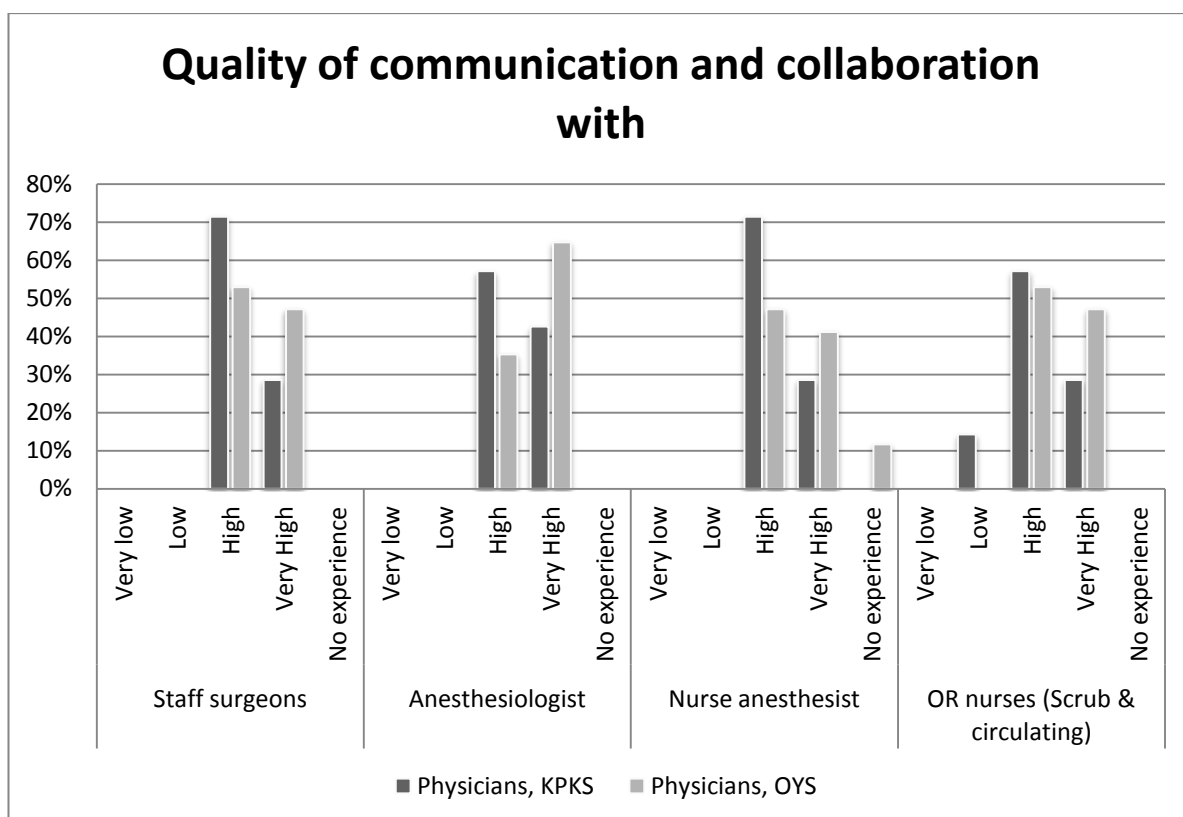
GRAPH 3. Quality of communication and collaboration perceived by physicians.

7.3   Perioperative personnel attitudes towards surgical safety checklist

There were no significant differences between nurses in KPKS and OYS on statement pertaining to the use of surgical safety checklist (Table 4). Unanimous majority of nurses (>93%) viewed use of SSC positively and agreed to the research statements. Nearly all the OYS and KPKS nurses (>98%) agreed to the statement that the checklist improves communication and collaboration between staff members (p=0,175).

Approximately 100% of the nurses in both hospitals agreed that the checklist significantly improves patient safety (p=0, 59).All the respondent nurses in OYS univocally admitted that the SSC is easy to utilize as to 93% of KPKS nurses (p=0, 41). Majority of nurses in KPKS (approximately 94%) perceived that the SSC was important to use in each patient case and introduction of the checklist in the theatre unit was a good decision. Relatively, all perioperative nurses in KPKS (100%) agreed to the questionnaire statement that the checklist was vital to

employ in every patient case and the decision to use the checklist in operation room was good.

TABLE 4. Attitudes of respondents towards utilization of SSC.

SSC	Respondents	Disagree strongly	Disagree	Agree	Agree Strongly	Asymp. Sig.
SSC enhances communication and collaboration among staff	KPKS, Nurses	0%	3,1%	37,5%	59,4%	0,175
	OYS, Nurses	0%	5,7%	51,4%	42,9%	
	KPKS, Physicians	0%	0%	85,7%	14,3%	0,373
	OYS, Physicians	0%	11,7%	41,2%	47,1%	
SSC improves patient safety	KPKS, Nurses	0%	0%	28,1%	71,9%	0,59
	OYS, Nurses	0%	0%	34,3%	65,7%	
	KPKS, Physicians	0%	0%	57,1%	42,6%	0,576
	OYS, Physicians	0%	5,9%	35,3%	58,8%	
SSC is easy to use	KPKS, Nurses	0%	6,3%	34,4%	59,4%	0,41
	OYS, Nurses	0%	0%	54,3%	45,7%	
	KPKS, Physicians	0%	0%	100%	0%	0,182
	OYS, Physicians	0%	0%	64,7%	35,3%	
It is important to use SSC in every case	KPKS, Nurses	0%	6,3%	21,9%	71,9%	0,521
	OYS, Nurses	0%	2,9%	34,3%	62,9%	
	KPKS, Physicians	0%	0%	100%	0%	0,036
	OYS, Physicians	0%	5,9%	41,2%	52,9%	
Implementing SSC was a good decision	KPKS, Nurses	0%	0%	31,3%	68,8%	0,927
	OYS, Nurses	0%	0%	34,3%	62,9%	
	KPKS, Physicians	0%	0%	85,7%	14,3%	0,067
	OYS, Physicians	0%	5,9%	35,3%	58,8%	

NOTE! Percentages may not tally to 100% due to rounding and absence of "no experience" responses.

Similarly, physicians shared the same positive view as nurses towards the utilization of the checklist. However, there were significant disparities expressed by physicians in KPKS and OYS with the importance of using the checklist. All the KPKS physicians (100%) strongly agreed to the use of the checklist in every case as to 94% of physicians in OYS (p=0,036). There was no statistical significance (p=0.067) between the physicians' responses in both hospitals to the statement: decision to introduce the checklist into operating units was a good plan.

Unanimously, all the respondents would prefer the checklist to be used in their care. A single respondent opposed to the use of the checklist his or her care assuming the situation as a surgical patient.

7.4 Perioperative personnel attitudes towards challenges in the implementation of surgical safety checklist

This section of the findings presents the challenges that perioperative professionals encounter during the utilization of the checklist (Table 5). It consisted of eight statements derived from reviewing different articles about barriers during implementation of SSC. No significant differences were identified between KPKS and OYS nurses in this section except for one statement; "It is difficult for staff members to observe time-out". Consequently, 75% of KPKS nurses disagreed to this statement where as similar percentage of OYS nurses (71%) agreed with it thus resulting significant difference (p=0,001).

The applicability of the checklist in every surgery was viewed as not feasible by approximately 23% of nurses in KPKS and 33% of nurses in OYS (p=0,603). Majority of the nurses (OYS nurses 97% and KPKS nurses 93%) rated the statement that filling the checklist did not consume too much time (p=0.197). The statement 'SSC causes irritation among personnel was not significant (p= 0,826) as perceive by 83% of KPKS nurses and 77% of OYS nurses. However, about 18% of KPKS nurses and approximately 23% of OYS nurses perceived the use of the checklist causes irritation among staff. The checks contained in the list was devoid of ambiguity as perceived by 87% of KPKS nurses and 78% of OYS nurses (p=0,335). In contrast, 9% of KPKS nurses and 23% of OYS perceived that the list contained ambiguous terms and phrases. However, majority of nurses in both hospitals (56% KPKS and 57% OYS) agreed to the statement of physicians opposing to the use of SSC (p=0,53). The majority of nurses (>56%) in both hospitals disagreed with most of the questionnaire statements thus indicating presented challenges were not experienced by these nurses.

Concluding from Table 5, one of the statements divided the views of physicians: Physicians oppose to the use of SSC. Majority of physicians in both hospitals (57% KPKS and 82% OYS) disagreed to this statement (p=0,015). In other statements, similar views were expressed by physicians in both hospitals and indicating that physicians did not experience any of the challenges.

Table 5.Attitudes of respondents towards challenges in the implementation of SSC.

CHALLENGES	Respondents	Disagree strongly	Disagree	Agree	Agree Strongly	Asymp. Sig.(p)
SSC is not applicable to all patients	KPKS, Nurses	21,9%	53,1%	21,9%	2,9%	0,603
	OYS, Nurses	22,9%	42,9%	28,6%	5,7%	
	KPKS, Physicians	14,3%	71,4%	14,3%	0%	0,69
	OYS, Physicians	23,5%	58,8%	17,6%	0%	
SSC takes too much time to fill	KPKS, Nurses	43,8%	50,0%	3,1%	0%	0,197
	OYS, Nurses	31,4%	65,7%	0%	2,9%	
	KPKS, Physicians	28,6%	57,1%	0%	0%	0,258
	OYS, Physicians	52,9%	35,3%	11,7%	0%	
SSC causes irritation between staff members	KPKS, Nurses	25,0%	56,3%	15,6%	3,1%	0,826
	OYS, Nurses	31,4%	45,7%	22,9%	0%	
	KPKS, Physicians	14,3%	71,4%	0%	0%	0,202
	OYS, Physicians	41,2%	52,9%	5,9%	0%	
Physicians oppose to the use of SSC	KPKS, Nurses	6,3%	37,5%	50,0%	6,3%	0,53
	OYS, Nurses	5,7%	34,3%	45,7%	11,4%	
	KPKS, Physicians	0%	57,1%	28,6%	0%	0,015
	OYS, Physicians	35,3%	47,1%	11,7%	0%	
Nurses oppose to the use of SSC	KPKS, Nurses	25,0%	71,9%	3,1%	0%	0,372
	OYS, Nurses	17,1%	77,1%	2,9%	0%	
	KPKS, Physicians	14,3%	57,1%	0%	0%	0,099
	OYS, Physicians	41,2%	47,1%	0%	5,9%	
SSC contains ambiguous statements	KPKS, Nurses	15,6%	71,9%	6,3%	3,1%	0,335
	OYS, Nurses	11,4%	65,7%	20,0%	2,9%	
	KPKS, Physicians	0%	57,1%	14,3%	14,3%	0,093
	OYS, Physicians	23,5%	47,1%	23,5%	0%	
It is difficult to get the staff to listen to the timeout	KPKS, Nurses	3,1%	71,9%	18,8%	3,1%	0,001
	OYS, Nurses	0%	28,6%	51,4%	20,0%	
	KPKS, Physicians	0%	57,1%	28,6%	0%	0,115
	OYS, Physicians	5,9%	64,7%	17,6%	11,7%	
SSC is difficult to implement	KPKS, Nurses	43,8%	50,0%	3,1%	3,1%	0,373
	OYS, Nurses	25,7%	68,8%	5,7%	0%	
	KPKS, Physicians	0%	85,7%	0%	14,3%	0,25
	OYS, Physicians	29,4%	64,7%	5,9%	0%	

NOTE! Percentages may not tally to 100% due to rounding and absence of "no experience" responses.

8   DISCUSSIONS AND CONCLUSIONS

8.1   Discussion of the research method and limitations

The questionnaire was responded by less than 50% of the total anticipated perioperative personnel in the catchment area. The ratio of actual respondents to the total population was 25,3% and thus, is considerably low. However, this research is not intended for generalization purpose. The low response rate may have negligible effect on the final result. Surgeons and anesthesiologists were combined together and denoted as 'Physician' due to the low number of participants. The response rate could have been better if the researchers have met with the Heads of the Operating Units in OYS personally and discussed the research with them. Moreover, the thesis plan and cover letter consisted of relevant information related to this research which the respondents received prior to participation to this research.

The data was collected within two weeks. The head nurses acted as mediators between the respondents and the researchers. The data collection period was extended for a week due to low respondent rate. A major error in the questionnaire was observed during the first week of data collection and this prompted the researchers to terminate the electronic link. A new link was activated for respondents to access and answer the questionnaires. The entire research work was conducted in a reliable and ethical manner. According to Gore, Powell, Baer, Sexton, Richardson, Marshall, Chinkes & Townsend Jr, (2010) recommended the utilization of survey as a tool to evaluate the attitudes and perceptions of workers and staff in large institutions. A successful implementation of an intervention in any institution requires investigation of perception and attitudes of frontline workers towards the new technology or innovation.

The purpose of the research was to investigate the attitudes of perioperative personnel towards safety culture in the unit and the use of the checklist. In addition, it also attempted to determine the challenges encountered during the implementation of the checklist. A number of significant findings were realized after analysis. The main goal of this research was to investigate the discrepancies

in perioperative personnel attitude of safety culture, communication and team work. Primarily, this research highlighted number of significant differences between perioperative personnel.

The ratio of actual respondents to total population was low. The research result was valid because the purpose was not for generalization. The researchers are of great opinion that the goal of the research was achieved and in addition, the questionnaire employed in this research was valid and reliable. The researchers strongly agreed that it was unnecessary to add or remove any statement from the questionnaire. Quantitative survey and closed ended questionnaire have many limitations associated with them. Although our target groups were ideal for exploring attitudes, more in-depth and personal issues would have been revealed in one-to-one interviews.

8.2   Discussion of the research findings

The purpose of the research was to investigate the attitudes of perioperative staff towards safety culture and the utilization of the checklist. The first objective was: What were the perioperative personnel's attitudes towards safety culture in the operating unit was the initial research objective or question. The questionnaire statements from 10 to 15 dealt with this objective. The results showed positive attitude towards patient safety by perioperative personnel in both hospitals. Perioperative nurses and physicians both felt responsible for the safety of their patients and prioritized the safety of their patient as important. There was widespread adherence to rules and clinical guidelines by perioperative professionals in both hospitals despite the differences among the respondent nurses. The significant finding pertaining to safety culture was the insufficient resource allocation and time to ensure safety of the surgical patient. A significant proportion of perioperative nurses as well as physicians felt that insufficient resources and limited time were factors hindering achieving patient safety. Several researches on patient safety have reported that the inability of health care system to utilize new technology effectively or insufficient resource allocation, may

compromise the overall quality of care (Powell-Cope, Nelson & Patterson 2008). Time and resources are important factors in determining operating room efficiency. Thus improvement in theatre unit efficiency can have a positive effect on attitudes health personnel (team work, collaboration and situational awareness) as well as management of the entire institution (Weinbroum et al. 2003.).The most important step improving the safety culture in the operating units is recognizing that an error has occurred and communicating or discussing imminent errors with colleagues and appropriate responsible personnel. Even though errors are imminent, team personnel most often hesitate to discuss these deficiencies or failures (Wauben et al. 2011.).

In this research, the quality of communication and collaboration was perceived to be much better by physicians compared to perioperative nurses. It can be deduced from the quality of communication and collaboration between perioperative staff graphs that physicians enjoyed better quality of collaboration with staff surgeons, anesthesiologists, OR nurses as well as nursing assistant. On the contrary, significant proportion of nurses in both institutions viewed their collaboration and communication with staff surgeons and nursing assistants as not good. This is consistent with previous studies with similar pattern that physicians in operating units have positive attitudes towards communication whilst nurses have pessimistic attitudes (Wauben et al. 2011.). According to Sexton (2006) perioperative nurses with poor communication attitudes struggle to speak up and were timid during confrontations. This impedes other team members from improving and to rectify errors before similar accident may occur in addition hinders discussing and learning from accidents as a team. (Sexton 2006.)

Teamwork acts as an important element in the causation or prevention of adverse events amongst health professionals (Manser 2009). It is constructed of following aspects: Quality of collaboration, shared mental models, coordination, communication and leadership as identified by Manser (2009). Interdisciplinary teams in perioperative setting should have mutual respect and trust towards each member. In addition, team members should have common mental attitudes and purpose towards patient safety. These may include shared goals, shared awareness and shared understanding of roles of each team members' roles.

A vast majority of respondents in both hospitals perceived work climate and teamwork as been positive. However, majority of OYS physicians reported that team members did not know each other by first and last name. This finding is alarming as introduction of team members should be conducted before a surgery can commence. On the contrary, KPKS personnel have good recollection of team members' name prior to surgery. Thus, there were discrepancies between respondents of OYS and KPKS in this statement.

Interestingly, regardless of their theatre roles, all respondents perceived the teamwork as been positive and the entire patient safety as an important priority in the theatre unit. In the research conducted by Manser (2009) significant differences in the perception of teamwork were found between nurses and physicians.

Similar to the research by Nilsson et al. (2010) all the perioperative personnel had positive attitude towards the checklist. Majority of the perioperative personnel believed the checklist improves communication and collaboration among personnel. It was perceived to be easy to use in surgery and was valued as very important in every patient's case. These findings are consistent to other similar researches (Takala et al. 2011; Taylor et al. 2009.). In addition, the result of this research also conforms to research conducted by Taylor et al. (2009), which revealed that the usage of the checklist improved the overall patient safety and safety culture in the operating units. The result was of the same view that perioperative personnel perceived the checklist to be convenient as it does not take long time to fill out. Univocally, all the health personnel preferred the checklist to be used when they become surgical patient. (Taylor et al. 2009.)

The goal was to investigate the challenges and ease of utilizing the checklist during surgery. The respondents revealed few significant challenges and barriers which impedes the successful implementation of the checklist. The critical challenge was the lack of observation of time out. Significant majority of the respondents agreed that it was difficult to observe the time-out. Time-out is important because it helps prevent errors and accidents by holding a final

verification of patient identity, the procedure and surgical site. This is a crucial stage during the implementation of the checklist and thus difficulty to execute it compromises patient safety. However, majority of physicians believed that the time-out was observed without any difficulty. This may be due to the fact that, they were in-charge of time-out and the role of nurses was not much needed during this stage.

8.3   Conclusions

Currently, prioritization of patient safety has become an important subject in nursing due to the evolution of nursing since the time of inception. Patient safety is a wide and most studied nursing concept in the field of health. The effect of errors in patient safety ranges from mild to life threatening situation. The Swiss model laments that errors and accidents may not necessarily be due to a lapse or single factor but rather due to several factors such as human factors.

This research indicated numerous findings in regards to safety culture as well as utilization of surgical safety checklist. The overall perception and attitude of theatre nurses and physicians towards safety culture was overwhelmingly good and positive in both hospitals. The most significant finding in this part was the insufficient time invested in patient safety. There were significant discrepancies between theatre nurses in both hospitals. Majority of KPKS theatre nurse perceived the time invested in safety as sufficient but on the contrary significant proportion of nurses in OYS were of different opinion. In addition, similar situation was observed in resource allocation for improving patient safety and culture. Furthermore, nurses were observed to have low quality of communication as compared to surgeons in this research. Good team work was perceived by respondents in this research and healthy team spirit is a recipe for better safety culture and collaboration between different team members in the theatre ward.

In conclusion, the utilization of the checklist is in its early stages since its introduction to hospitals in Finland. However, theatre personnel exhibited positive attitude and viewed it as a good decision to utilize the checklist in prevention of

surgical errors in the theatre units. The use of the checklist in theatre ward was seen as a positive step in this research and thus, there were enormous benefits associated with the use of the checklist as confirmed by the respondents in this research. In the finding, the problem of gathering members to observe debriefing was perceived as difficult. Briefing and debriefing should also be taken into consideration as part of the perioperative procedure and duly observed. This compels all team members to participate and delineate each member's role during debriefing and thus consequently help to improve communication and coordination.

8.4   Implications to nursing practice and suggestions for future studies

The implication of this research is to generate the importance of adopting effective safety culture and implementation of the checklist in operating room settings. Furthermore, it informs and creates awareness for head nurses in operation units to monitor effectively the quality of safety culture and the entire work climate between professionals. As a result, this helps to improve the use of the safety surgical checklist as a safety intervention in theatre units.

Future studies and research can be geared towards assessing situational awareness of perioperative personnel in improving patient safety. It is one of the important components of non-technical skills aside teamwork and communication. Teamwork climate assessments of frontline perioperative nurses using SAQ (safety attitude questionnaires) should be employed as a periodic evaluation of patient safety by big institutions. Considering the fact that surgical procedures are usually complex and susceptible to errors, improving technical skills should be considered as equally vital as improving non-technical skills in order to enhance effective and safer surgeries.

In addition, future studies may also be directed to ascertain whether differences among non-technical skills among theatre staff are related to accidents in theatre units. Revealing this relationship would help to support the utilization of complicated team interventions that embodies the entire surgical care and support

systems in theatre units. Continuous training of personnel should always be an integral part of the intervention, prior to introducing or initiating any safety intervention in every institution. Training of personnel should also be focused to solve trivial and practical issues for instance the selection of responsible persons to champion or lead the implementation of the checklist. In today's technological world, there is high adoptive rate and user friendly platform associated with the use of electronic inter-phase. It will provide a unique opportunity and ease of utilizing the checklist by theatre professionals when the checklist is converted from paper version to electronic format. Future studies could be focused to investigate the perception of theatre staff towards the use of the electronic format of the checklist.

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APPENDICES
APPENDIX 1

Title of the research	Authors	Source	Research methods	Key results
A Surgical Safety Checklist to Reduce Morbidity and Mortality in a Global Population	Haynes, A.B., Weiser, T. G., Berry, W. R., Lipsitz, S. R., Breizat, A.-H. S., Dellinger, E. P., Herbosa, T., Joseph, S., Kibatala, P. L., Lapitan, M. C. M., Merry, A. F., Moorthy, K., Reznick, R.K., Taylor, B. and Gawande, A. A.	New England Journal Medicin 2009;360:491-9.	Randomized Controlled Trial- Quantitative Study	The result of the study showed improvement in attitudes towards teamwork and safety climate among theatre staff as well as reduced perioperative morbidity or mortality. The improvement in teamwork and safety culture was due to adherence to the usage of the checklist.
Implementing a pre-operative checklist to increase patient safety: a 1-year follow-up of personnel attitudes	Nilsson, L., Lindberget, O., Gupta, A., and Vegfors, M.	Acta Anaesthesiologica Scandinavica 2010; 54: 176-182	Quantitative Study	The study result revealed that theatre personnel showed a positive adherence and acceptance of the usage of the checklist after a year of introduction in two main hospitals in central Sweden.

The surgical safety checklist effects are sustained, and team culture is strengthened	Taylor, B., Slater, A. and Reznick, R.	The Surgeon, Journal of the Royal Colleges of Surgeons of Edinburgh and Ireland November 15, 2009 Edition 8(2010) 1-4	Randomised controlled trial-Quantitative	The results revealed that surgeons, anesthesiologists and nurses were optimistic of the benefit of the checklist and took little time, that if they themselves were to have an operation, they would prefer that the checklist be used, and improvement in team culture had been observed.
A pilot study of the implementation of WHO Surgical Checklist in Finland: improvements in activities and communication	Takala R. S. K., Pauniaho S-L., Kotkansalo A., Helmiö P., Blomgren K., Helminen M., Kinnunen M., Takala A., Aaltonen R., Katila A. J., Peltomaa K. & Ikonen S-T.	Acta Anaesthesiologica Scandinavica 2011;Volume Number 55:12	Randomised controlled study-Quantitative	The result of this study showed significant improvement in communication and fewer communication errors reported between anesthesiologists and surgeons as they duly discussed critical events preoperatively and during the time out stage. The results of this studies reiterated that the checklist significantly improved surgical team's recognition of patient safety related matters, the procedures and expected outcomes.
Discrepant perceptions of communication, team work and situation awareness among	Wauben L.S.G.L, Dekker-Van D.C.M., Wijngaarden V. J. D.H., Goossens R.	International Journal for Quality in Health Care 2011; Volume 23,	Randomised comparative study-Quantitative Research	The study showed numerous differences in several aspects in attitudes between surgeons and other surgical team

surgical team members	H. M., Huijsman R., Klein J.& Lange J. F.	Number 2		members regarding communication, situational awareness and teamwork.
Compliance With The WHO Surgical Safety Checklist: Deviations And Possible Improvements	Rydenfält C., Johansson G., Odenrick P., Åkerman K. & Larsson P. L.	International Journal for Quality in Health Care; pp. 1–6	Quantitative and qualitative approach	The result revealed that there was high compliance rate during the study period. However, when critical investigation was carried out it was observed that only a half of the checks were properly conducted. Continuous training and education were recommended.

APPENDIX 2

World Health Organization

SURGICAL SAFETY CHECKLIST (FIRST EDITION)

Before induction of anaesthesia ▶▶▶▶▶▶ **Before skin incision** ▶▶▶▶▶▶▶▶▶ **Before patient leaves operating room**

SIGN IN

☐ PATIENT HAS CONFIRMED
 • IDENTITY
 • SITE
 • PROCEDURE
 • CONSENT

☐ SITE MARKED/NOT APPLICABLE

☐ ANAESTHESIA SAFETY CHECK COMPLETED

☐ PULSE OXIMETER ON PATIENT AND FUNCTIONING

☐ DOES PATIENT HAVE A:

KNOWN ALLERGY?
☐ NO
☐ YES

DIFFICULT AIRWAY/ASPIRATION RISK?
☐ NO
☐ YES, AND EQUIPMENT/ASSISTANCE AVAILABLE

RISK OF >500ML BLOOD LOSS
(7ML/KG IN CHILDREN)?
☐ NO
☐ YES, AND ADEQUATE INTRAVENOUS ACCESS
 AND FLUIDS PLANNED

TIME OUT

☐ CONFIRM ALL TEAM MEMBERS HAVE
 INTRODUCED THEMSELVES BY NAME AND
 ROLE

☐ SURGEON, ANAESTHESIA PROFESSIONAL
 AND NURSE VERBALLY CONFIRM
 • PATIENT
 • SITE
 • PROCEDURE

ANTICIPATED CRITICAL EVENTS

☐ SURGEON REVIEWS: WHAT ARE THE
 CRITICAL OR UNEXPECTED STEPS,
 OPERATIVE DURATION, ANTICIPATED
 BLOOD LOSS?

☐ ANAESTHESIA TEAM REVIEWS: ARE THERE
 ANY PATIENT-SPECIFIC CONCERNS?

☐ NURSING TEAM REVIEWS: HAS STERILITY
 (INCLUDING INDICATOR RESULTS) BEEN
 CONFIRMED? ARE THERE EQUIPMENT
 ISSUES OR ANY CONCERNS?

HAS ANTIBIOTIC PROPHYLAXIS BEEN GIVEN
WITHIN THE LAST 60 MINUTES?
☐ YES
☐ NOT APPLICABLE

IS ESSENTIAL IMAGING DISPLAYED?
☐ YES
☐ NOT APPLICABLE

SIGN OUT

NURSE VERBALLY CONFIRMS WITH THE
TEAM:

☐ THE NAME OF THE PROCEDURE RECORDED

☐ THAT INSTRUMENT, SPONGE AND NEEDLE
 COUNTS ARE CORRECT (OR NOT
 APPLICABLE)

☐ HOW THE SPECIMEN IS LABELLED
 (INCLUDING PATIENT NAME)

☐ WHETHER THERE ARE ANY EQUIPMENT
 PROBLEMS TO BE ADDRESSED

☐ SURGEON, ANAESTHESIA PROFESSIONAL
 AND NURSE REVIEW THE KEY CONCERNS
 FOR RECOVERY AND MANAGEMENT
 OF THIS PATIENT

THIS CHECKLIST IS NOT INTENDED TO BE COMPREHENSIVE. ADDITIONS AND MODIFICATIONS TO FIT LOCAL PRACTICE ARE ENCOURAGED.

APPENDIX 3

Hyvinvoinnin ja kulttuurin yksikkö, Kokkola

Leikkaustiimin tarkistuslistan hyväksyminen perioperatiivisen henkilöstön keskuudessa: Vertaileva tutkimus

Hyvä vastaanottaja,

Pyydämme ystävällisesti vastaamaan oheiseen opinnäytetyöhömme liittyvään kyselyyn. Opiskelemme kolmannen vuosikurssin sairaanhoitajaopiskelijoita englanninkielisessä koulutusohjelmassa Centria ammattikorkeakoulussa Kokkolassa. Teemme tutkimusta leikkaustiimin tarkisuslistan hyväksymisestä ja siihen liittyvistä asenteista perioperatiivisen henkilöstön keskuudessa. Aineisto kerätään Keski-Pohjanmaan keskussairaalan leikkausosastolla ja päiväkirurgiselta osastolla sekä Oulun yliopistollisen sairaalan keskusleikkausosastolla. Opinnäyteyö valmistuu marraskuussa 2013 ja se on luettavissa myöhemmin Theseus- palvelussa.

Tutkimuksen tarkoituksena on kartoittaa perioperatiivisen henkilöstön kokemuksia tarkistuslistan käytössä ja käyttöön liittyviä asenteita. Osallistumisenne on merkittävä apu tutkimuksessamme.

Kyselylomake koostuu 29 kysymyksestä, joihin vastaaminen kestää noin 10–15 minuuttia. Kyselyyn pääset oheisesta linkistä

(linkki)

Kyselyyn vastataan nimettömästi ja vastaukset käsitellään luottamuksellisesti tilastollisen analyysin keinoin. Yksittäisen vastaajan tietoja ei voida tunnistaa. Arvostamme suuresti osallistumistanne tähän opinnäytetyöhön.

Kiitos.

Nea Eshun ja Patrick Eshun
NNRNS10K
Bachelor Degree in Nursing
Hyvinvoinnin ja kulttuurin yksikkö, Kokkola
Centria ammattikorkeakoulu

Jos teillä on kysyttävää tai haluatte lisätietoja, ottakaa ystävällisesti yhteyttä meihin sähköpostitse: tai
tai ohjaajaamme,
Lehtori, MSc Timo Kinnuseen,

Centria
AMMATTIKORKEAKOULU

Leikkaustiimin Tarkistuslista - Asenne Kysely

OHJE: Valitse sopivin vaihtoehto, tai kirjoita annettuun tilaan vastataksesi kysymykseen.

Sairaala		KPKS
		OYS
Nykyinen virka / työ		Kirurgi
		Erikoistuva lääkäri
		Anestesialääkäri
		Instrumentoiva sh
		Valvova sh
		Anestesiahoitaja
Työsuhde		Vakituinen
		Osa-aikainen
		Sijainen
Työkokemus nykyisessä työssä		
Työkokemus perioperatiivisessa lääketieteessä / hoitotyössä		
Kokemus lääketieteessä / hoitoalalla kokonaisuudessa		
Sukupuoli		Nainen
		Mies
Ikä		

OHJE: Tässä osiossa kartoitetaan kuinka laadukkaaksi koet **tällä hetkellä** kommunikaation ja yhteistyön alla mainittujen tahojen kanssa. Vastaa valitsemalla sopivin vaihtoehto; 1 = erittäin huono, 2 = huono, 3 = hyvä, 4 = erittäin hyvä tai X = ei kokemusta.

	KOMMUNIKAATION JA YHTEISTYÖN LAATU	Erittäin huono	Huono	Hyvä	Erittäin hyvä	Ei kokemusta
1	Kirurgit	1	2	3	4	X
	Erikoistuvat lääkärit	1	2	3	4	X
	Perfuusiolääkärit	1	2	3	4	X
	Perfuusiohoitajat	1	2	3	4	X
	Anestesialääkärit	1	2	3	4	X
	Anestesiahoitajat	1	2	3	4	X
	Anestesiateknikot	1	2	3	4	X
	Leikkaussalihoitajat	1	2	3	4	X
	Heräämöhoitajat	1	2	3	4	X
	Lääkintavahtimestarit / lähihoitajat	1	2	3	4	X
	Kirurgiset sairaanhoitajat	1	2	3	4	X
	Pre-hoitajat	1	2	3	4	X
	Leiko-hoitajat	1	2	3	4	X
	Hoidonvaraajat	1	2	3	4	X
	Päiki-hoitajat	1	2	3	4	X
	Koordinaattorit	1	2	3	4	X
	Osastonhoitajat	1	2	3	4	X

OHJE: Seuraavissa osioissa kartoitetaan millaisena koet **tällä hetkellä** yhteistyön ja turvallisuuskulttuurin sekä tarkistuslistan käyttöön liittyvät asenteet. Vastaa valitsemalla sopivin vaihtoehto; 1 = vahvasti eri mieltä, 2 = eri mieltä, 3 = samaa mieltä, 4 = vahvasti samaa mieltä tai X= ei kokemusta

YHTEISTYÖ	Vahvasti erimieltä	Erimieltä	Samaa mieltä	Vahvasti samaa mieltä	Ei kokemusta
2 Työntekijät saavat asiallista palautetta toisiltaan	1	2	3	4	X
3 Erimielisyyksiä voidaan ilmaista rakentavasti	1	2	3	4	X
4 Työntekijät tuntevat toisensa etu- ja sukunimeltä	1	2	3	4	X
5 Pääsääntöisesti työryhmällä on hyvä tiimihenki	1	2	3	4	X
6 Työntekijät pitävät huolen, että he tulevat kuulluksi	1	2	3	4	X
7 Työntekijät auttavat mielellään toisiaan	1	2	3	4	X
8 Lääkärit ja hoitajat työskentelevät rakentavasti yhdessä	1	2	3	4	X
9 Henkilökuntaa rohkaistaan tuomaan esille huolensa turvallisuudesta	1	2	3	4	X

TURVALLISUUSKULTTUURI	Vahvasti erimieltä	Eri mieltä	Samaa mieltä	Vahvasti samaa mieltä	Ei kokemusta
10 Leikkaushuoneessa sitoudutaan tarkasti noudattamaan laadittuja sääntöjä (mm. kirurginen käsien pesu, leikkausasennot, steriilin toiminnan periaatteet)	1	2	3	4	X
11 Koko henkilökunta ottaa vastuun potilaan turvallisuudesta	1	2	3	4	X
12 Tarve siirtyä nopeasti potilastilanteesta toiseen vaarantaa potilasturvallisuuden	1	2	3	4	X
13 Potilasturvallisuus on tärkeä periaate leikkausosastollamme	1	2	3	4	X
14 Turvallisuuteen käytetään tarpeeksi aikaa	1	2	3	4	X
15 Turvallisuuteen käytetään tarpeeksi resursseja (mm. riittävä henkilöstö, tietojärjestelmien hyödyntääminen, laitteet ja tarvikkeet)	1	2	3	4	X

	ASENTEET	Vahvasti eri mieltä	Eri mieltä	Samaa mieltä	Vahvasti samaa mieltä	Ei kokemusta
16	Tarkistuslista parantaa työntekijöiden välistä kommunikaatiota ja yhteistyötä	1	2	3	4	X
17	Tarkistuslista edistää potilasturvallisuutta	1	2	3	4	X
18	Tarkistuslistaa on helppo käyttää	1	2	3	4	X
19	Tarkistuslistaa on tärkeää käyttää jokaisen potilaan kohdalla	1	2	3	4	X
20	Tarkistuslistan käyttöönotto oli hyvä päätös	1	2	3	4	X
21	Tarkistuslista ei ole sovi kaikille potilaille	1	2	3	4	X
22	Tarkistuslistan täyttämiseen menee liikaa aikaa	1	2	3	4	X
23	Tarkistuslista aiheuttaa ongelmia työntekijöiden välille	1	2	3	4	X
24	Lääkärit vastustavat tarkistuslistan käyttöä	1	2	3	4	X
25	Hoitajat vastustavat tarkistuslistan käyttöä	1	2	3	4	X
26	Tarkistuslista sisältää tulkinnanvaraisia toimintaohjeita	1	2	3	4	X
27	Henkilökuntaa on vaikea saada kuuntelemaan tarkistusta	1	2	3	4	X
28	Tarkistuslistaa on vaikea käyttää	1	2	3	4	X

29	Jos olisin potilas, haluaisin tarkistuslistaa käytettävän minun hoidossani	Kyllä
		Ei

Centria
AMMATTIKORKEAKOULU

Unit of health, welfare and culture, Kokkola

Attitudes of perioperative personnel on safety culture and usage of surgical safety checklist: Comparative research

Dear recipient,

We kindly ask you to participate to our thesis research by answer to the attached questionnaire. We are third year nursing students from English degree in Centria University of applied sciences in Kokkola. We are conducting a research about acceptance of surgical safety checklist and attitudes towards it among perioperative personnel. The data will be collected in Oulu University Hospital's central operating unit and Central Ostrobothnia central hospital's central operating unit and day surgery unit. The thesis will be completed in November 2013 and it will be available to public in Theseus service later on.

The purpose of our research is to investigate the experiences and attitudes of perioperative personnel in the use of surgical safety checklist. Your participation would be a great help in our research.

The questionnaire includes 29 questions and answering would take approximately 15-20 minutes. You can get to the questionnaire from the link below:

(link)

Questionnaires are answered anonymously and responses are handled confidentially using the means of statistical analysis. Any information of a single respondent cannot be identified. We highly appreciate your participation in this research.

Thank you very much.

Nea Eshun ja Patrick Eshun
NNRNS10K
Bachelor Degree in Nursing
Unit of health, welfare and culture, Kokkola
Centria university of applied sciences

If you have any questions or concerns about completing the questionnaire, please do not hesitate to contact us by e-mail: tai

or Our Instructor
Lector, MSc Timo Kinnunen,

Centria
AMMATTIKORKEAKOULU

Surgical Safety Checklist Attitudes Questionnaire

INSTRUCTIONS: Please indicate your response by choosing the appropriate alternative or write where necessary to a given space. When given multiple choices, choose the best fitting one only.

Hospital		KPKS
		OYS
Current post / job		Staff surgeon
		Surgical resident
		Anesthesiologist
		Scrub nurse
		Circulating nurse
		Nurse anesthetist
Contract		Permanent
		Part-time
		Substitute
Work experience in current job		
Work experience in perioperative field		
Work experience in medicine / nursing altogether		
Gender		Female
		Male
Age		

APPENDIX 6/2

INSTRUCTIONS: The quality of communication and collaboration **currently** perceived by respondent is mapped out in this section. Please indicate your response by choosing the appropriate alternative; 1 = Very low, 2 = Low, 3 = High, 4 = Very high or X= No experience.

	QUALITY OF COMMUNICATION AND COLLABORATION	Very low	Low	High	Very high	No experience
1	Staff surgeons	1	2	3	4	X
	Surgical residents	1	2	3	4	X
	Perfusionists	1	2	3	4	X
	Perfusionist nurses	1	2	3	4	X
	Anesthesiologists	1	2	3	4	X
	Nurse anesthetists	1	2	3	4	X
	Anesthesia technicians	1	2	3	4	X
	OR nurses (Scrub & circulating)	1	2	3	4	X
	PACU nurses	1	2	3	4	X
	Nursing assistants	1	2	3	4	X
	Ward nurses	1	2	3	4	X
	Pre-op evaluation staff	1	2	3	4	X
	FHTO-nurses	1	2	3	4	X
	Queue manager	1	2	3	4	X
	Day surgery nurses	1	2	3	4	X
	Coordinator	1	2	3	4	X
	Nurse manager	1	2	3	4	X

INSTRUCTIONS: The way respondent **currently** perceives teamwork and safety culture as well as attitudes towards the use of surgical safety checklist is mapped out in following sections. Please indicate your response by choosing in the appropriate alternative; 1 = Strongly disagree, 2 = Disagree, 3 = Agree, 4 = Agree strongly or X= no experience.

	TEAMWORK IN OR	Strongly disagree	Disagree	Agree	Strongly agree	No experience
2	Appropriate feedback is received about performance	1	2	3	4	X
3	Disagreement can be expressed in a constructive manner	1	2	3	4	X
4	Staff members know each other by first and last name	1	2	3	4	X
5	There is generally a good team spirit among the staff	1	2	3	4	X
6	Surgical team members make sure their comments or instructions are heard	1	2	3	4	X
7	Surgical team members appear eager to help one another	1	2	3	4	X
8	The physicians and nurses here work together as a well-coordinated team	1	2	3	4	X
9	Staff is encouraged to report any safety concerns they may have	1	2	3	4	X

	SAFETY CULTURE	Strongly disagree	Disagree	Agree	Strongly agree	No experience
10	There is widespread adherence to rules and clinical guidelines (e.g. surgical hand wash, patient positioning, principles of sterile activities) in the OR	1	2	3	4	X
11	All the personnel take responsibility for the patient safety	1	2	3	4	X
12	Pressure to move quickly from case to case gets in the way of patient safety	1	2	3	4	X
13	Patient safety is a high priority in our Ors	1	2	3	4	X
14	There is enough time to put into safety	1	2	3	4	X
15	There is enough resources put into safety (e.g. staff, utilization of information systems, machines and equipments)	1	2	3	4	X

APPENDIX 6/4

	ATTITUDES	Strongly disagree	Disagree	Agree	Strongly agree	No experience
16	Surgical Safety Checklist enhances communication and collaboration between staff	1	2	3	4	X
17	Surgical Safety Checklist improves patient safety	1	2	3	4	X
18	Surgical Safety Checklist is easy to use	1	2	3	4	X
19	It is important to use Surgical Safety Checklist with every case	1	2	3	4	X
20	Implementing Surgical Safety Checklist was a good decision	1	2	3	4	X
21	Surgical Safety Checklist is not applicable to all patients	1	2	3	4	X
22	Surgical Safety Checklist takes too much time to fill	1	2	3	4	X
23	Surgical Safety Checklist causes irritation between staff members	1	2	3	4	X
24	Physicians oppose to the use of Surgical Safety Checklist	1	2	3	4	X
25	Nurses oppose to the use of Surgical Safety Checklist	1	2	3	4	X
26	Surgical Safety Checklist contains ambiguous statements	1	2	3	4	X
27	It is difficult to get the staff listen to the timeout	1	2	3	4	X
28	Surgical safety checklist was difficult to implement	1	2	3	4	X

29	If I were having an operation I would want the checklist to be used		Yes
			No

KESKI-POHJANMAAN ERIKOISSAIRAANHOITO- JA   VIRANHALTIJAPÄÄTÖS
PERUSPALVELUKUNTAYHTYMÄ

Tutkimuslupapäätös
Hallintoylihoitaja   *11. 4. 13*   § *9*

ASIA   Eshun Nea Yasmine, Eshun Patrick, Perioperatiivisen henkilöstön
                        asenteet tarkistuslistan käytöstä. Centria Keski-Pohjanmaan
                        Ammattikorkeakoulu. 05.04.2013

PÄÄTÖS   Tutkimuslupa-anomus hyväksytään.

ESITYKSEN TEKIJÄ

PÄÄTÖKSEN TEKIJÄ   Pirjo-Liisa Hautala-Jylhä
                    Johtajaylilääkäri

Keski-Pohjanmaan erikoissairaanhoito-
ja peruspalvelukuntayhtymä
Mellersta Österbottens samkommun för
specialsjukvård och grundservice

KESKI-POHJANMAAN ERIKOISSAIRAANHOITO- JA PERUSPALVELUKY

TUTKIMUSLUPA-ANOMUS

Hakijan nimi Nea Yasmine Eshun	**Hakijan nimi** Patrick Eshun
Osoite Kokkola **Puhelin**	**Osoite** Kokkola **Puhelin**

Tutkimuksen ohjaajan nimi ja yhteystiedot
TtM, Lehtori Timo Kinnunen

Tutkimuksen nimi
Perioperatiivisen henkilöstön asenteet tarkistuslistan käytöstä

Tutkimuksen tarkoitus
Tutkia, kuvata ja vertailla perioperatiivisen henkilöstön asenteita yhteistyöstä, kommunikaatiosta, turvallisuuskulttuurista ja tarkistuslistan käytöstä

Tutkimuksen tavoitteet
Kuvata ja ymmärtää tarkistuslistan käyttöön liittyviä asenteita, ja löytää kehityskohteita tarkistuslistan käytössä.

Tutkimustehtävät
1 Millaiseksi perioperatiivinen henkilöstö kokee leikkausosaston turvallisuuskultturin?
2 Millaisia asenteita perioperatiivisella henkilöstöllä on tarkistuslistan käyttöä kohtaan?
3 Millaisia haasteita tarkistuslistan käyttöön liittyy?
4 Kuinka tarkistuslistan käyttöä voidaan tehostaa/ parantaa?

Aineistonkeruu ja analyysi
Määrällinen tutkimusote, Webropol-kysely, tilastollinen analyysi. Aineistonkeruu perioperatiiviselle henkilöstölle kevään 2013 aikana.

Keski-Pohjanmaan erikoissairaanhoito-
ja peruspalvelukuntayhtymä
Mellersta Österbottens samkommun för
specialsjukvård och grundservice

Paikka _27.3.2013_   Päiväys _Kokkola_

Nes Eslun   _Pukud_
Hakijan allekirjoitus: Hakijan allekirjoitus

Liitteet
1) ☒ Tutkimussuunnitelma
2) ☒ Kysely/haastattelulomake
3) ☒ Tiedote tutkimukseen osallistujalle
4) ☐ Tutkimukseen osallistuvan suostumuslomake (mikäli tutkimukseen osallistuu potilaita)

LUVAN MYÖNTÄMINEN

Päiväys _____

Lupa myönnetty   ☐

Lupaa ei myönnetty   ☐   **Perustelut**

KESKI-POHJANMAAN ERIKOISSAIRAANHOITO- JA
PERUSPALVELUKUNTAYHTYMÄ

_____
Johtajaylilääkäri

Tiedoksi:

_____

_____

_____

APPENDIX 8

Pohjois-Pohjanmaan sairaanhoitopiirin kuntayhtymä

LUPA TUTKIMUKSELLE/OPINNÄYTETYÖLLE
(täytettävä koneella)

Operatiivinen Tulosalue / vastuualue	24703 vastuuyksikkönro	**DIAARINRO:** 98/2013

1. Tutkijaa koskevat tiedot	Tutkijan suku- ja etunimet Eshun Nea Yasmine ja Eshun Patrick		Henkilötunnus	
	Nykyinen työnantaja / opiskelupaikka Centria AMK, Kokkola		Nykyinen virka / toimi / opiskelija opiskelija ja opiskelija	
	Kotiosoite		Postinro ja -paikka	
	Puhelin toimeen	Puhelin kotiin	Sähköpostiosoite	
	Suoritettu tutkinto		Suoritusvuosi	Suorituspaikka

2. Tutkimus-projektia tai tutkimusta koskevat tiedot (Diaarinro) Katso hallinto-keskuksen tiedote 15/2009)	Tutkimusprojektin lyhyt nimi Perioperatiivisen henkilöstön asenteet tarkistuslistan käytöstä

Tutkimus on ☒ julkinen / ☐ salainen   Tutkimusaika kevät 2013

Pääkaavanumero 902   **Tutkimuksen luonteen määrittely** Hoitomenetelmävertailututkimus

Tutkimus on
☒ opinnäyte (ammattikorkeakoulu)   ☐ gradu   ☐ muu, mikä
☐ syventävä opinnäyte (lääketiede)   ☐ väitöskirja

Anoja on
☐ apurahan saanut tutkija   ☐ muu tutkija
☒ opiskelija

Anoja osallistuu potilastyöhön
☐ kyllä
☒ ei

Tutkimuksen vastuuhenkilö (Laki lääk. tutk. 794/2010) / ohjaaja / päätutkija
TtM, Lehtori, Timo Kinnunen

Hankkeeseen osallistuvat sairaalan klinikat / muut tutkijat / tutkimusryhmä / työntekijät
Anestesia, Leikkaus-ja tehohoito, KESLE

Hankkeeseen osallistuvat ulkopuoliset henkilöt (tarvittaessa erillinen liite), joille anotaan lupaa työskennellä hankkeen puitteissa sairaalassa (sitoumus jokaiselta liitteenä)

Tutkimuksen rahoitussuunnitelma ▶ Erillinen liite
Arvio tutkimustyöstä sairaalalle aiheutuvista vuosittaisista suoranaisista kustannuksista
☐ Aiheuttaa sairaalalle kustannuksia, selvitys mitä   ☒ Ei aiheuta sairaalalle kustannuksia

Ulkopuolinen rahoitus
☐ Ulkopuolinen rahoittaja   **Rahoittaja**   Sopimuksen nro
    ☐ kokonaan   ☐ osittain

Muu rahoitus
☐ EVO   ☐ muu, mikä   Projektin numero
☐ KEVO   (EVO, KEVO, TUKE)

Päivämäärä 4.4.2013 Anojan allekirjoitus ja nimen selvennys
Nea Eshun   Patrick Eshun

3. Lausunnot	**Tarvittavat lausunnot ja luvat**		lähetyspäivä	vastaus saatu
	☐ Ei tarvetta			
	☐ Alueellinen eettinen tmk / ☐ Ilmoitus kansallisesta lausunnosta			
	☐ TUKIJA [1]			
Luvat	☐ Fimea [2] ☐ Johtajaylil./laitoksen joht./STM/THL [3] ☐ VALVIRA [4]			

4. PÄÄTÖS	**Tutkimustulosten omistusoikeus**

☐ Sovittu, liite sopimuksesta   ☐ Ei tarvetta tehdä sopimusta

Päätös
☒ Tutkimuslupa myönnetään hakemuksen mukaisesti
☐ Hakemus palautetaan korjattavaksi seuraavin muutoksin
☐ Hakemus hylätään , miksi   ☐ Anomus käsitelty johtoryhmässä

Päätöksentekijä
☒ tulosalueen johtaja / vastuualueen johtaja / ylihoitaja   ☐ johtajaylilääkäri / hallintoylihoitaja   ☐ hallitus

Päivämäärä 8.4.13	Allekirjoitus	**LOMAKKEEN SÄILYTYS** - Tutkija alkuperäinen (tutkimuksen ajan) - Päättäjä (arkistointi)

[1] TUKIJA= Valtakunnallinen tutkimuseettinen toimikunta [2] Fimealta ilmoitetaan 60 pv:n kuluessa onko huomautettavaa. Ellei ilmoitusta tule, tutkimus voidaan aloittaa. [3] Rekisteritutkimukset [4] Kudoslaki (101/2001) ja asetus (594/2001) sekä Hallintokeskuksen tiedote 5/2009 (luvat).

Liitteet: Tutkimussuunnitelma ja rahoitussuunnitelma Muita liitteitä   kpl