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Early Career Nurses' Perceptions of Quality and Safety in the Operating Room

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This is to certify that the doctoral dissertation by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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Walden University
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Abstract

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Nursing – Education

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Abstract

With an ongoing shortage of operating room nurses, novices may be hired into circulator positions. Over 50 million people will undergo surgery in America this year, and many will be cared for by circulators with less than five years of experience. Little is known about how this burgeoning group of circulators perceive and experience quality and safety. In this qualitative descriptive study, the perceptions of quality and safety were explored in nurses who completed a postgraduate perioperative curriculum embedded with quality and safety competencies. Nurses were viewed through Benner's characteristics of nurse competence and Blooms domains of learning framed interpretations of QSEN competencies. Using semi-structured, remotely-conducted interviews, the perceptions of five early career circulators were obtained about quality and safety. Verbatim data transcription was accomplished with Otter.Ai and NVivo was used to manage data. Following Braun and Clarke's reflexive thematic analytic approach, interview data were inductively coded and themed across six phases. Six themes were generated: I am accountable for safety; teamwork can influence safety; experiences changed my behaviors; quality care is patient-focused and outcome-oriented; internal and external factors influence quality and safety; and the circulator role is integral to patient quality and safety. All nurses were knowledgeable about safety but lacked skills for quality measurement and improvement. Findings indicated some success for decades-long social change initiatives for healthcare improvement however further research is needed to understand diversities and commonalities in knowledge, skills, and attitudes among other early career circulators as well as those at mid- and late-career stages.

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Dedication

This study began because God placed me in the way. It continued because He gave me the persistence and external resources to continue in often challenging circumstances. My family supported me emotionally, physically, and financially during the years that I read, studied, reflected, and wrote “in the office.” To have them value this work as much as I did was a wonderful gift, and I am so grateful. I dedicate this work to my family: husband, Jay, and three sons; to my father, a staunch life-long learner, and to my mother, who showed me that a career, a family, and an education are all attainable. Thank you all for modeling a rich and fruitful life and instilling in me a love of learning.

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The quality of this work is directly the result of Dr. Janice Long, my committee chairperson, who championed me when I made strides and pushed me to reflect and redirect when improvements were needed. I found tremendous support and guidance by staff in the Walden University Library services, Writing Center, and Center for Research Quality, along with my committee members, Dr. Dr. Donna Bailey, and the School of Nursing faculty I met at residencies. I needed their expertise, feedback, and support and acknowledge each of you who took time to make the dissertation processes clear and the pathway to success seem achievable and worthy. As a scholar, I will do my best to make a difference in the world.

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Chapter 1: Introduction to the Study

Over 100 million surgical procedures are performed annually in the United States (Mattingly et al., 2021; Weiss et al., 2014). During surgery, patients are cared for by a circulating registered nurse (ORRN) who works as an integral member of a multidisciplinary team to facilitate the quality and safety of their procedures. An ORRN circulator is a specialist role centered on patient care in the OR setting but occurs outside of the sterile field environs. The circulator role is considered critical to ensure safety and support physical and psychological patient welfare across the perioperative experience (AORN, 2014). From a financial perspective, operating rooms (ORs) generally are revenue-producing departments (Deshpande et al., 2021). Although mitigation strategies have reduced nursing staff shortages in some practice areas, OR nurse vacancy rates continued to rise over the past decade (Bacon & Stewart, 2022; Ball et al., 2015; Schmidt & Brown, 2019; Zinn et al., 2012). Contracted nurses are hired to fill circulator vacancies in the short term (Bacon & Stewart, 2022). When OR directors invest fiscally to orient and offer specialty training for inexperienced and new graduate nurses' payrolls, there may be significantly lower over the short and long terms than filling positions with contracted nurses.

OR vacancies exist in part because experienced ORRNs are aging out of the profession. As they retire, there is potential for loss of intellectual and technical skill capital that may threaten delivery of high-quality safe care (Association of Perioperative Registered Nurses [AORN], 2015a; Bacon & Stewart, 2018; Brown et al., 2018; Covell & Sidani, 2012). As experienced ORRNs retire, a dearth of experienced preceptors and mentors is predicted in many ORs (Bacon & Stewart, 2018). Novice nurses, including

newly graduated RNs (NGRNs), are filling ORRN vacancies and will be precepted by early career ORRNs (Bacon & Stewart, 2018). Nurses have a professional ethical imperative to protect patient welfare including controlling costs of care (Bailes et al., 2014). How nurses perceive and carry out quality and safety competencies are of importance to the welfare of surgical patients as well as their healthcare providers and health care organizations. The aims of this qualitative descriptive (QD) study are to explore and describe the safety and quality perceptions and practices of early career ORRNs, and to capture what influences their knowledge, skills, and attitudes about quality and safety.

In Chapter 1, I will provide a historical background of the healthcare quality and safety movement since the 1990s, which will substantiate the current shortage of OR nurses and will provide a historical background of the healthcare quality and safety movement since the 1990s, including a brief description of healthcare quality and safety measures. The Periop 101 program with Quality and Safety Education for Nurse (QSEN) competencies and the current OR quality and safety climate, standards and indicators are described next. Theoretical underpinnings and a plan for this QD study is introduced in Chapter 1, along with key terms and concepts central to the study. Assumptions, scope, and delimitations and limitations of the study are described, and the chapter concludes with a summary of the social significance for study findings.

Background

Concern for quality and safety in healthcare became pervasive in American society following the dissemination of a series of Institute of Medicine (IOM) reports and recommendations beginning in 1998. The IOM reported unacceptable rates of

preventable patient harm, identified key quality of care and safety issues in healthcare, delineated the importance of nursing competence to achieve high quality care, and proposed plans for transformation of the entire healthcare delivery system (IOM, 1998; 2001). Public awareness of medical errors prompted the growth of complex healthcare infrastructures to identify indicators of quality and safety and to track, report, and improve compliance rates (IOM, 2001). For example, hospital compliance rates with the Centers for Medicare and Medicaid (CMS; n.d.) quality indicators (QIs) are publicly posted on the *Hospital Compare* webpages. Nursing practices have been linked to patient quality and safety outcomes, and compliance rates of nurse-sensitive indicators (NSIs) are reported by many hospitals (Bowden et al., 2019; Nyide et al., 2019; Ross, 2022; Shin et al., 2018). Nurses shoulder an essential role in ensuring that patients receive high quality safe care (Bailes et al., 2014).

In response to the IOM's call for improvement in healthcare quality, the QSEN competencies were developed by experts in the AACN QSEN Educational Consortium (2012; Cronenwett et al., 2007). Undergraduate and graduate-level academic nursing programs have integrated QSEN competencies into curricula to prepare new nurses to understand the needs of patients and the complexities of healthcare quality and safety (Altmiller, 2017; Hulett & Davis, 2020; Mennenga et al., 2015; Piscotty et al., 2013; Sherwood & Nickel, 2017). However, in a climate where quality and safety compliance rates are publicized and incentivized, new nurses can find it frustrating to comply with expected standards of quality while meeting productivity and cost containment QIs (Salmond & Echevarria, 2017). Knowledge and awareness of basic quality and safety practices may be present in nurse graduates, however, time and experiences in a

supportive environment are needed for novice nurses to develop skills and attitudes to that support these standards, particularly in complex acute care practice areas like the OR (Benner, 2001).

OR Nursing Shortage

Alongside the healthcare safety and quality improvement movement, vacancies in operating room registered nurse (ORRN) positions have steadily increased since 2013, and OR administrators annually reported difficulties filling vacancies with experienced ORRNs since 2014 (Bacon & Stewart, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2022). Fewer nurses entered the OR profession during this period, and a growing number of nurses retired or left the profession or moved to other practice settings (Bacon & Stewart, 2019; AORN, 2022; Stucky et al., 2020). The *median percent vacancy* rate for ORRNs increased from 3% in 2013 to 9% in 2019, falling slightly to 7% in 2020, but rebounding to 11% by 2022 (Bacon & Stewart, 2018, 2019, 2020, 2022). While the OR vacancy rate may appear comparatively small, 61% of OR managers continue to report nurse vacancies are open for 6 months or longer (Bacon & Stewart, 2022), and they were unable to fill vacancies with experienced ORRNs. Over half of nurses in the perioperative nurse survey reported cases were delayed or cancelled in their workplaces due to staffing shortages, and experienced situations where they felt safety and quality care were threatened (Bacon & Stewart, 2022).

When experienced ORRNs are not available there is a trend to hire NGRNs or travel nurses (Bacon & Stewart, 2019, 2022). Three percent of nurses entering OR roles in 2020 and 2022 were NGRNs, and in 2021, 4% entered from nursing school (Bacon & Stewart, 2020, 2021, 2022). Few baccalaureate nursing degree programs offer

clinical experiences in perioperative nursing. When NGRNs enter the workforce, many are unfamiliar with perioperative career options (Mattioni & Wilson, 2018; Plank, 2018). When new graduate nurses are hired directly into an OR, orientation may last 3 to 12 months. To prepare new nurses to practice competently as an OR nurse, post-graduate perioperative specialty education with skill-building experiences, and organizational support are necessary after orientation (AORN, 2018; Schoessler & Farish, 2007; Vortman et al., 2019). AORN anticipated the profession's need for a formal specialty orientation program based to expedite and standardize theory and clinical practices of newly hired nurses. In 1999, AORN made available Periop 101: A Core Curriculum (Periop 101) (Ullmann, 1999). Although the content, format, and methods of dissemination have evolved significantly since inception, an online version of the core curriculum was licensed by over 25 in 2017 (AORN, 2017b).

Trending the results of the annual AORN perioperative nurse salary and compensation surveys between 2019 and 2022, two things were observable. First, over a quarter of ORRNs considered leaving their positions over the last 4 years which may portend an increasing shortage of OR nurses. In 2019, 28% of ORRNs were somewhat or very likely considering quitting within the next year and 10% of these nurses planned to retire (Bacon & Stewart, 2019). In 2020, 26% of nurses felt likely to quit, with 12% of this group anticipating retirement (Bacon & Stewart, 2020). In 2022, 34% felt likely to quit and 9% of them planned to retire.

Second, early career ORRNs constituted the largest percentage (37%) of nurses the OR workforce in 2022. Between 2020 and 2022, the percentage of OR Nurse respondents in the surveys with more than 20 years of OR decreased from 29% to 26.5%,

bearing witness to an exodus of nurses (Bacon & Stewart, 2020, 2022). In 2022, over one third (37%) of OR nurses reported working fewer than 5 years (Bacon & Stewart, 2022). As the proportion of experienced ORRNs decreases, fewer are available to precept, model, and mentor early career nurses. The challenges and risks inherent in all invasive procedures may pose even greater in the hands of inexperienced ORRNs.

To further complicate the workplace staffing issues, in some organizations newly hired OR nurses leave before completing orientation within 2 years (Djukic et al., 2014). In their study of 97 hospitals, Blegen et al. (2017) reported that only 83% of NGRNs stayed in their first role in nursing after 1 year. This trend has been observed in the OR nursing workforce (Brown et al., 2018). orientation period Surveyed ORRNs in Bacon and Stewart's annual reports listed dissatisfactions with work environment, supervisor/manager, compensation, or employer as top reasons for quitting job (Bacon & Stewart, 2019, 2020).

In comparison to other nursing specialties, the shortage of OR nurses may appear less consequential, however, too few nurses, with too little experience seems a combination destined to pose healthcare safety and quality risks for surgical patients. The nursing shortage in ORs can complicate efforts to provide safe, high quality intraoperative nursing care. The OR workplace demands technical skills (a.k.a. practical knowledge) as well as clinical understanding (theoretical knowledge), but also motivation and collaborative efforts that develop over time such as moving patients through invasive procedures without undue harm. With increasing technical complexities in workplaces and shortages of experienced OR nurses the largest proportion of OR nurses have practiced less than 4 years; loss of experienced preceptors and mentors; need for

significant orientation period for novices, newer ORRNs are precepting novice RNs (Jackson, 2008) and the concomitant loss of experienced ORRNs to precept and mentor, has created a situation where). How do early career ORRNs, who constitute a growing percentage of the circulator population, perceive and practice quality and safety, and what are factors that shape their perceptions about these concepts?

OR Quality and Safety

The acts and processes of managing surgical manipulation and anesthetization of the human body pose intrinsic risks of harm, making surgery an inherently "risky business" (Leapfrog Group, 2020; Owens et al., 2018). The IOM called for quality and safety in healthcare and set the stage for medicine, nursing, and other healthcare organizations to improve care by establishing aims, designing strategies, developing competencies, and disseminating education and resources to achieve improvement (Montalvo, 2007). The number of studies that addressed safety in nursing or healthcare increased abruptly beginning in the 1990s. I undertook methodic searches of CINAHL for articles related to *nursing, safety in nursing,* or *safety in healthcare*, examining the number of articles that were yielded when filtering by decade beginning in 1990. The increased number of peer reviewed articles published in ProQuest between 1990 and 1995 was just over 4,000. The number of peer reviewed articles using the same key word search between 2016 and 2020 was 82,058, demonstrating the responsiveness and focus of scholars in medicine, nursing, and healthcare organizations to the IOM's call for a change in the paradigms of care. A multitude of variables have since been identified and measured to characterize quality and safety improvement efforts and proactively reduce

risks, yet inconsistent successes have been realized (Leapfrog, 2020; Nuckols et al., 2013).

Quality and safety standards of practice for OR nursing originated from guidelines established by professional organizations, accrediting bodies, healthcare reimbursement agencies, and federal, local, and state laws. OR safety and QIs today address particular surgical risks in addition to patient handoffs, including but not limited to physical transfer and positioning of patients' bodies, burns (chemical/thermal), specimen handling, transfusion errors, sterility creation and maintenance, medication errors, and errors related to identifying the correct patient and/or correct side/site for the surgical incision (AORN, 2017b; Brown & Aronow, 2016; Wu et al., 2017). QIs include efficiency metrics such as on-time case starts, procedure duration vs. case duration, and productivity (Oh et al., 2011). ORs are tasked with identifying, standardizing, measuring, reporting, and improving practices that affect patient safety and quality of care (Wu et al., 2017). Early career ORRNs work in a high-risk, fast-moving, stressful, and complex procedural environment that is often short-staffed (Ahmed, 2019; Chrouser et al., 2018; Laflamme, 2017; van Delft et al., 2018). ORRNs are pressured to meet standards for both safety and quality which may seem to present contrary aims (Porter, 2010).

Clinical nursing practice in the perioperative setting requires acquisition of specialized skills beyond the competencies of typical new graduates, and over 2500 ORs elect to license a standardized formal perioperative nursing course called *Periop 101:A Core Curriculum*™ for nurses new to the OR. The goal of the curriculum is to foster a basic practice foundation of knowledge, skills, and values for competent entry-level practice in the OR (AORN, 2017; Zinn et al., 2012). Within Periop 101, the graduate-

level QSEN competencies have been threaded, and are present in every lesson plan. The focus on quality and safety in Periop 101 provides a foundation for understanding the concepts of quality and safety in OR settings. Little is known about the perceptions of early career ORRNs experiences and competencies in quality and safety in the perioperative setting. This study will help fill gaps in knowledge about ways early career ORRNs experience safety and quality in the clinical setting, and begin to answer what they perceive as influential in their development of knowledge, skill, and attitudes toward safety and quality.

Problem Statement

The pending exodus of experts in the perioperative nursing field with retirement, and the influx of novices into the perioperative nursing profession is occurring juxta point to safety and quality improvement mandates, with pressure to provide more affordable and accessible care (Ball et al., 2015; Beitz, 2019; Salmond & Echevarria, 2017; Stephens et al., 2017). There is societal expectation that early career ORRNs will understand, value, and practice safe, high quality care. But the nature of what ORRNs understand about quality and safety relative to what they learned during Periop 101 has not been explored during the early career period after orientation. Although QSEN quality and safety competencies have been quantitatively measured by some (Bashaw, 2016; Piscotty et al., 2013), no studies were identified that systematically captured and codified the actual perceptions about safety and quality in the OR, and none were located that examined the factors that ORRNs believe contributed to their understanding and ability to give high-quality, safe care. A description of early career ORRNs' knowledge, perceived skills, and attitudes after Periop 101 with QSEN competencies may assist

healthcare organizational decision-makers and clinical educators to identify and prioritize key program elements and create experiences that promote quality and safety in practice as they orient novice OR nurses.

Purpose of the Study

The purpose of this QD research study was to examine how early career ORRNs who completed Periop 101perceived and experienced quality and safety in professional practice. Data were collected in semi-structured phone interviews with a sample of five early career ORRN participant. An inductive approach was followed to code data. A reflexive thematic analysis (RTA) process was used to generate themes from participants' that gave voice to their perceptions of quality and safety in the OR.

Research Question

The research question that guided this study is: What are the perceptions of early career ORRNs who have completed the Periop 101 curriculum about quality and safety in the OR care setting?

Theoretical Frameworks

Three theoretical frameworks are used to situate participants in this work. Benner's novice to expert model grounds understanding of study participants' transitions in practice competence over the course of a career. Bloom's taxonomy offers insight into how humans learn, and offers three domains, knowledge, skills, and attitudes (KSAs), as requisite for achieving competence. A constructivist paradigm frames how participants come to view the concepts of quality and safety that is uniquely their own. A discussion is presented in the next section of how these contribute to understanding study participants.

Benner's Novice to Expert Competence Model

The theoretical framework for understanding clinical practice in early career ORRNs is based on Benner's (2004) model of novice to expert competence development. Benner (2001) found that advanced beginner nurses who are permitted to practice in a consistent and familiar environment, with patients who have similar conditions or are undergoing similar procedures, and with team members who were supportive will develop characteristics of competence more quickly, and that characteristics of competence are identifiable in observations and discourse with early career nurses (Benner, 2001). Participants selected for this study will be ORRNs who have transitioned from being novices or advanced beginners in the first year of practice, and who are deemed competent in practice in the 2nd and 3rd year. Although study participants are competent, it is understood that each person continues moves along a unique path in the spectrum of competency and movement is contingent on time, experiences, and support to reach the proficient stage of practice.

Bloom's Taxonomy

Bloom's well-known construction of a taxonomy of learning in the early 1950s is still applied by course planners in health occupations education and training (Forehand, 2019). Bloom identified three domains for the taxonomy: cognitive (knowledge),psychomotor (skills), and affective (attitudes and values; Forehand, 2019; Krathwohl, 2002, 2018; Wilson, 2020). The American Nurses' Association (ANA) incorporated a tri-fold framework of KSAs to construct quality and safety nurse competencies, which are now threaded throughout nursing curricula in higher education (Cronenwett et al., 2007), and KSAs are present in PeriOp 101 design (AORN, 2017b).

Participants are viewed as learners who acquired a unique body of knowledge, developed skills, and formed attitudes about OR quality and safety during their initial orientation year as they completed Periop 101 (Forehand, 2019).

Constructivism

The constructivist epistemology is rooted in the fields of philosophy, psychology, sociology, and education (Brandon & All, 2010). Ultanir (2012) asserted that human beings construct reality based on their own understandings as they interact with the world around them. Von Glasersfeld (1992), in his description of radical constructivism, asserted that a singular solution to a problem cannot exist because each human uniquely constructs and organizes a personal reality, raising the possibility that many solutions may exist. In keeping with the tenets of Von Glasersfeld's radical constructivist core ideas, participants in this study are viewed as humans who have constructed unique realities of quality and safety from prior knowledge and experiences as they interacted with people, things, and systems in the perioperative setting. Participants are influenced by "perturbations" (Von Glasersfeld, 1995, p. 113) that motivate them to act, and by values that guide their choices of action.

Nature of the Study

OR-specific quality and safety perceptions and experiences of early career ORRNs have not previously been explored, and I will employ a QD design to produce rich description by nurses in this segment of the perioperative workforce (Maxwell, 2009; Neergaard et al., 2009). A QD inquiry can reveal contextual meanings and demonstrate the complexity of factors that exist around a focused topic (Neergaard et al., 2009; Sandelowski, 2000). The QD design is exploratory in nature, used best when little is

known about a phenomenon, and is intended to discover details that may later inform interpretation or further theory development (Hunter et al., 2018; Neergaard et al., 2009). The QD method is considered appropriate for discovery of new facts, when seeking low-inference interpretations, and may add to the body of evidence for practice (Neergaard et al., 2009; Sandelowski, 2000; Tracy, 2010). In-depth accounts of practice and perspective are necessary to be able to stay close to descriptions by participants (Doyle et al., 2020). Staller (2010) indicated the benefit of using semi-structured interviews to solicit holistic data, and Kim et al. (2017) indicated the value of semi-structured interviews in QD research. For this study, I used semi-structured interview questions (See Appendix D: Interview Guide).

A purposive convenience sample of interviewees was recruited from ORRN members within AORN who have emails on the member listserv. Criteria for recruitment was designed to meet the intent of the research query to better understand quality and safety in early career ORRNs. Participant criteria includes nurses who have worked in an OR circulator role in the same setting for 1 to 3 years after completion of Periop 101 during the first year of employment, and who have no prior healthcare work experiences. Exclusion of ORRNs with prior healthcare employment helped eliminate bias which may have developed during previous experiences.

The number of interviews collected in QD studies varies, and in some cases, will continue until no new information is deemed available, a point referred to as saturation (Guest et al., 2006; Kim et al., 2017; Mason, 2010; Vasileiou et al., 2018). Bradshaw et al. (2017) did not recommend using any particular number of participants, pointing instead to the importance of using saturation for determining sample size. Saunders et al.

(2018) explored approaches to using saturation in qualitative studies, and suggested the threshold is reached with no new codes/themes are apparent, as well as when no new theoretical insights are forthcoming. However, using saturation as an endpoint may not be the most appropriate choice to completely answer this research question. I aimed to explore how early career OR nurses conceptualize quality and safety. I also wanted to capture what factors participants attributed to influence their perspectives on quality and safety. This QD study is not designed to build theory (grounded theory), test or illustrate a theoretical model, or validate a codebook (Saunders et al., 2018). Since few have qualitatively examined the presence of quality and safety concepts in this early career population, little is known; therefore, there is no expectation that saturation for meanings may fully be achieved in an initial study sample. Instead, the relative endpoint for data collection would be the relevance of findings to answering the research question (Clarke & Braun, 2017; Malterud et al., 2016). Small sample sizes are commonly found in qualitative studies, but Gareth et al. (2017) recommended six to 15 interviews for professional doctorate projects. I used a recruitment strategy to achieve maximal variation because this study's aim was to explore concepts in a previously unexplored context and to obtain rich, robust descriptions (Bradshaw et al., 2017). To promote variation in findings, participant data were sorted by categories for workplace size (five categories) and type (inpatient and outpatient). This research question is a novel one and expected to begin depicting an understanding of the role of Periop 101 in early career ORRN quality and safety practices. Future studies will be needed to create a robust view of early career ORRN perceptions. Due to pragmatic concerns of time and finance, the sample size was limited to 10-15 participants (Vasileiou, 2018).

The potential combinations of workplace variables for OR type and size were calculated, yielding six possible combinations. The sixth combination produced consisted of the variables, *outpatient setting* with *greater than 10 ORs*. The average number of ORs in outpatient ambulatory surgery centers in 2017 was three (Medicare Payment Advisory Commission, 2020). Based on this, it was expected that more volunteers will be from outpatient facilities with fewer ORs. This combination of type and size of facility was not included as a demographic category, leaving five potential characteristic combinations.

Audio-recorded interviews will be transcribed verbatim. With the assistance of a computer assisted qualitative data analysis software, data were initially structurally coded using a coding frame as described by Schreier (2014). A process of inductive coding and theming followed Braun and Clarke's (Gareth et al., 2017) approach of RTA, which consists of six systematic steps to immerse the researcher in the data, and which emphasizes the use of reflection by a researcher who is an insider to the discipline.

The semi-structured interview guide incorporated open-ended questions with prompts to expose participant perceptions and elicit descriptions of clinical practice experiences. Field notes were used to record my thoughts and affective responses as they occurred during the interview. Field notes were referenced during coding to help clarify meanings if ambiguity exists in voice recordings and to identify potential areas of researcher bias.

The data management process was performed as described earlier for transcripts from the first five participants, who comprised a group of maximally diverse and grouped to comprise the first cohort of transcripts. Case classifications using demographic items were used to build a coding frame for indexing of interviews. Demographic details about

participant characteristics included personal data for age ranges, and gender, and workplace hospital bed size, and type of OR setting. Demographic data were be reported as frequencies and measures of central tendency.

Definitions

Key terms and concepts in this study are defined below to elucidate perceptions and context throughout the unfolding process of answering the research questions.

Competent: Nurses who work in the same or similar setting, performing similar types of care for 2-3 years are thought to be competent (Benner, 2001). In this stage, nurses shift from focusing on what and how to perform (rule-based) care to planning and integrating care based on a broader range of perspectives and situational factors that inform decision-making (Benner, 2001; Garside & Nhemachena, 2013). Care given during this time is organized and efficient (Benner, 2001).

Competencies: Observable and measurable behaviors exhibited during the performance of role-specific tasks are considered competencies. Competencies contribute to the larger construct of competence (Meretoja et al., 2015), and are often measured using checklists or rubrics. Domains of competency/ies are thought to include KSAs and other attributes (AACN QSEN Educational Consortium, 2012; Fukada, 2018).

Early Career ORRNs: Nurses who are no longer novices or advanced beginners and are considered competent. This group has completed orientation but worked fewer than four years as an ORRN.

Novices: Nurses with foundational knowledge of general and basic practices who lack clinical experiences and skills to apply theory to practice (Benner, 2001). Novice

nurses are able to follow rules; however, they are not able to adapt what they know to new situations without guidance.

QSEN competencies: The QSEN initiative developed undergraduate and graduate-level competencies for six domains: Patient-centered care, teamwork and collaboration, evidence-based practice, quality improvement, safety, and informatics. Each QSEN competency domain is constituted by KSAs (Lyle-Edrosolo & Waxman, 2016). The aim of the QSEN initiative was to prepare nurses through education to improve the safety and quality of health care (Chenot & Christopher, 2019). Graduate-level QSEN competencies are present in the Periop 101 curriculum.

ORRN: For the purposes of this study, the term will represent the role of OR circulator/circulating nurse, although other RN roles in the OR are possible. The ORRN circulator functions as a non-sterile team member in an invasive procedural area such as an OR, catheterization or endoscopy lab, or outpatient/ambulatory surgical clinic. This ORRN circulator role is

> performed by the perioperative registered nurse, without donning sterile attire, during the preoperative, intraoperative, and postoperative phases of surgical patient care. In collaboration with the entire perioperative team, the RN circulator uses the nursing process to provide and coordinate the nursing care of the patient undergoing operative or other invasive procedures. (AORN, 2014)

Assumptions

Assumptions in this study relate to participants. While it is not possible or expected that every participant will have identical experiences as they learn the role of ORRN, there are two assumptions made for every participant that are accepted.

1. New ORRN participants in the early stage of their career are competent in practice based on Benner's (2001) assumption that competent nurses have moved beyond those characteristics displayed by novice and advanced beginner nurses as they acquired experience, and that this developmental stage occurs within the first 2 to 3 years of clinical practice.
2. New ORRN participants will truthfully share perceptions and recount the realities of their experiences according to their best recollection, acknowledging that human memory is subjectively and uniquely constructed, and time and distance from experiences may reduce accurate recall (Howard & Eichenbaum, 2013).

Scope and Delimitations

The KSAs of circulating ORRNs are of interest to this study, thus other perioperative nurses who may function peripherally in pre-, and post-operative units, or whose role is other than a circulator are excluded. New ORRNs were selected as participants because they are deemed competent, yet little is known about the nature of KSAs related to quality and safety present during the early career phase. *AORN's Position Statement on One Perioperative registered Nurse Circulator Dedicated to Every Patient Undergoing an Operative or Other Invasive Procedure* (2014) indicated the role of the ORRN to influence quality and safety throughout a patient's operative experience. This study will identify elements of what and how quality and safety are accomplished by competent nurses who are relatively new to the role and practice setting. Criteria for

selection of participants for the purposive homogenous convenience sample is limited to registered nurses who:

- have no prior healthcare experience before working as an ORRN,
- were hired after graduation from a baccalaureate program directly into the OR,
- completed Periop 101 during orientation to the department within the 1st year,
- have worked a minimum of 1 year and fewer than 4 years full-time as an ORRN in the same OR, and
- are currently employed at least half-time in an OR.

Limitations

Limitations that may impact the study include those related to methodology and method processes, and those related to the researcher (Price & Murnan, 2004). I planned a purposive sampling method to maximize variability in responses for this descriptive study. With purposive sampling, findings are unique to participant experiences and contexts, therefore generalization may not be possible. However, transferability may be possible if findings resonate with others in similar settings (Tracy, 2010). Demographic data points were collected and reported descriptively about participants and workplaces to improve transferability by offering context for comparison by organizations that are seeking information on transfer of safety and quality KSAs to OR practice (Kivunga & Kuyini, 2017).

Researcher-related actions at any point during planning, data collection, analyses, or syntheses may limit rigor in the study. This proposal acknowledges that planning and administering this qualitative study design rests directly on my self-discipline,

interpersonal finesse, and strategic data management skills to plan, capture, read, reflect, organize and report meaningful data and establish credibility, confirmability, dependability, and transferability of results. Processes were thoughtfully planned and explicated in detail within memos and journal entries as they progress. I documented steps of the processes as they occurred, recorded personal reflections about the processes, and described obstacles encountered and any changes that may be required to circumvent them. Memo and journal content was summarized in this paper to improve process transparency and expose researcher biases as they were encountered.

Significance

Patients expect to receive high quality, safe nursing care that is responsive and beneficial to their unique health needs (Agency for Healthcare Research and Quality [AHRQ], n.d.; Becker's Healthcare, 2015; Trossman, 2010). Healthcare organizations endeavor to deliver high quality, safe, yet affordable healthcare that meets requirements for maximum third-party reimbursement and credentialing (Burton, 2017; Godden, 2012). Nurses are ethically accountable for providing high quality, safe and affordable care as part of their professional contract with society (Bailes et al., 2014; Tyer-Viola et al., 2009; White et al., 2015). To be accountable nurses must have KSAs that underpin safety and quality practices. The Periop 101 curriculum with embedded graduate-level QSEN competencies is an option selected by over 2,500 organizations to prepare novice ORRNs to prepare nurses new to the OR (AORN, 2017b). Because orientation for novice ORRNs requires human, educational, time, and material resources which can be financially significant to healthcare organizations (Chappy et al., 2016; Silvestre et al. 2017), organizational leaders that select Periop 101 with graduate-level QSEN

competencies for new hire orientations anticipate that program graduates will enact and support safe, high quality care practices with timely completion of this program. Since no reports were located during searches of how Periop 101 graduates perceive safety and quality after they complete the program, this study will contribute to an understanding how early career ORRNs perceive and practice safety and quality after completing Periop 101 and will elucidate the role of the program in preparing new ORRNs to respond to societal demands for safe, high quality care in a complex, acute care environment. This knowledge may help organizations reflect on decisions to use Periop 101, and ways to optimize new hire orientation for ORRNs.

Summary

The role of the ORRN is considered integral for achieving positive patient outcomes for surgical patients (AORN, 2014; AORN, 2017b). Preparation of novice ORRNs for safe practice predominantly comes at the expense of hiring organizations since perioperative nursing has been phased out of academic nursing programs. With a perioperative nursing shortage occurring as society's awareness of healthcare quality deficits and medical errors increases, safe, high-quality nursing care in the OR is highly desirable. Studies have examined how AORN's specialty curriculum, Periop 101, affects retention (Byrd et al., 2015; Vortman et al., 2019), and improves standardization in the OR (Bragdon, 2012) but have not yet described how safety and quality knowledge is perceived or the skills and attitudes program graduates have in early practice. In a society where hospitals and patients anticipate nurses will demonstrate safe, high quality care at graduation, or soon after hire, the potential benefits of identifying value for formal programs that will foster early, consistent, and sustainable safety and quality care

practices are of interest to healthcare stakeholders (IOM, 2010; Murphy & Janisse, 2017; Rush et al., 2013). This study will begin to address the gap in knowledge that exists.

In Chapter 2, the literature that explicates safety and quality practices and problems within the context of the OR are described. A high-level view of the Periop 101 curriculum is provided including the history and applications of QSEN competencies which are foundational to Periop 101. The theoretical framework for competence in nursing practice will be introduced in Chapter 2, followed by scholars' definitions of pertinent terms. QSEN competencies for safe high quality care are then introduced to provide a platform for later analyses of participants' practice narratives for competencies. In Chapter 3, the methods of inquiry and the rigor to maintain quality are described. A discussion of systematic data management and coding is included.

Chapter 2: Literature Review

Introduction

Amidst calls for health care reforms over the past 2 decades, health care organizations began to assume accountability for the delivery of high quality, safe care that was affordable, efficient, patient-centered, timely, and equitable (Beitz, 2019; IOM, 2001; Salmond & Eschevarria, 2017). During this paradigm shift in care delivery, the Association of periOperative Registered Nurses (AORN), predicted shortages of experienced ORRNs (AORN, 2015a). AORN's prediction materialized, and shortages of nurses in the OR increased almost annually between 2013 and 2023 (Bacon & Stewart, 2022; Chappy et al., 2016; Sherman et al., 2014; Zinn et al., 2012). Patients expect to receive high quality, safe care from competent nurses during their invasive experiences (Church, 2016). Healthcare administrators, managers, academic and clinical educators acknowledge the need for nurses to demonstrate quality and safety competencies (Flores et al., 2013). Conjointly, societal pressures to transform healthcare services and shortages of experienced ORRNs made it imperative for health care, academic, and professional nursing organizations to foster quality and safety competencies in novice nurses (Altmiller, 2017; Buerhaus et al., 2017; van Graan & Williams, 2017). QSEN was developed to fill this need (Chenot & Christopher, 2019). Altmiller (2017, 2018), a leader in developing QSEN education strategies, reported that deficits in implementation and evaluation of QSEN clinical competencies have continued over the last 10 years since Cronenwett et al.'s (2007) initial proposal to incorporate quality and safety competencies into academic nursing curricula. Although scholars have reported on the integration of QSEN into academia nursing curricula, research on how nurses beyond graduation

perceive and embody QSEN competencies in practice is uncommon (Altmiller, 2017; Ambrosio-Mawhirter & Criscitelli, 2018; Hulett & Davis, 2020; Mennenga et al., 2015; Piscotty et al., 2013; Sherwood & Nickel, 2017). A gap in understanding how QSEN competencies for quality and safety are understood and practiced exists in the perioperative setting.

During broadly-based literature searches in a variety of academic databases, factors related to the status and implications of demands for quality and safety in healthcare and in the OR were located. For the purposes of this study, it will be important to acknowledge the potential implications these factors may have, and these are discussed in the literature review. A discussion of the theoretical framework of competence in Benner's works is included to situate the participants as competent, early career ORRNs. The literature review also references the theory of constructivist learning as it frames the researcher's understanding of the development of KSAs needed for QSEN competencies to develop. Strategies for literature searches are described in the next section of Chapter 2, followed by a discussion of theoretical frameworks. The review of pertinent literature concludes this chapter.

Literature Search Strategy

Electronic literature searches began in 2016, and continued through 2020, in the following library databases iteratively: CINAHL Plus with Full Text, CINAHL and MEDLINE, ERIC and Education Source Combined, MEDLINE with Full Text, OVID, ProQuest (multiple), PsycARTICLES, SAGE Journals, ScienceDirect, Emerald Insight, and PubMed. Database searches were limited to peer-reviewed or scholarly articles in English language which were available as full-text. Where possible, expanders for *related*

*word*s and *subjects*, and *within article text* were selected to provide the largest number of articles, then filters were applied according to the search topic characteristics.

Varying date range strategies were used depending on the search topic. For example, when searching on 'Benner', literature date range began in 1980 to locate foundational publications by Benner. Interative searches for studies where it was applied, and establish a chronological sense of change as studies were published. Date delimitation was not used for similar reasons when searching for foundational safety and quality documents from major agencies: AHRQ, AORN, IOM, and other professional groups. Date range was limited to the last 10 years for workforce statistics and VBP. Date ranges for searches related to quality and safety indicators, and nursing shortages was set for 2015 to current to produce a current perspective.

The following terms were used singly and in combinations during database searches: competen*, nurs*, safety, quality, QSEN, Periop 101, orientation, Benner, novice to expert, skill acquisition, teamwork, intellectual capital, nurs*-sensitive indicator, nursing shortage. The terms, perioperative, surgical or operating room were combined with risk factors, adverse events, transition to practice, learning theory, human factors, turnover, value-based purchasing (VBP), productivity, stress, burnout, resilience. Key term competen* was iteratively searched in all databases to locate theory, definitions, models and instrument applications in scholarly works from other professions as well as nursing. Google and Google Scholar searches were conducted to identify relevant titles for subsequent database searches as well as open access articles. Additional articles were found in reference lists from collected articles.

Scholarly articles related to perioperative competencies were not limited to those published in the United States. Globally, time and requirements for academic and clinical preparation of nurses varies, as do expected competencies. Differences in academic and clinical preparation, registry and licensure milestones made cross-comparison of nurse practices challenging if information about preparation was absent. Articles were selected for inclusion if they described perioperative competencies by BSN prepared nurses who were employed as fully licensed and registered nurses in their country's health care system.

Articles were saved in adobe acrobat digital form when possible and catalogued using folders with subfolders for substructed categories. The filing nomenclature for articles began with the prefix 'Art-', followed by the title, the last name of the first author, and the publication year. Webpages/sites, white papers, book chapters and other resource types were prefaced with pertinent three to four letter descriptors for the document type (e.g., webpage, book, chapter#), then followed the previously described naming system. This system allowed for easy retrieval by type, author, and date when searching articles saved in my collection.

Theoretical Foundations

A theoretical foundation acts as a "coat hanger" for data analysis and interpretation, offering opportunities to view the world in a systematic way, and demonstrating relationships among constructs (Kivunja, 2018; Lewis-Beck et al., 2004). Willig (2014) suggested that theory is crucial to interpretation of data and stresses the importance of the researcher's conceptual lens throughout analysis. I embrace a *critical realist* lens, which is positioned nearer to *relativism* than *realism* along the ontological

theory continuum. I consider it plausible that a reality could exist outside the realm of human perception (Maxwell, 2018), but discount the ability to find a singular truth (Schwandt et al., 2007),) and believe individuals, myself included, perceive reality in ways that are shaped by earlier experiences and worldviews as well as contextual influences (Maxwell, 2018). Accounts of authentic experiences can contribute to a common pool of knowledge that is may be valuable to others (Braun & Clarke, 2013).

Constructivism

As an epistemology in the psychology field, constructivism acknowledges that humans subjectively construct their own realities and that a different version of reality exists for every human being (Burr, 2004; Gash, 2014; von Glasersfeld, 1992). Constructivism as a developmental theory was described by Piaget, a cognitive child psychologist, between 1929 – 1955, and his work was expanded upon by Vygotsky in the early 1960's (Burr, 2004; Yoders, 2014). Others since have incorporated constructivist ideas into instructional designs that feature approaches to actively involve students, are relevant, facilitate applications to life, based on the educator's role as a facilitator (Gronseth, 2015; Jiang & Perkins, 2013; Lewis-Beck et al., 2004; Packer & Goicoechea, 2000; Ultanir, 2012; WNET, 2004; Yoders, 2014).

My perspectives about participants were shaped by von Glasersfeld's (2001) radical constructivist epistemology, which served "as a way of thinking about knowledge and the activity of knowing" (p. 91). Von Glasersfeld asserted that the foundations of constructivism rose from works by philosophers Kant, Vico, and Berkeley in the 18th century, and were refined and applied to human development philosophies by Piaget, who perceived *knowledge* as an accommodation to "fit into the world" (p. 96). Von

Glasersfeld's radical constructivism implicated the cognitive abilities of humans as instrumental in organizing, accommodating, and making meaning of the world. The following constructivist ideas from von Glasersfeld and others guided this study.

- Learners are considered active builders of knowledge, using past knowledge and experiences to frame new experiences which allows for construction of new and more robust knowledge (Mukhalalati, 2019).
- ORRNs are self-directed learners who are able to construct new knowledge "through discovery and exploration in a responsive learning environment" (Tennyson, 2010, p. 7).
- New ORRNs are free agents, choosing to learn what they perceive as personally valuable, often in light of the socio-cultural environment that surrounds learning opportunities (Packer & Goicoechea, 2000).

Variances in accounts of knowledge and experiences among new ORRNs will occur with certainty, regardless of similarities between participants. Yet variant findings do not diminish the value of the study. Instead, gathering the perceptions, ideas, descriptions, and reflections about various practices will facilitate answering the research question in a more robust and holistic manner.

Novice to Expert

Nurse participants are assumed to be competent practitioners according to Patricia Benner's (2001) model of clinical practice development commonly referred to as the novice to expert model. Benner found that as nurses acquire knowledge and skill, their practices reach a level of competence between the end of Year 1 and the end of Year 3. The early career perioperative nurse population was selected as important to understand

because they were newly competent in the practice arena and were the largest and fastest growing segment of ORRNs (37%), constituting more than one-third of perioperative nurses surveyed (Bacon & Stewart, 2022).

Competence

Competence in nursing has not been defined consistently among scholar practitioners, and confusion continues to exist between the concepts of competence and competencies (Garside & Nhemachena, 2013; Gillespie & Hamlin, 2009; Yanhua & Watson, 2011; Terry et al., 2015). The terms are interchangeable in some articles and are interpreted as distinctly different in others (Kahn & Ramachandran, 2012). For this study, the concepts of competence and competency/ies will be viewed as distinct. Fukada (2018) distinguished between these by describing competence as an 'ability' arising from knowledge and experience, and competency/ies as observable 'behavioral characteristics' that reflect a person's experiences and attitudes. More simply put, "Competence (ability) is a premise for developing competency" (Fukada, 2018, p. 1). Kahn and Ramachandran (2012) viewed competence differently, interpreting it as "a point on a spectrum of improving performance" and they conceptualized competency as skills (p. 902). Competence herein will be understood as the region along the continuum of nursing practice development where nurses shift from decision-making based purely on rules (novice and advanced beginner stages), to incorporating a broader range of perspectives and situational factors (Benner, 2004).

Benner (2001, 2004), who applied the Dreyfus and Dreyfus (1980) model of skill acquisition during two studies of nurses over 9 years, identified characteristics of five stages of development in nurses along the competence continuum. Benner (2001) found

novice nurses lacked knowledge and skills pertinent to a new role, and therefore practicing by rule-following and requiring frequent feedback and supervision. Newly graduated nurses who enter the as a first nursing position are considered novices. It is thought that novices combine knowledge from past life experiences with newly acquired theoretical knowledge to learn a new role (Benner, 2001). Nurse novice learners are motivated by their attitudes as they transition along the competence continuum through the 'advanced beginner' practice stage to 'competent' practice (Benner, 2001; Theisen & Sandau, 2013). 'Proficient' and 'expert' nurses are considered competent, highly advanced practitioners whose practices are characterized by efficient time and resource management skills, effective team member communication skills, and recognition and consideration of patients' specific care needs (Benner, 2001). At the expert stage, decision-making becomes intuitive (Benner, 2001).

Participants in this study are ORRNs who, according to Benner's model of novice to expert, transitioned from novice nurses when hired to become advanced beginners during the first year of practice in the OR, and in the second and third year, are competent in nursing practice. New ORRNs are expected to become competent within the first 2 to 3 years when they work within the same or similar setting, performing similar surgical procedures with the same team members (Benner, 2001; Garside & Nhemachena, 2013). While novices are guided by rule-following, they also rely heavily on consultations with those more experienced. An advanced beginner delivers patient care more autonomously and begins to recognize additional elements and aspects in care situations that must be considered with decision-making. Advanced beginners are still rule-followers and in unfamiliar care situations must consult with experts and begin to demonstrate

competency in basic skills (Benner, 2001; 2019; St. Martin et al., 2015; Theisen & Sundau, 2013). At the competent level, nurse' perspectives broaden to view self and work as part of a greater whole. Competent nurses are able to plan care based on prior experiences and theoretical knowledge, and they may coordinate a variety of complex care regimens with others as a team (Benner, 2001). The competent nurse has a sense of mastery in work but is not yet proficient, therefore carries out care slowly (Benner, 2001; Spence, 2019). Proficiency can develop in competent nurses if they are provided with contextual consistency, feedback, and support (Benner, 2001). At the apex of competent practice is an expert who can quickly perceive and weigh a vast number of factors in care situations, to act quickly based on these, and display an intuitive understanding arising from past experiences. Not all who are competent will become proficient or expert (Causer et al., 2014).

Benner's (2001) explanation of transition from novice to competent practice acknowledges the distinction and interrelationship between "knowing that" and "knowing how" (p. 2). Theoretical knowledge of perioperative nursing practices, rules, and standards is a necessary component to knowing-that (Benner, 2001). However, practical knowledge is applied during practice, hence the importance of knowing-how to the concept of competence (Benner, 2001). Over time, new experiences are framed by prior knowledge, and skills become more sophisticated. The language nurses use to describe their work also changes, offering insights into their level of practice along the continuum (Benner 2001). Novice learners focus almost exclusively on one aspect of a situation and are unaware of other aspects which may be important as well. Advanced beginners describe work in terms of whether rules and standards are followed. Competent nurses

identify aspects of the context which are relative to rules but can discriminate between aspects which require priority actions (Benner, 2001). In novel situations, competent nurses consider many options, some irrelevant, before making decisions. This basic analytic process distinguishes competent nurses from proficient nurses who focus immediately on the "accurate region of the problem without wasteful consideration" (Benner, 2001, p. 3). Study participants are assumed to be competent since they have worked between 2 and 4 years as ORRNs in the same OR.

Competency/ies

At the simplest level, competency/ies are behavioral skills which are observable (Cox, 2016; Garside & Nhemachena, 2013). Wilkinson (2013) and Cox (2016) argued that more than observable skills are necessary for competency. The ANA (2013) defines competency as "an expected level of performance that integrates knowledge, skills, abilities, and judgement (p.3). AORN (2016) defines competency as "the knowledge, skills, and abilities needed to fulfill the professional role of an RN in the OR", and Stobinski (2008) further clarifies by saying, "competency is what the nurse is capable of doing, and it is manifested in measurable actions and behaviors" (p. 417).

Competency domains vary by specialty and practice model. For example, in Benner's (2001, pp. 47-75) competency domain, the "helping role", nurses were observed creating a healing relationship, providing comfort through touch and communication, and being present. Competency standards and models are developed by professional nursing organizations like AORN, ANA, and accrediting organizations such as The Joint Commission, Magnet and state boards of nursing. Such organizations also designate practice domains and performance guidelines (Lyle-Edrosolo & Waxman, 2016;

Stobinski, 2008). With many sources of competencies, it is challenging to narrow the list of competencies that are most likely to best serve the public and patients' interests. Quality and safety competencies have been identified as paramount across nursing specialties and have been formally integrated into academic nursing curricula for undergraduate and graduate level programs using competencies from QSEN (Altmiller & Hopkins-Pepe, 2019; Cooper, 2017).

Literature Reviews – Key Variables

In this chapter, I will introduce variables that situate the research question: the ongoing OR nursing shortage; the historic development of healthcare improvement; OR specific quality and safety; the Periop 101 program, and QSEN quality and safety competencies.

Nursing Shortage

Over 100 million surgeries are performed annually in the United States (Mattingly et al., 2021). ORRNs circulate in most surgical procedures and play a critical role in the provision of safe, high quality intra-operative care for these patients (AORN, 2015; AORN, 2017b). However, experienced ORRNs are in short supply, and the shortage worsened since 2000 (Ball et al., 2015; Schmidt & Brown, 2019; Zinn et al., 2012). In the 2019 Bureau of Labor Statistics Job Outlook authors suggested that an influx of people into the nursing profession could help alleviate the overall nursing shortage but indicated that procedural specialty areas such as the OR would likely continue to experience shortages.

Between Bacon and Stewart's 2020 and 2022 annual publication of perioperative nurse salary and compensation survey results, the subset of early career respondents with

fewer than 5 years of OR experience grew from 30.2% to 37%. The percentage of mid-career nurses with 6 to 20 years of experience dropped from 40.6% to 36%. The subset of later career nurses (21 to 35 years) fell from 29% to 26.5%. Just over 6% had worked 35+ years in 2022 survey. Observation of serial survey results since 2012 revealed the median vacancy rate rose from 3% in 2013 to 18% in 2022 (AORN, 2017; 2018, 2019, 2020, 2022). The average age of perioperative nurses dropped from 46 years in 2020 to 45 in 2022 (Bacon & Stewart, 2020, 2022). Department managers reported difficulties filling vacant ORRN positions in 2018-2022 (AORN, 2018, 2019, 2020, 2022).

The shortage of experienced ORRNs is concerning since the pool of experienced perioperative nurse recruits has dwindled and few newly graduated nurses are exposed to OR nursing thus do not consider entering OR careers (Beitz, 2019). Beitz (2019) considered the status of the shortage of ORRNs alongside the increasing societal demands for technology and teamwork skills, predicting that threats to patient safety will continue. In 2014, Sherman et al. (2014) predicted that patient access to surgical procedures, patient safety, and financial ramifications may result from shortages of perioperative RNs. Landers (2015) cited a connection between potential causes of perioperative errors and shortages of experienced ORRN staff. In June 2020, novice and early career ORRNs occupied more than 37% of the OR nursing workforce (Bacon & Stewart, 2022). It is important to understand the nature of quality and safety competencies in OR practice settings for this growing group, and learn what factors they perceive are influential in their KSAs about quality and safety (AORN, 2020a).

Healthcare Quality and Safety

Quality and safety in healthcare has become increasingly important to Americans since the advent of the IOM's (2000) call for quality improvement at the turn of the century. This call was prompted by reports of rising prevalence of errors and poor quality in healthcare (IOM, 2000; Lohr & Schroeder, 1990). The IOM (2000) defined quality in healthcare in 1998 as "the degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge" (p. 11). In 2001, the IOM introduced six aims to improve American healthcare quality in their report, *Crossing the Quality Chasm: A New health System for the 21st Century*. These six aims prompted a proliferation of quality and safety improvement programs to promote care that is:

- safe
- effective
- patient-centered
- timely
- efficient
- equitable

The IOMs six aims and their foundational recommendations have been adopted, expanded, and operationalized in healthcare by multiple federal, state, and professional regulatory bodies resulting in a plethora of structures, processes and outcome measures that healthcare organizations strive to achieve (Marjoua & Bozic, 2012). Despite decades of monitoring and attempts to reform the healthcare system, measuring and ensuring high

quality health care remain relevant issues (Aiken et al., 2018; Salmond & Echevarria, 2017; Zlatos, 2019).

Quality in healthcare is frequently measured with structural, process, and outcomes indicators (Brown et al., 2018; Burston et al., 2013; Chassin & Loeb, 2011; Donabedian, 1966, as cited in Donabedian, 2005; Montalvo, 2007; Zlatos, 2019). Structural QIs in the perioperative setting are focused on surgical volumes and compliance with perioperative protocols that span the entire perioperative care experience (Chazapis et al., 2018). Structural variables such as skill mix, patient to nurse ratios, and nursing hours per patient day are indicators of quality as well (Burston et al., 2013).

Process indicators use data extracted from the electronic medical record at key care points to demonstrate compliance with best practices, such as prophylactic antibiotic administration in specified surgical cases and actions and adherence to protocols that prevent venous thrombo-embolus (VTE) occurrences. In a 2018 systematic review of 131 articles, Chazapis et al. (p.56). identified "261 clinical indicators relevant to structure and process measurement of perioperative care."

Quality outcome measures that are thought to be dependent on nursing care in surgical settings collect data around prevention of blood clots (VTE), pressure ulcers (HCPUs), urinary tract infections (UTIs), and surgical site infections (SSIs; Myers, 2018).

Safety in healthcare is a constituent of quality care. In 2000, the IOM report, *To Err Is Human: Building A Safer Health System*, categorized patient safety as one of three domains within the construct of quality in healthcare, contemporaneous with "practices that are consistent with current medical knowledge, and customization" (IOM, 2000, p.

18). In the last 2 decades, healthcare organizations adopted quality-oriented care models to make patient safety a priority, create an environment of reporting and accountability, and to demonstrate the successes of their patient safety efforts to the public (Phipps, 2017; Ponte et al., 2004). Models located in patient safety literature have proposed multiple contributing factors: individual nurse and hospital characteristics (Lee et al., 2018); architecture and facility design (Joseph et al., 2018); the interaction of human factors within organizational systems design (Henriksen et al., 2008); and nurse staffing mix and staffing patterns (Stevens et al., 2019) among others. Quality and safety measures in healthcare are also monitored by a multitude of federal and state agencies that regulate and accredit healthcare organizations. The Joint Commission (TJC) issues practice standards and accredits hospitals that meet specific quality and safety criteria (TJC, 2020). State statutory provisions guide hospital interpretations of quality and safety measures and establish error reporting processes and surveillance (Weinberg et al., 2005). Federal agencies that monitor and regulate healthcare quality and safety include: Department of Labor, Environmental Protection Agency (EPA), IOM, and under the umbrella of the Department of Health and Human Services (DHHS) CDC, CMS, National Institutes of Health (NIH), Food and Drug Administration (FDA), and the AHRQ (Study.com, 2020). Measurement and reporting of compliance with a large number of clinical indicators can be cumbersome and costly for organizations (Penn LDI, 2015). In the second decade of the 21st century, organizations have capitalized on information technologies to capture, analyze, and report performance for indicators (American Hospital Association [AHA], 2018; Burston et al., 2013; Chassin & Loeb, 2011; Malloch, 2015; Marjoua & Bozic, 2012; Onsoyen et al., 2010; Shirey, 2013; Wu et

al., 2017). For example, the American College of Surgeons (ACS) collects and submits data to a global repository called the National Quality Improvement Program (ACS-NSQIP) to determine best practices for structures, processes, and outcomes of surgical patients, and to benchmark hospitals (Horn et al., 2019; Liu et al., 2018; Zlatos, 2019). Horn (2019) utilized the ACS-NSQIPs database to identify elements present in elective surgery spinal cases that reduced healthcare acquired conditions (HAC) in this population of surgical patients. HACs, a termed used by CMS (2020), are preventable conditions that result in higher costs of care if they occur. Horn examined a sample of 90,551 spinal cases from the ACS-NSQIP database, revealing the occurrence rate of HACs in 3.3% of cases, which included SSIs, UTIs, and VTE. Horn identified key demographic, clinical and surgical elements that were predictive of HAC occurrences, providing impetus for hospitals to systematically identify these contributing elements prior to surgery and manage processes that are amenable to improvement (Lau & Chamberlain, 2017).

OR Quality and Safety

OR quality is grounded in the six aforementioned IOM (2001) aims. Similar to other acute care areas, quality in OR care crosses multiple disciplines (medicine, nursing, anesthesia, sterilization, etc.), across a variety of locales (inpatient, outpatient), and occurs on multiple sessions across time (pre, intra-, and post-operative phases, e.g.; Zlatos, 2019). Surgeons, nurses, anesthesia providers, infection control specialists and other allied professionals are collectively accountable for quality and safety in the OR, which is a fast-paced, complex working environment (Muller et al., 2018). OR-related quality and safety indicators may be process-related, such as patient hand-offs, outcome-related, such as SSIs, or they may require structural elements such as policies, staffing

patterns, or pathways to be in place (Donabedian, 2005; Gilhooly et al., 2020). Invasive procedures carry inherent safety risks which cannot be completely eliminated; other risks can be mitigated, for example, controlling blood sugar ranges in diabetic surgical patients. Since a body of knowledge exists around actions that were found to decrease surgical risks and improve outcomes, it may be valuable to introduce four ways that perioperative quality and safety are situated and how this relates to the role of circulating nurses.

Complex data abstraction and analytical processes exist to demonstrate rates for *surgical risk, healthcare-acquired condition*s, *sentinel events*, and *adverse events*. To offer context for understanding quality and safety in the OR, a discussion of these four aspects is offered.

Surgical Risk

Surgical procedures pose inherent safety risks including risk of death due to the nature of surgical techniques and skills of the surgeon (Liu et al., 2018; Wahr et al., 2013). In addition to procedural risk, the physiology measures of patients' functions contribute toward estimating surgical risk. Some surgical risks are preventable, and others are not. Surgical risk was defined by Shaydokov and Tuma (https://www.ncbi.nlm.nih.gov/books/NBK532240/?report=printable, 2023) as, "a cumulative risk of death, development of a new disease or medical condition, or deterioration of a previously existed medical condition that develops in the early or late postoperative period and can be directly associated with surgical treatment." Surgical risks include safety risks, and these may arise from the use of equipment such as electrosurgical units and lasers (Borie et al., 2017), when teams have poor non-technical

skills (Gordon et al., 2012), when patients are transferred between care providers (Brown & Aronow, 2016; Wu et al., 2017), and when other communication challenges among team members exist (Schiff et al., 2016; Wahr et al., 2013).

Surgical risks may be compounded by health conditions of patients that are influenced by the techniques utilized in anesthesia management (American Society of Anesthesiologists, 2020; Chand et al., 2007; Liu et al., 2018; Nasr et al., 2019; Schwarze et al., 2015; Smilowitz & Berger, 2020). Shaydakov and Tuma (2023) offered a review of surgical risk stratification models that included: ASA physical status classifications; Cardiac Risk Index which considers cardiac, cerebrovascular, renal, endocrine, and major surgery history; POSSUM risk table with physiologic and operative variables; and the ASC NSCIP universal risk calculator which uses CPT codes, age, gender, functional status combined with disease states as variables (Chudgar et al., 2022).

The terms used for preventable harms include serious reportable events (SREs), HACs, sentinel events (SEs), and adverse events. A brief introduction to preventable harm terms follows.

The NQF (2011) initially published a list of SREs in 2002, describing them as adverse events that were preventable occurrences in hospitals that resulted in serious disability. Five National Quality Forum (NQF) SREs exist for hospital perioperative setting, outpatient surgery centers, office settings, and long term care:

- surgery or invasive procedures performed on the wrong site
- surgery performed on the wrong patient
- the wrong surgery or procedure was performed on a patient
- a foreign body was unintentionally left inside the patient postoperatively

- or a healthy patient died on the OR table or immediately afterward (NQF, 2020).

Healthcare-Acquired Conditions

In 2008, CMS established a category of events called *healthcare-acquired conditions* (HACs) and announced that they would no longer reimburse healthcare organizations for associated costs when these occurred (CMS, 2020). Between 2014 and 2020 CMS (2020) monitored 14 HACs, some of which pertained to surgical patients: foreign objects retained after surgery, transfusion incompatibility, Stage III and IV pressure ulcers, falls, poor glycemic control, CAUTI, vascular catheter-associated infections, SSIs in selected procedures, and deep vein thrombosis (DVTs) in knee and hip arthroplasty cases. Changes in the reimbursement model during this decade incentivized healthcare organizations and ORs to begin working toward quality improvement in an earnest manner.

Sentinel Events

A *sentinel event* (SE) as defined by TJC is a "patient safety event that results in death, permanent harm, or severe temporary harm" (https://www.jointcommission.org/resources/patient-safety-topics/sentinel-event/). The most frequently reviewed procedural sentinel events by TJC are falls, unintended retention of a foreign object during invasive procedures, suicide, wrong surgery, and delays in treatment (https://www.jointcommission.org/-/media/tjc/documents/resources/patient-safety-topics/sentinel-event/most-frequently-reviewed-event-types-2020.pdf)). Perioperative team members are led by ORRN

circulators to account for sponges, instruments, and needles that might be potentially left inside a body cavity.

Adverse Events

Adverse events were defined by Brennan et al. in 1991 *Harvard Medical Practice Study* as "an injury that was caused by medical management (rather than the underlying disease) and that prolonged the hospitalization, produced a disability at the time of discharge, or both" (Anderson, 2015). In a systematic review of surgical adverse events, Anderson et al. (2015) adopted Brennan's definition, and reported types and frequencies of surgical adverse events from two of seven selected studies. Anderson et al. found the causes of surgical adverse events were errors in surgical technique, monitoring errors, delayed or incorrect treatment, diagnostic errors/delays, medication errors, anesthesia errors, and judgement areas/outside of expertise.

Kim et al. (2015) examined issues and guidelines in perioperative safety from the surgeons' points of view. They found adverse events in surgery were related to communication breakdowns, delays in diagnosis and treatment, and failure to treat, but postulated that the more important need is establishing and maintaining a *culture of safety*. The concept of a culture of safety is widely described as necessary for quality and safety (AORN, 2017a; Barnsteiner, 2011; LaFlamme, 2017; Wang & Tao, 2017). Graduate level QSEN competencies include knowledge of factors that contribute to a culture of safety, willingness to acknowledge and report errors (skills), and a commitment to creating a culture of safety (attitude; AACN QSEN Educational Consortium, 2012).

Van Delft et al. (2018) studied adverse events in orthopedic cases through direct observation of 150 procedures over the course of 10 weeks. Adverse events were defined

as “any factor affecting the surgical procedure in a negative way” (p.459). A total of 147 adverse events were identified and categorized by type of procedure, by event elements, such as instrumentation or equipment failures, and were stratified by the number of minutes of procedural delay adverse events caused. Patient outcomes were tracked, and researchers identified five cases where patient intra-operative and post-operative outcomes may have been affected negatively by the adverse events that occurred.

Lear et al. (2017) examined perceptions of vascular surgeons in Great Britain about adverse events and reported their perceptions of contributing factors to adverse events. Surgeons most often attributed verbal communication failures to adverse event occurrences, followed by competence-related factors. In this mixed-method study Lear and colleagues found inadequate staffing levels or skill mix (32.5%, n . 25/77), and a lack of knowledge/skills (37.3%; n . 28/75) or competence (32.9%; n . 25/76) contributed to adverse event occurrences.

Periop 101: A Core Curriculum

Perioperative nursing skills and clinical experiences were dropped from many nursing curricula during the last decade of the 20th century, and a shift from diploma nursing programs to 2- and 4-year degree programs began during this period (Mattioni & Wilson, 2018; Plank, 2018). The resultant changes in undergraduate nursing curricula eliminated perioperative nursing courses and clinical opportunities. As a result, recently graduated nurses lack exposure to perioperative nursing fundamentals and few consider the OR as a career choice (AORN, 2015b, Beitz, 2019; Castellucio, 2012; Mattioni & Wilson, 2018; Plank, 2018; Ullmann, 1999; Wilson, 2012).

The professional organization of perioperative registered nurses, AORN, observed the trend away from offering clinical perioperative nursing experiences in undergraduate programs, and also anticipated the shortage of OR nurses with the turn of the 21st century. In 1999, a group of expert perioperative nurse clinicians and educators collaborated to introduce a perioperative specialty core curriculum that would offer a standardized orientation program for use by healthcare organizations (Ullmann, 1999). AORN's perioperative nursing course evolved to become Periop 101 Core Curriculum™ (Periop 101), and in 2007, was relaunched with an online platform. Since 2011 the program has been managed through Cengage Learning, an e-learning solutions provider (Flowers, 2007; PR Newswire, 2011). The Periop 101 program is offered in a blended learning format that employers license for individual users, usually as part of an orientation program. Over 23 online learning modules constitute the online portion of the curriculum, and these are based on perioperative nursing standards and guidelines. Licenses to the program include access to a collection of clinical educational videos and a robust body of orientation resources for use by the licensing institution. Resources include preceptor training modules, standardized competency checklists, and orientation planning materials. Materials are continually updated based on evidence for best practices in perioperative nursing (AORN, 2017c). Using Periop 101 in orientations and residencies for novice OR nurses is one arm in a three-pronged recommendation by AORN to improve of the quality of orientation and to standardize knowledge development of nurses who are new to OR nursing (AORN, 2015a). Re-introducing perioperative nursing foundations into baccalaureate nursing programs is a second arm for succession planning, and the third arm is using ORs as clinical sites for student nurses

(AORN, 2015a). Despite the wide use of Periop 101 in orientation programs, no studies have examined the role this curriculum may play in the cultivation of quality and safety in OR nursing practices (AORN, 2017c; Battie, 2013; Gillespie, 2014; Helzer Doroh & Monanhan, 2016; Wilson, 2012; Zinn et al., 2012).

Quality and Safety Education for Nurses (QSEN)

As part of the nursing profession's response to the IOM's call for improvement in healthcare quality, QSEN competencies were developed and rolled out in three phases by experts in the AACN QSEN Educational Consortium (Barnsteiner et al., 2013; Cronenwett et al., 2007; Flores et al., 2013).

The six undergraduate and graduate level QSEN competency domains address:

- Patient-centered care
- Teamwork and collaboration
- Evidence-based practice (EBP)
- Quality improvement
- Safety
- Informatics (Cronenwett et al., 2007)

During Phase I, QSEN competencies were explicated by the AACN as the KSAs BSN students should possess at the point of graduation (Cronenwett et al., 2007; Jones, 2013). Graduate-level QSEN competencies were published in 2012 and included KSAs pertinent to master's and doctoral level students (AACN QSEN Educational Consortium, 2012). In Phase II, resources for integrating QSEN competencies into nursing curricula were made available to academic faculty via the QSEN website. During Phase III, QSEN competencies were incorporated into nursing textbooks, academic and clinical teaching

resources and were aligned with The Joint Commission's and Magnet® standards to facilitate integration into clinical settings by healthcare organizations (Lyle-Edrosolo & Waxman, 2016).

Following a nation-wide campaign to educate academic faculty how to integrate QSEN into curricula (Barnsteiner et al., 2013; Chenot & Christopher, 2019), nursing faculty began to publish how they integrated QSEN into clinical and didactic settings (Reibel et al., 2019; Sittner et al., 2013). Pilot studies of QSEN integration into nursing orientation and staff development programs in hospitals began to appear soon after (Djukic et al., 2013; Flores et al., 2013). In another application, Burke and Johnson (2017) described how QSEN competencies were used to ground the development of a nurse advancement ladder in a hospital setting. The taskforce for the American Academy of Ambulatory Care Nursing's (AACNs) residency program incorporated QSEN competencies into their list of professional competencies (More, 2017). A number of articles reported the use of QSEN in academic-practice partnering situations (Chenot & Christopher, 2019; Flores et al., 2013; Masters, 2015). Altmiller (2019) suggested that further integration into continuing education and professional development programs for nurses is needed to cultivate evidence-based practices and standardize the language of nursing care.

The graduate-level safety and quality domains are of interest to this study because these are integrated into the Periop 101 program. Graduate-level QSEN competencies reflect higher orders of KSAs (AACN QSEN Educational Consortium, 2012; Forehand, 2019; QSEN Institute, 2020). Although all six of QSEN domains are interdependent and

necessary for achieving safety and quality within new ORRN practices, this study will focus on OR-specific qualities of quality and safety nursing KSAs.

Summary and Conclusions

Literature was presented to convey some context about quality and safety in healthcare and OR workplaces and to situate the preparation for and role of early career ORRN circulators relative to quality and safety. Staffing shortages are ongoing in ORs, can affect the ability to run OR cases efficiently, and have been associated with an increase in adverse events (Currie et al., 2005). Although quality and safety concepts have been threaded throughout academic and clinical specialty curricula to empower nurses to successfully improve care quality and practice safety (Altmiller, 2017), little is known about how this is occurs once they are in practice. Despite the emphasis on improving healthcare quality and safety there were gaps in literature about (1) how nurses perceived and experienced quality and safety concepts in early clinical practice, (2) early career OR nurse perceptions of quality and safety in the OR circulating role, and (3) what early career nurses thought influenced safety and quality. I anticipated that ORRNs would talk about OR-specific practice exemplars of quality and safety and from these, participants' perceptions, knowledge, and attitudes might be assessed. I queried data in an inductive manner to produce codes for what early career ORRNs perceived about quality and safety and to abstract examples of quality and safety in clinical practice and a deductive analysis using QSEN concepts will help identify OR-specific quality and safety KSAs present in this group. In Chapter 3, I present the design, methods, and procedures to reach these aims.

Chapter 3: Methodology

Introduction

Because shortages of experienced OR nurses exist and OR vacancies are being filled with newly graduated novice nurses, at a time when the American healthcare system is under pressure to demonstrate quality and safety and reduce costs, it is important to prepare nurses to provide high quality and safe care. Scholars have not examined how early career RNs perceive quality and safety in the OR nor have they identified factors that influence understandings of quality and safety concepts in this group. The purposes of this QD study are to produce a snapshot of early career ORRNs perceptions of quality and safety and to illuminate factors that these nurses consider influential in developing KSAs.

Chapter 3 contains a description of the rationales for selecting a QD method for this study along with rationales for design decisions. A section about the role of the researcher contains reflections on my personal beliefs and attitudes, and how these may be associated with challenges and potential benefits for research planning, data collection, analysis, and interpretation as an *insider* (Dwyer & Buckle, 2009). In the methodology section, I will address the strategies used for participant selection and recruitment procedures and will review the interview instrument and protocol for data collection and management. A section follows on data analysis methods. Chapter 3 includes a description of how the tenets of trustworthiness were met. At the conclusion of Chapter 3 is a discussion the procedures performed to ensure the ethical treatment of participants throughout recruitment and interview, and a section on the measures used to protect data during collection, storage, retrieval, and reporting are described.

Research Design and Rationale

The research question that guided this study is: What are the perceptions of early career ORRNs who have completed the Periop 101 curriculum about quality and safety in the OR care setting? Using a specified interview guide, I conducted semi-structured one-to-one interviews. Open-ended interview questions were used to elicit participant perceptions of the concepts of quality and safety, and to discern from their descriptions if and how Periop 101 may have influenced these perceptions.

The research question in this study was formulated as a "Wh-"type of open-ended question intended to elicit complex and robust descriptions. In Wh-questions, according to Kim et al. (2017), Sandelowski (2000), and Wang and Yan (2012), the interrogative pronouns *who, what, when, where, how,* and *why* are utilized to discover the nature of experiences. A QD design is appropriate when the aim is to collect straightforward descriptions about what is perceived and has been applied in studies of healthcare and nursing-related phenomenon (Bradshaw et al., 2017; Burt et al., 2005; Doyle et al., 2020; Kim et al, 2017; Neergaard et al., 2009; Sandelowski, 2000). Braun and Clarke (2013, p. 173) said, "Descriptive work aims to 'give voice' to a topic or a group of people." This study used a QD design as described by Bradshaw et al. (2017) who cited the importance of explicating a recognized method of data analysis to establish rigor. Bradshaw et al. acknowledged that content analysis and thematic analyses methods were appropriate but did not recommend one method over another. A RTA approach was applied during data analysis as described by Braun and Clarke (2006, 2013, 2020). Meehan's (2021) and Kriukow's (https://www.youtube.com/c/QualitativeResearcher/featured) applications of

NVivo were followed to organize data, conduct coding, themeing, and interpreting activities, and to manage data artifacts.

Role of the Researcher

As a 39 year veteran OR nurse, with clinical and academic educator experiences, I bring perspectives to this study that may be simultaneously beneficial and biased. I am white, female, and an American citizen. My political views lean to the left and are moderately liberal. I am heterosexual, a mother of three adult sons, and identify as a member of the 'sandwich' generation (Parker & Patton, 2013) as a 'baby boomer' according to the Pew Research Center (2015). I consider nursing my profession, not just a job. I value life-long learning for myself and promote it for others. Life experiences like employment, marriage, divorce, mothering, and teaching and leading contribute to my unique construction of the world. Like study participants, I actively work as a nurse in an OR setting. Unlike participants, I have longer tenure in the OR and a broader range of perioperative roles and experiences than they might. To diminish bias, I took care not to assume we had common beliefs or values, or that I fully understood their perceptions (Dwyer & Buckle, 2009). To expose the personal biases, I reflectively journaled on differences and similarities between my opinions, perceptions, and beliefs from those of participants to discover personal biases and attempted to identify areas where they influenced processes and decisions. I discuss these in Chapter 4 and 5.

Dwyer and Buckle (2009) described researchers who were members of the group under study as *insiders* with personal and intimate knowledge of roles and contexts in the study sample. An insider's experiences and perceptions may "enhance(s) the depth and breadth of understanding" because of commonly shared experiences and 'speaking' the

specialty's language (Dwyer & Buckle, 2009, p. 57). I consider myself to be an insider in this study. Dwyer and Buckle associated greater credibility with interviewers when they were perceived as familiar with the context and subject matter of study. Alternately, questions of trustworthiness may arise with studies by insiders. Insiders may erroneously assume they fully understand the focus of participants' accounts or may assign their own beliefs. An early jump to conclusions may not yet be fully informed (Dwyer & Buckle, 2009). Insiders have a duty to inform participants of the level of their familiarity with the context and foci of the study and are obligated to be cognizant of, acknowledge, reflect on, and to report personal perceptions and assumptions that occur during planning, interviewing, analyzing, and interpretation. I include a brief introduction of myself as a nurse researcher in the Informed Consent and in the opening script of the interview guide. Graneheim and Lundman (2004, p.111) say "it is impossible and undesirable for the researcher not to add a particular perspective to the phenomenon under study. On the other hand, the researcher must 'let the text talk' and not impute meaning that is not there". Tong et al. (2007) stressed the importance of informing participants about the researcher's identity to improve credibility of findings. Once readers are familiar with who the researcher is, they are better able to determine how the researcher's positioning may have influenced interpretations (Tong et al., 2007). This QD study will analyze content close to the text and report straightforward descriptions of perceptions and experiences, as Kim et al. (2017) recommend.

During my nursing career, I worked as a scrub nurse, circulating nurse, recovery room nurse, clinical coordinator, clinical educator, and quality improvement coordinator in a variety of sizes and types of perioperative departments. As an OR clinical educator in

the 2000s, I was a program administrator for the Periop 101 curricula used with novice OR nurses and was able to graduate three cohorts of nurses from the program. I perceived that Periop 101 online modules contained valuable content for building a knowledge foundation in perioperative nursing. I perceived that newly hired nurses found the materials helpful in shaping concepts of the role of a circulating nurse perioperative care as well as instrumental for skill building. I also recall the struggles and challenges novice ORRNs experienced as they applied knowledge in an unfamiliar setting. In my orientation experience as a novice nurse in the OR in 1985, I completed a *homegrown* perioperative training course after transferring from a 2-year stint a Med-Surg unit to a 6-suite inpatient OR. I struggled to understand what OR nursing entailed because it was vastly different from floor nursing. I experienced being an *outsider* and felt ill-equipped to function autonomously and safely for several years. After a lengthy and varied perioperative career in a variety of settings I may now be considered an insider with robust knowledge of the everyday jargon and familiarity with typical processes that may occur as patients travel across the perioperative continuum. Throughout my career I experienced many forces that made it challenging to give high quality safe care despite best intentions. These prior experiences contributed my unique worldview and constructs of the perioperative arena. It was important for me to recognize that participants did not have similar experiences, and to encourage them to give honest voices to their perceptions. Using reflexive journaling, I attempted to set aside my pre-determined ideas as much as is possible during data collection and analysis to minimize effects of personal bias (Braun & Clarke, 2006; Talmage, 2014).

My professional experiences and familiarity with the OR may lend some credibility to my ability to comprehend the context of meanings which were immersed in OR jargon (Dwyer & Buckle, 2009). Conversely, my past experiences are unique to me thus not necessarily transferable to others, so I was cautious not to jump to conclusions about meanings, or to assume they had similar perspectives as mine. Journaling was a strategy employed to become self-aware of biases and assumptions as well as to construct an audit trail that is visible (Braun & Clarke, 2006; Ortlipp, 2008). To mitigate influences of bias in throughout the process I maintained a reflective journal throughout the processes of data collection, coding and analysis, and reporting of findings (Finlay, 2012). Journal entries included my personal reactions to participants' responses, thoughts, and ideas during coding and analysis, and references to my worldviews. It is not possible as a researcher to be fully objective since personal worldviews do shape the decisions made in the study processes (Mittenfelner & Ravitch, 2018) but maintaining records of these demonstrated areas of personal bias. NVivo offered a location for storing reflective journal entries. To maintain originality of form and content, and to establish trustworthiness, interviews were transcribed verbatim after interviews. Transcription was performed using an automated service. I corrected transcription errors by listening to audio recordings and marking speaker turns on the initial pass. Original audio recordings were considered artifacts were de-identified, then uploaded to NVivo. This process facilitated early immersion in the data. Braun and Clarke (2006) emphasized the importance during qualitative analysis of becoming familiar early with data by repetitiously reading and reflexive note taking.

Methodology

Participant Selection Logic

Inclusion Criteria

Study participants were purposefully selected from a convenience sample for this study. Participants:

- were over 18 years of age,
- completed the Periop 101 curriculum during the initial year of OR orientation,
- read and spoke English,
- were registered nurses who entered the OR as their first nursing position after graduation,
- were members of AORN
- had no prior healthcare-related employment or volunteer history before your hire into the OR,
- worked as a circulator in the same OR $\geqq$ 1 year and $<$ 4 years,
- agreed to audio recording of interview using a distance communication technology (internet or phone) within the next 2 months.
- had no prior knowledge of or relationship with the researcher

Rationale

Braun and Clarke (2013) addressed sampling strategies in their 2013 text, *Successful Qualitative Research: A Practical Guide for Beginners*. They advised researchers to select samples that were appropriate to the research question, consistent with the explicated theoretical underpinning, and would yield enough data for thorough analysis of the research question. Participant selection and sampling strategies were based on Braun and Clarke's (2013) recommendations.

In the purposive sample of interest were ORRNs who completed Periop 101: A Core Curriculum, were early career nurses (worked OR 4 years or less), who worked as circulating nurses. I excluded nurses with 4+ years of OR experiences, nurses with prior OR experience outside of the RN role, and nurses who transferred into the OR. Purposive sampling is an appropriate method when seeking information from a pre-defined group on the basis of inclusion criteria and is considered a method consistent with QD methodologies (Bradshaw et al., 2017; Daniel, 2012; Doyle et al., 2020; Kim et al, 2017). In 2021 AORN had 36,263 members. Over half (52%) of perioperative nurses were AORN members in 2021 (Bacon & Stewart, 2021).

Participants were considered *informants* about their specialty and were able to situate concepts of quality and safety unique to their nursing practices in the OR (Bradshaw et al., 2017; Harrell & Bradley, 2009). While it is not possible nor desirable to eliminate the contributions of participants' many prior life experiences, the sample excluded volunteers with prior OR work experiences to establish a more common baseline of experience. Participants were nurses who circulated in OR settings and are

referred to using the following terms: nurses, circulators/circulating nurses, participants, and ORRNs.

Data related to age range, gender, employment duration, and educational background were collected and reported to offer contextual overview to readers. Collecting employment data permitted selection of circulating nurses who met inclusion criteria. The employment duration criterion was designed to locate participants who had reached the competent stage of practice after Year 1, but who were still in the early career phase (2-4 years). Orientation and continued employment in a consistently similar, and supportive environment over time is thought to foster competence development (Benner, 2001).

Workplace type (inpatient, outpatient) and OR size (small, medium, large) data values were collected to demonstrate diversity among participants. Intentional variation in selection can produce rich and broadly based data from those with deepest understandings of the context of investigation (Braun & Clarke, 2013).

A criterion for selection included membership in the AORN professional organization that licensed the curriculum. While a 1-year membership in AORN is included during Periop 101 program participation, it is optional thereafter. Ongoing membership in AORN facilitated use of the AORN member database for recruitment. Nurses who chose to continue their AORN professional membership after completing Periop 101 during Years 2 and 3 of employment were the population of interest and the source for recruitment. Invitations to participate in the study were disseminated via the AORN member listserv after IRB approval. The decision to utilize the AORN member listserv was made for convenience of access to ORRNs for recruitment, and because

AORN licenses the Periop 101 curriculum. Early career nurse descriptions of quality and safety in practice, may inform Periop 101 stakeholders like AORN and employing organizations who consider return on investment for Periop 101 program licensing.

A heterogenous sample was used to achieve maximum variation for workplace size and type (Guest et al., 2006). Workplace data for OR *setting* (inpatient, outpatient), and *Size* (number of ORs) categories were established to guide participant selection.

1. Inpatient type + ≦3 ORs size
2. Inpatient type + 4-10 ORs size
3. Inpatient type + >10 ORs size
4. Outpatient type + ≦3 ORs size
5. Outpatient type + 4-10 ORs size

Five nurses met inclusion criteria and completed interviews in this sample. Scholars have conjectured any number of recommendations for sample size in qualitative studies. Bradshaw et al. (2017) emphasized the importance of explaining how a sample size may meet the study objective. Vasileiou et al. (2018) felt that sample adequacy was directly related to trustworthiness in qualitative studies but found no consistent recommendations for qualitative research sample size in his systematic review. I employed QD methods to begin an understanding of how this population of specialty nurses conceptualizes and operationalizes quality and safety, and to expose factors they felt were influences on their knowledge, skills, and attitudes. The amount of scholarly literature on this topic is limited, and a sample size of 10 with diverse workplaces, ages, genders, employment duration and educational backgrounds representation was planned to answer the research question without over-encumbering the analysis process. A study of this size was not

expected to provide enough data to fully represent the scope of perceptions in the population of interest, but did yield robust data about them, and produced an introductory body of knowledge about the research question that may stimulate others to further investigations on quality and safety in this segment of nurses. Although the sample size was small, Mason (2010) indicated that the quality of data produced is more important that the quantity of data, especially when a researcher has limited experience and resources.

While participants were not asked to divulge sensitive information, some did share personal examples from their work. Participants had particular vulnerabilities that I became aware of throughout the interview process and caution was taken not to reveal these in a manner that could identify participants or expose vulnerabilities.

Instrumentation and Data Collection Procedures

Demographic data were collected using a self-designed, online collection form (See Appendix B: Demographic Data Collection Section). Form items were limited in scope to protect participants' privacy. For this study, collected interview transcripts constituted the primary data source for coding and analysis. Having more than one data type is considered helpful in *crystallizing* the aspects that contribute to the situations from which data arises (Fusch, 2018; Tracy, 2010). Tracy (2010) and Fusch (2018) consider the role of the crystallizing process as part of triangulation which may improve study credibility if data are accurate. Reflective journal entries were referenced throughout the study to help crystalize meanings.

The decisions I made while formulating the research question were guided by my unique worldviews as a researcher, an OR nurse, a parent, and educator etc. (Finlay,

2012; Flick, 2018). Mittenfelner & Ravitch (2018) and Nowell et al. (2017) considered the role of the researcher as instrument for data collection, citing inherent subjectivity in questioning and data analysis. Flick (2018) indicated that researcher's decisions during interviews "are framing the production of the data" (p. 4). To better understand the influence my worldview may have on the study, I also used the memo-writing feature of NVivo to record my reflexive thoughts on data meanings, and account for decisions that are made about coding and themeing. Reflective journal entries and memos were uploaded to NVivo to make study processes more transparent, and to document awareness of personal assumptions during my interpretations of the data (Ortlipp, 2008).

Demographic Data Collection

Demographic data were collected after obtaining consent, and prior to scheduling interviews. This approach permitted me to select participants for interviews whose demographic criteria (a) met inclusion criteria, and (b) contributed to maximum variation in the sample (Guest et al., 2006). Personal demographic data related to age, gender, and education and employment were collected to improve the likelihood of resonance with others in similar contexts (See Appendix B: Demographic Collection Section; Tracy, 2010). Workplace demographics data related to size and type of agency were also collected. Rationale for choosing demographic items is discussed in the following sections.

Age. The decision to report ages by range was made after reviewing how ages were reported in other QD studies. Saxton and Nauser's (2020) study of clinical immersion in the emergency room and OR, reported nursing student ages as a range, along with the mean age. Santos et al. (2014) reported mothers' ages in three ranges due

to a small sample size of 17 participants from a single city who suffered postnatal depression. Some scholars reported ages in a single range or only a mean, median, or mode (Chiam et al., 2020). This method of aggregated reporting provided information that is important for contextualizing and transferability yet helps preserve confidentiality for participants (Morse, 2008).

Age group ranges for this study aligned with the Pew Research Center's (2015) generational group age ranges for *millennials* (1981-1997), *generation X-ers* (1965-1981), and *baby boomers* (1946-1964). The millennial age group was split into early and late ranges on the demographic data collection form to distinguish between more recently graduated nurses and those who may have completed nursing programs at a later age or who had second-degree status. While there are disparate opinions whether attributes and characteristics of generational values and perceptions, scholars continue to apply, the Pew age ranges in research have added new contingency factors that may affect generational identities (Dust et al., 2019; Joshi et al., 2010; Joshi et al., 2011). Due to the diversity of findings in generational studies, further study of generational differences is recommended (Stevanin et al., 2020). I reflected on generational differences among participants when these were observed.

Education. The nurse education-level options in Item 3 of Appendix B: Demographic information form, reflected the different types of nurse education programs existing in the United States in 2020. Although few diploma nursing programs remain, this category of educational preparation was included as an item value. I planned to exclude Master's prepared nurses from participation due to the potential for influence

from additional exposure to the graduate-level QSEN competencies in higher academia. There were no Master's prepared nurse participants.

An opportunity to capture *educational attainment* outside of nursing was present in Item 4. *Second-degree nurses* have the benefit of academic experiences outside of nursing before entering a nursing educational pathway (Raines & Sipes, 2007). Raines and Sipes conducted a program evaluation with graduates of an accelerated BSN program where all 17 participants had bachelor's degrees in a non-nursing field to evaluate program success. Students from that study were slightly older, displayed more maturity, and confidence. Interviews with participants from multiple levels of educational background contributed to the goal of producing maximal variation in findings.

Workplace. For this study, only size and type of workplace data was collected. In Roberts et al., (2016) survey study of a small sample of 18 nurses' who implemented pressure ulcer bundle, participants came from four public and private acute care hospitals in a community. Participant workplaces were delineated only as public or private agencies to protect organizational and participant identities. Gathering additional workplace details such as *academic/teaching hospital, physician-owned surgical clinic, surgical specialty* etc., would not necessarily benefit answering the research question, and could make participant discovery more likely with the small sample size.

Date/Time Items. Data from Items 5-12 were inclusion-related items that were collected to assist with candidate selection. Volunteers whose answers met inclusion criteria were sent an invitation to participate in an interview.

Data Storage. Demographic data was collected via a Google form located in a protected Google Drive file folder. Responses in the forms were automatically populated

into a Google spreadsheet for easy inspection and analysis. Access to spreadsheets was limited to me and my committee members as required by Walden University's IRB policy for doctoral student responsibilities regarding research data. Access to the computer was password protected. The demographic collection form had two sections: participant demographics and workplace demographics (See Appendix B). All items in Sections 1 and 2 of the form were required.

Interview Data Collection

Data for this study was collected from interviews. A self-designed interview data guide was used with each interview (See Appendix C: Interview Guide). Interview audios and transcripts were given unique identifiers when saved. Nowles et al. (2017) recommended a naming schema for working with large data sets that guided nomenclature development in this study. Raw data were named to identify the type of data source, and the date of acquisition/ interview, and were deidentified prior to uploading into NVivo.

The body of the interview data collection form began with an *opening script* that was read aloud to the interviewee prior to audio recording. The script contained an introduction of myself as a researcher, and a prompt for verbal confirmation that the participant's consent and demographic form were received. A statement pertaining to protection of the participant's information was included in the opening script, as well as: a statement of the purpose of the interview; an estimate for duration of the interview; and reasons for selecting audio recording for data collection. The opening script concluded with a request to proceed with the interview.

Once recording commenced, the *interviewer lead out script* (See Appendix C: Interview Guide) was read to the interviewee to situate the participants' reflections on orientation with Periop 101 program. While it was of import not to *lead* the interviewee, one intent of the study was to identify what may have influenced participant perceptions, hence a mention of Periop 101 considered a necessary contextual directive within the semi-structured interview format (Wang & Yan, 2012). To diminish the 'leading' effect, Interview Questions Safety-2 and Quality-2 were designed as open-ended, non-leading queries about what participants perceived as influential to their understandings of quality and safety. Later interview questions did not mention Periop 101 to allow participants the freedom to introduce their particular avenues of influence that may have existed. Once the leadout script concluded, the interview questions were asked.

Interview questions were largely open-ended and directed the participant to consider aspects of OR quality and safety. Interview questions were formatted as '*Wh*'-questions that ask what, where, who, when, why, how, or which, that prompted the interviewees to offer rich thick details consistent with descriptive studies (Sandelowski, 2000). Because an interviewer may be perceived as dominant when using closed-ended questions, care was taken to use open-ended prompts that did not lead, except to redirect to the interview question or to focus the intent on the research question (Wang & Yan, 2012). Prompts were used to restate, confirm, or summarize what the participant said. Other open-ended prompts that were intended to elicit deeper levels of description, for example, "Tell me more. How did that work? What did you do next?"

Interview questions in the guide were divided by focus (Appendix C: Interview Guide). The initial questions addressed safety perceptions, and the second set addressed

quality perceptions. A final question in both the safety and quality sections directed respondents to make a judgement about what patients should understand about perioperative safety and quality. The concluding questions were intended to draw out additional details about what constitutes practices that were consistent with their conceptualizations of quality and safety.

Procedures

Recruitment and Participation Procedures

Volunteers were recruited with an electronically sent invitation via the AORN member listserv to nurses who were active members of the professional organization with consent to receive AORN communications (See Appendix A: Recruitment Materials). AORN was a partnering organization because they facilitated recruitment by forwarding recruitment materials on my behalf after I met AORN's stringent criteria for database use. AORN's research representatives collaborated with me to better reach the target audience within their member database. The recruitment message contained the list of inclusion criteria, and interested recipients were invited to complete the informed consent form if they believe they met the criteria. At no time were names or identities of AORN members shared with me.

The recruitment message (Appendix A) contained a link to the informed consent. This form was housed on Google Drive in restricted folders. At the end of the consent, a link to demographic survey items was placed (Appendix B). When respondents submitted the demographic data collection form, their informed consent was implied. Since demographic items were completed after participants granted consent, the order of these operations met ethical standards for obtaining informed consent prior to data collection

and permitted me to further filter volunteer's data using study inclusion criteria efficiently. Form settings required users to share their email addresses to submit the form and settings prevented more than one submission per email address (https://forms.gle/9JB9k2DqMRTLZ1cr7). An automatic confirmation reply from the Google form was sent to the volunteers' email address which confirmed submission of their responses.

Data Collection Procedures

A Google form was utilized to collect demographic data from interviewees. Data from the auto-filled Google spreadsheet was amenable to importing to NVivo *Case classifications* folder. Access to data in the Google Drive spreadsheet was restricted to me and my Walden University dissertation committee members to protect confidentiality and privacy yet establish an audit trail for credibility. Participants were assigned an alias, and the participant demographic spreadsheet with de-identified data was imported for study credibility. Data files were backed up on a secured, password-protected MAC Book Pro and on an external hard drive that was 'fingerprint protected' and stored securely when not in use.

Semi-structured interviews were audio recorded using a speech to text application for file transcription, Otter.ai . The Otter.ai application functioned acceptably to transcribe audio data. I did not need to employ backup audio recording processes because there were no connection or recording failures. As planned, to ensure accuracy, I listened to audio files while reading transcriptions. This permitted me to assign speaker turns, and to correct errors in voice transcription if present. Transcripts were sent to participants for member checking then uploaded into NVivo and stored as text data files.

Data Analysis

As planned, I followed Braun and Clarke's (2020) six-step method for conducting RTA, which is grounded in, and assigns value to, the "subjectivity and reflexivity" of the researcher . The RTA approach is consistent with Bradshaw et al.'s (2017) QD method in that it "strives for in-depth understanding, but with emphasis first on literal description" (p. 2). According to V. Braun (Braun & Clarke, 2018), "reflecting on what you bring in from your discipline is really important on how we read the data" (25:49), and familiarity with the context and language of participants may afford deeper levels of coding and interpretation (Braun & Clarke, 2019). As a 35+ year perioperative nurse with a broad base of experiences, I was able to recognize contextual details and interpret meanings as an insider would (Mittenfelner & Ravitch, 2018). RTA is considered an appropriate method when novices undertake qualitative research because it offers an approach for creating credible data that can provide process transparency for readers but is not a prescriptive approach in nature (Braun & Clarke, 2020; Meehan, 2021). I utilized Meehan's (2021) guided example of using NVivo alongside the RTA method which was based on Braun and Clarke's 2020 iteration of the six phases of RTA. Procedural planning for NVivo was informed by J. Kriukow's approaches using NVivo with qualitative research and thematic analysis (https://www.youtube.com/c/QualitativeResearcher/featured).

During Phase I (Braun & Clarke, 2020), *data familiarization and writing familiarization notes*, I reviewed a single interview transcript at a time while listening to the audio recording. During the first pass, transcription errors were corrected (Meehan, 2021) and speaker turns were marked, then the files were uploaded to NVivo. I annotated

my thoughts and ideas about text segments of interest within the transcript during subsequent transcript reviews and engaged in reflexive journal writing throughout familiarization to document my thoughts and perspectives. Familiarization with content deepened during subsequent transcript review sessions and enabled me to develop a holistic high-level view of the transcripts.

In Phase II, engagement with the data continued as I began a *systematic data coding* process to assign representative codes to text segments with features relevant to the research question. Using Braun and Clarke's approach for Phase II, each entire transcript was coded as a continuous process, but not all codes were created in one sitting. A transcript was not considered fully coded even after multiple readings. Codes represented both latent and semantic content as described by Braun and Clarke (2020), and additional coding continued on earlier transcripts as later interviews were transcribed and coded. Descriptions of code parameters and characteristics were recorded in NVivo to guide decisions about using existing codes or creating new ones. The end result of Phase II was a list of codes which were not well categorized into child-parent relationships.

Phase III activities commenced with a change in orientation from code production to iterative code comparisons through sorting with the aim to observe patterns within a transcript and identify the relationships between codes and themes (Braun & Clarke, 2006). In Phase III, I generated initial themes from codes and continued to collate data (Braun & Clark, 2020). Themes, according to Braun and Clarke (2019) are "a pattern of shared meaning underpinned or united by. . . a *central organizing concept*" (p. 11). The development of themes required ongoing reflections about relationships among codes,

themes, and the research question. Consistent with RTA, themes did not simply emerge or wait to be discovered but were instead, generated (Braun & Clarke, 2006). Themes were "produced at the intersection of the researcher's theoretical assumptions, their analytic resources and skill, and the data themselves" (Braun & Clarke, 2019, p. 14). Reflective memoing and journaling about similarities and relationships among codes continued throughout the remainder phases.

In Phases 4 and 5, *developing and reviewing themes,* and *refining, defining, and naming themes,* candidate themes were reviewed and refined by looking for coherence among the data, and by seeking patterns (Braun & Clarke, 2006). The data were reread to discern whether themes captured the meaning of the content (Gareth et al., 2017). Some themes lacked enough data to support them and were dropped. Others were combined due to similarity or overlap. The boundaries between themes were refined based on levels of distinction, relations to each other, and whether they were indicative of a central organizing concept (Gareth et al., 2017). As themes were tweaked to fit the 'story' that the data told, theme definitions were summarized around core ideas, and subthemes became obvious. En nvivo nomenclature strategy was used to keep meanings transparent (Gareth et al., 2017).

Phase 6 was *writing the report* (Braun & Clarke, 2020). At this stage the report of a theme "weaves together data, analysis, and connections to scholarly (and other) literature into a singular output that answers their research question(s)" (Gareth et al., 2017, p. 25). Memos and journal entries were reviewed for insights on the processes and decisions that occurred. Recursive processes of sorting and refining began to help

crystallize findings. Also helpful in interpretation of findings were my attempts at free-writing about my role as a researcher (Braun & Clarke, 2013).

Issues of Trustworthiness

How research is conducted can make the findings valuable or render them useless. Value in research is first measured by whether the topic is important to society, however, studies themselves must be trustworthy if they are to be valued (Mertens, 2018). Tracy (2010) said trustworthiness in QD research methodology was indicated when evidence of rigor and credibility contributed to value. Bradshaw et al. (2017), and Doyle et al. (2020) agreed that trustworthiness was demonstrated in QD methods when ethical regard in planning and treatment of participants existed, and research processes were transparent. Mertens (2018) indicated that trustworthiness was a dimension of ethical treatment in research. Tracy suggested eight 'markers' for quality in research : worthy topic, rich rigor, sincerity, credibility, resonance, significance of contribution ethics, and meaningful coherence. It is evident that no single set of criteria exists to characterize quality, and therefore, trustworthiness in qualitative research. Bradshaw et al. (2017), Lincoln and Guba (Schwandt et al., 2007), and Mertens listed in common four criteria for trustworthiness in QD studies. These are credibility, transferability, dependability, and confirmability. The steps planned followed Merten's four criteria and are described in the next section.

Credibility

According to Mertens (2018), credibility in qualitative studies is "confidence in the accuracy of the findings" (p. 37). Tracy (2010) indicated that the presence of explicit details and concrete examples of the knowledge held by participants will add to

credibility. Schwandt et al. (2007) suggested that prolonged engagement with participants, cross-checking data, actively searching for negative cases to otherwise salient findings, and member checking will provide evidence of credibility. Graneheim and Lundman (2004) mentioned the importance of choosing a methodology for data collection that aligns with other parts of the design.

The methods of this study were influenced by Bradshaw et al.'s (2017) criteria for establishing rigor in a QD study, and Braun and Clarke's (2019) criteria for appraising qualitative research that incorporated a 20-Item checklist addressing methodology and analysis processes. To adhere to the selected criteria, I attempted to develop rapport with participants during interviews, engaged with data frequently and repeatedly, and used member checking to confirm that a good fit existed between my interpretations and participants' representations of their experiences (Braun & Clarke, 2013).

Credibility was cultivated by the presence of respectful and power-balanced relationships between interviewer and interviewee, which allowed rapport, trust, and empathy to develop, and resulted in collection of rich data (Bradshaw et al., 2017). Opportunities to engage with participants were afforded before the interviews as I interacted with them to introduce myself and answer questions. Language in email communications and the informed consent was designed to convey courtesy and warmth, as well as information, to foster the growth of rapport and trust and were carefully constructed to promote a sense of power balance between me and the recipients (Bradshaw et al., 2017; Wang & Yan, 2012). During interviews, I sought clarification and validation of meaning and content accuracy with active listening, restating what I heard to confirm my interpretation. I maintained an audit trail of data collection, coding, and

analysis processes within NVivo to depict chronology and timeliness, and stored communication artifacts (emails, texts, voicemails, memos, field notes, audio recordings, e.g.) as evidence of respectful relationship building efforts.

Trust-building efforts with participants began with an email invitation to set up an interview sent to volunteers whose answers met inclusion criteria. Those email invitations were brief and designed to promote a sense of human connection. The content provided a brief introduction with the title of the study with details necessary for understanding the next step in the process.

Using the participant's preferred communication platform, with respect for both our schedules, an interview date and time was negotiated. Replies to all communications from participants were sent within 24 hours of receipt to convey respect. All communications were saved as part of the audit trail and stored in NVivo for transparency as well as member-checking.

To establish rapport at the time of our interview, I read an opening script (See Appendix C: Interview guide). In this script I briefly introduced myself and greeted the participant to convey courtesy to the participant. In the opening script I prompted participants to provide any additional information about themselves if they desired and recorded these as field notes to the demographic data collection form. I reminded them that data identity would be protected and kept confidential. The purposes of the study were briefly explained next in the opening script, and finally, details about the interview process were shared with the participant. I offered to answer questions if they arose. A final verbal permission to record was obtained. This nature of script and pre-conversation conveyed to participants that they had autonomy in participation and were efforts to make

the interviewee more comfortable by revealing information of an honest and personal nature. Comfort, within an interviewer-interviewee relationship, is beneficial to encourage self-disclosure, when the interviewee may have little vested interest in the subject matter of the interview (Talmage, 2012). When participants feel connected to the interviewer, they may be able to divulge more rich descriptions of perceptions and experiences (Bradshaw et al., 2017). The informed consent contained information to identify me as a professional nurse who was familiar with the perioperative arena (Tong et al., 2007).

To maintain rapport throughout the interview process I employed prompts that were closed and open-ended. Prompts, such as, “tell me more”, “why do you think . . . ?” “how did that come about?”, “what happened next?”, “what does that mean”, are questions designed to promote a deeper level of description without imposing limits on the direction of the response. Prompts that restated or reflect the participant’s ideas were used to promote a sense I was actively listening and to provide an opportunity for members to validate that I understood the meaning of their spoken words (Talmage, 2012). If narrative topics moved away from answering the interview question, I restated what I heard, then either re-introduced the original topic in an alternate manner or opened with the subsequent interview question. I allowed moments of silence to permit participants to collect their thoughts.

Once the interview was completed, I read a closing script to express my appreciation, and to obtain permission for future contacts so they might verify their own transcripts for accuracy. Member checking of interview transcripts facilitated accuracy in the transcriptions (Mertens, 2018). I reminded participants before and after the interviews

that they might withdraw from the study at any point, and at the conclusion of the interviews I again provided my personal contact information so they might do so if desired at some future point.

A study may be more credible when participant quotations are used to support interpretations during the research findings report (Graneheim & Lundman, 2004). Since an aim of this study was to better understand what and how early career ORRNs perceive quality and safety in their work, a QD study design was selected. A QD study design may yield direct descriptions that clarify findings and may justify future research on the topic or be used to improve care or practices (Bradshaw et al., 2017; Maxwell, 2009). Descriptions by participants were quoted verbatim for accuracy and may allow readers to recognize connections between content and codes/themes (Maxwell, 2009).

Confirmability

Confirmability in qualitative studies is created by describing connections "between data and conclusions that are reached" (Mertens, 2018, p. 35). Bradshaw et al. (2017) offered five means to support confirmability in QD studies: keep a reflective journal throughout the process, maintain an audit trail, collect participant demographics, utilize member checking, and incorporate the participants' own words as evidence for conclusions and inferences. Journaling and memo-writing throughout the coding, theming, and analytic phases established confirmability through transparency how data was collected and analyzed (Braun & Clarke, 2013). The following steps were taken to meet criteria for confirmability as described by Bradshaw et al. (2017).

Throughout the study and immersion in the data, I maintained a reflective journal with references to the data that captured ideas and interpretations as well as examples of

further investigations or decisions about what to include. Journal entries and artifacts representing the audit trail were stored in NVivo as external sources of data that created a trail of work. Evidence of the audit trail is supported in the artifact properties such as 'date created', 'date modified', and 'date last opened.'

Transferability

Mertens (2018, p. 36) defined transferability as the "provision of sufficient detail to allow others to apply in other contexts". Bradshaw et al. (2017) say that a transferable study is marked by purposeful sampling, reflective journaling, rich descriptions with chronological study details so others might follow the study design. Schwandt et al. (2007, p. 19) also spoke to the need for thick descriptive data to permit others to assess if findings fit their situations. Tracy (2010) opined that qualitative studies may never truly be transferable, but remarks that findings should resonate with readers, and evoke feelings of 'fit' in similar situations. Braun and Clarke (2013) marked the inclusion of contextual details as important for transferability. To improve transferability, I transcribed interviews verbatim to maintain accuracy and authenticity of the participants' experiences and included quotes that illustrated meaning alongside details related to context.

Dependability

Dependability, according to Mertens (2018), is the "provision of access to data that demonstrates the emergence of hypothesis and changes in understanding." (p. 37). Dependability is demonstrated by maintaining audit trails that may be confirmed by an objective disinterested scholar, by including discussions of whether, what, and why methods may deviate from the original plans (Mertens, 2014; Schwandt et al., 2007).

Maher et al. (2018) said dependability is evident when others can follow the methodologies to reproduce the study. Over time, research processes may become sloppy, and overwhelming (Graneheim & Lundman, 2004). I transcribed and coded for Phases 2 and 3 as quickly as possible after the interviews concluded. This strategy prevented having a backlog of interviews to process and code and enabled me to keep close to the data with early immersion.

Ethical Procedures

In the United States in 1979, after egregious treatment of humans in some research studies, the U.S. Department of Health and Human Services [HHS] published the Belmont Report which tasked researchers to attend to ethical procedures by adhering to three principles: respect for persons, beneficence, and justice. In 2018, criteria in the HHS Federal Register policy, also known as the 'Common Rule', were updated (45 CFR 46, Subpart A). Part 46 provided clear guidance for the study design and implementation that must be considered during ethical planning for studies with human subjects. Walden University IRB made available multiple guidance documents that were consistent with HHS' policy. Guidelines for ethical research from all three sources were considered as this study was planned, as well as examples located in QD studies and scholarly literature (Kim et al., 2017; Neergaard et al., 2009). Of particular assistance to my planning were two tools: the Walden University Research Ethics Approval Checklist (Planning Worksheet), and the Qualitative Dissertation Checklist.

Ethical considerations pertain to participants the researcher, and for the research process (Mertens, 2018). A discussion of ethical considerations related to treatment of participants as human subjects as will follow. Ethical concerns related to data collection,

management and storage procedures are subsequently discussed. Researcher-related ethical concerns were discussed earlier in the section entitled The Role of the Researcher.

Ethical Concerns Related to Humans

Respect. In qualitative methods based on constructivist paradigms, respect for human participants is a foundation for ethical treatment (Mertens, 2018; Shaw, 2020). Respect is a Kantian imperative that charges researchers not to act in ways that objectify persons, and to treat relationships with persons as an end, not a means (Kant, 1785, as cited in von Glasersfeld, 1995). Finlay (2012) described ethical benefits of using dimensions of reflexivity to negotiate *process consent*, manage emotional intensity, and enact the interviewer relationship with the interviewee. Process consent conveys ongoing decision-making power by the participant about what and how their personal data may be used. During this study, participants were engaged in an ongoing process of consent.

Respect for persons was marked by respectful and compassionate interactions throughout the interview and subsequent points of contact. In the reflexive journaling process I examined how I met my aim of respecting the welfare of other humans. The content of recruitment materials was composed and reflectively considered for the presence of respectful tone. I saved communication artifacts to demonstrate my tone and sensitivity to participant vulnerabilities due to power imbalance between the researcher and participant (Bracken-Roche, 2017). Responses to participant emails and other communications with me were made in a timely manner to convey respect for participants. I respected confidentiality and privacy of participants by securely storing and limiting access to study artifacts that might lead to deductive disclosure (Kaiser, 2009).

Participants took time to complete their portion of the study. These steps included:

- reading the Informed Consent (3-5 min.)
- completing the demographic survey online form (3-5 min.)
- testing phone connections at the start of the interview (3 min.)
- interviewing (30-40 min.)
- reading their interview transcript for accuracy (5-10 min.)
- responding to emails from me related to this study (3-5 min.)

To respect participants' time invested in the interview and transcript review for accuracy they were given an appreciation gift of a $25 in their preferred form.

Interviews were conducted remotely may affect the trust relationship between researcher and participant (Salmons, 2012). If a perceived power inequality is not acknowledged or addressed the relationship may be uncomfortable, and some participants may minimize their responses during an interview, be less willing to voice the truth of what they perceive, drop out, or deliberately represent their realities in a way they believe the researcher wants to hear (Finlay, 2012; Lillrank, 2012; Talmage, 2012). To cultivate a trusting relationship between the interviewer and interviewee so that (a) the quality of data will be rich, and (b) so those who voice the data feel protected from exploitation or stigmatization (James & Busher, 2012), I carefully planned the interview guide language to promote an atmosphere that would diminish their perceptions that I was dominant in the relationship, and they were submissive (Wang & Yan, 2012). I communicated in ways to convey respect for their time and their positions in work and life. I documented decisions relating to communications in reflexive journaling process.

Voluntary Participation. The informed consent conveyed the voluntary nature of a participant's role. James and Busher (2012), Finlay (2012), and Kaiser (2009) indicated the importance of ongoing negotiations to ensure informed consent between researcher and participants occurs throughout the study. Conditions for voluntary participation were met. Thirteen volunteers were invited to interview. Initially six volunteers agreed to interview, however, one volunteer dropped out of the study prior to the interview. Two follow-up invitation emails to seven volunteers were carefully worded to prevent fear of coercion or reprisal.

Voluntary participation continued with member-checking for transcript accuracy with an opportunity to remove data they felt would lead to deductive identification (Kaiser, 2009). Asking participants to make these decisions reflected respect for their needs to voluntarily control personal information. For example, should it be determined that participant quotes will add meaning to the study findings, participants will be engaged for express permission to use the quoted materials prior to publication, and they will be provided contextual details to assist them in decision-making about their permission to quote them. The process steps were documented in journal entries, and artifacts showing express approval from participants to print quotes to help establish a credible audit trail (Finlay, 2012).

Pre-existing relationships between a researcher and participant through professional, social, or personal avenues could exert effects on study findings. Personal biases based on prior knowledge and relationships may prevent honest accounts to interview questions and may prevent me from objective perceptions about data collected. Volunteers who recognized or had prior acquaintance with me were asked not to

volunteer in the informed consent. No participants were identified with prior acquaintance with me.

Risks Versus Benefits

Benefits. There were no guaranteed benefits from participation in this study. The partnering organization that assisted with recruitment, did not remunerate me or participants in any way. The relationship between participants and the partnering organization was not placed at risk since participant identities were not shared with the organization. However, this study is expected to contribute to the body of knowledge related to OR nurses' and quality and safety perceptions and practices which participants and the partnering organization may indirectly benefit from.

This study may offer an improved understanding of how early career nurses, who are a growing presence in the OR workforce, understand and experience quality and safety. For example, study findings might offer insight to stakeholders seeking to improve quality and safety in perioperative settings (IOM, 2001) such as those evaluating orientation programs for return on investment (Byrd et al., 2015; Castellucio, 2012; Murphy & Janisse, 2017; Rush et al., 2013). Clinical educators using the Periop 101 curriculum may find this information valuable as they design orientation programming. Professional nursing organizations such as AORN, ANA, and project planners for QSEN may find this information offers insight into the unique opportunities and challenges that perioperative nurses have conceptualizing, creating, and improving quality and safety in patient care.

Risks. James and Busher (2012) discussed considerations for internet interviewing, indicating this method has growing significance and utility in research.

Participants were able to select the format for the interview, and participants requested a phone interview option which allowed them a sense of some control over the process. Since interviews occurred via phone no physical risks were posed beyond those expected in daily life, and participants selected the location they desired for the interview.

Mental or emotional stress was not evident during four of the five interviews. Some frustration was noted with one participant related to my inability to comprehend language. Additional details are provided in Chapter 4. Post-interview apprehension was anticipated especially if they recounted experiences that implicated blame on other parties, that cast themselves in a negative manner, or if situations recounted were emotionally charged. Participants were provided with opportunity to strike segments of transcripts, but none did. They were also provided with a resource link to National Alliance for Mental Illness (NAMI) HelpLine website in the informed consent to provide other options if they felt the need for counseling after the interview.

Unintended identification of participants in research studies is known as deductive disclosure (Kaiser, 2009). Roulston (2010) mentioned the strategy of including contextual data alongside the participants own words, to exemplify and provide enough evidence that others will agree with claims made. To protect participants from risks of social, professional or economic harm from *deductive disclosure* and subsequent loss of confidentiality (Eldh, 2020; Findlay, 2012; Kaiser, 2009; Mertens, 2018), contextual details around quoted material were thoughtfully constructed. Loss of confidentiality and privacy might also occur if security for data files is breached, or if data is mis-used. Strategies to protect data were followed.

Ethical Concerns Related to Data Management Processes

Personal and workplace raw data was obtained from two sources: participant demographic responses and interview data. Data collection during the interview was accomplished via audio recording during remotely conducted interviews. Since information collected during research could identify or harm a person if publicly exposed, this data was protected by the researcher in a manner that provides participant privacy, and ensures confidentiality of data (HHS, 2018; Mooney-Somers & Olsen, 2017). The strategies and precision used for data collection and management can affect the quality and dependability of the study (Finlay, 2012), therefore I followed a concrete set of steps to transcribe, classify, code, and analyze data. Documentation of processes was recorded in journaling to add transparency, maintain data confidentiality, and create an audit trail (Braun & Clarke, 2000; Finlay, 2012) . The steps for ethical data capture and storage are described in the methodology procedures section and supplemented in the next sections.

Data Capture Plan. A goal of an ethical data capture procedure is to minimize the opportunity for others to obtain the data in raw form. This was accomplished by protecting privacy during interviews, and by protecting data from public access during transfer and storage. No other persons were permitted to observe the interview nor was anyone permitted to listen to audio files or read transcripts outside of committee members. The interviewee was given a copy of the transcript and was empowered to authorize access to others if desired.

Interview data were collected using an audio recording and transcription software (Otter.ai). Otter.ai produced an audio file and transcription of audio data as words were

spoken by both parties. These data were saved in an online folder within the Otter.ai software platform and exported to secured. While the creators of Otter.ai do not guarantee files will not be made accessible to others, they do regulate access to the program by registering users and user data online is maintained in a separate account that is password protected (Otter.ai, 2020). To prevent indiscriminate access to data files through the Otter.ai service, files were deleted from the Otter.ai online user storage folder immediately after downloading to secured folders.

During data entry by volunteers, form settings limited user encounters to one per unique email address. Data entered populated a corresponding, behind-the-scenes datasheet that was securely stored in Google Drive. Each row of survey data equated with one volunteer's answers. Spreadsheet column headers reflected the survey item questions.

Data Storage Plan. Limited access to data protects confidentiality. Security for local and cloud-based storage locations of data were accomplished. Local and online data file locations were password protected on a personal MacBook Pro that secured in a locked file drawer in my home office when not in use. Participants were assigned pseudonyms and accounts were linked with the participant by a key that was stored in a protected laptop folder separate from other study data.

Summary

This study described early career ORRN perceptions of quality and safety, and offered insights on what shaped these perceptions, and details about how quality and safety were accomplished in the OR. A sample of ORRNs was purposively selected to maximize variability within the sample. Participation in the study was voluntary and data was not collected until the informed consent process was completed. Demographic data

was collected using online forms prior to interviews and was used to confirm that candidates met inclusion criteria. Semi-structured interviews were remotely-conducted, recorded and transcribed verbatim. The use of a QD research design with RTA methods enabled capture of “straight descriptions” and development of quality and safety themes for the OR setting. Efforts to make the study trustworthy included the following: courteous and timely communication measures before during and after interview data collection (Bradshaw et al., 2017); member checking of transcripts (Johnson & Rowlands, 2012; Mertens, 2018); maintenance of an audit trail throughout data capture, coding, and analysis so that methods are reproducible and may be validated; and reflective memoing and journaling throughout the process to document points where decision-making were biased by prior personal experiences in the perioperative and educational field (Roulston, 2010).

Chapter 4: Findings

Introduction

The purposes of this QD study were to inform what is known about how early career ORRNs perceive quality and safety in the workplace after completing Periop 101, and to illuminate factors that they consider influential in developing KSAs that create safety and quality. The guiding research question for this study was: What are the perceptions of early career ORRNs who have completed the Periop 101 curriculum about quality and safety in the OR care setting? In this chapter, I describe who and how participants were recruited, reintroduce contextual factors surrounding the interview setting, and account for processes of data collection, coding and analysis. A discussion of steps taken to establish trustworthiness in the study concludes this chapter.

Setting

Participants were initially recruited via email from among the subgroup of AORN members who joined the association within the last four years. Recruitment to this population of early career nurses within the AORN member database was the first of six waves of recruitment efforts. Five people volunteered within the 30 days after Wave 1 was emailed. Three volunteers met inclusion criteria and were invited to interview. Two scheduled interviews. One completed the interview process. Due to low recruitment rate, I requested and was granted changes in recruitment procedures by IRB. Five subsequent waves of recruitment were made between March and October 2022 through social media platforms (perioperative nursing, AORN chapter and perioperative specialty interest sites on Facebook and LinkedIn), and the updated recruitment message was forwarded via

social media messaging services to professional colleagues for dissemination to perioperative nurses they knew. Thirty-four nurses volunteered after Wave 2, of whom three met inclusion criteria. One from this group of recruits completed the interview process. After Wave 3, three additional nurses volunteered, one met inclusion criteria but did not schedule an interview. Wave 4 in June 2022 yielded 11 respondents, six met inclusion criteria, and two completed the interview process. In August, after Wave 5, four people volunteered, and one interviewed, and after the sixth wave of recruitment a fifth nurse completed an interview. Recruitment concluded after seven months with five participants who completed the interview process. These aliases are assigned to participants to protect identities: Vol 3, Vol 14, Vol 43, Vol 53, and Vol 43.

A possible condition affecting recruitment and workplace settings was the COVID-19 pandemic. At the time of the Vol 3's interview, in January 2022, COVID infection rates were reported by CDC (2022) as the highest of any in the world with COVID-19 patient hospitalizations increasing nearly 50% in just one week. Throughout the pandemic, elective surgery schedules were interrupted for months and in most ORs, clinical practice patterns, staffing, and demands changed frequently (Colosimo et al., 2023; Miziara & Galego, 2021; O'Glasser & Schenning, 2022; Prasad et al., 2021; Ti et al., 2020). Some experienced OR nurses transferred to roles with more stable paychecks or flexed down when the COVID pandemic prompted a moratorium on elective surgical procedures for inpatient settings (Meredith et al., 2020; Prasad et al., 2021). A small number of surgery centers remained open. OR staffing shortages in those centers were exacerbated by high rates of staff absenteeism from illness. As COVID rates waned in early 2022, ORs reopened for elective procedures and OR staffing shortages became

more apparent in some but not all settings. Volunteer 53 described a staffing shortage that affected safety and quality, citing times when she repeatedly called for assistance to lift and transfer patients.

> . . . typically, when I call for turnover, that's when like other members like the turnover crew come in and help, but sometimes they're already helping other rooms so they're not able to come into the room and assist us to transfer. So, in those cases, you know, I kind of just call turnover or page turnover again, or, or I'll ask for positioning help or like any available RN or scrub tech or you know, just stick my head out the door if there's anyone available.

Other ORs experienced layoffs and transfers to other ORs due to lack of work. Volunteer 54 mentioned a shift of cases to other surgery centers during the COVID pandemic that resulted in lack of work, saying, ". . . going through COVID has been extremely stressful and we've had some . . . there are hospitals open up within our area. So, our surgeons are taking their surgeries to those hospitals."

Not all ORs experienced similar challenges with COVID-19 pandemic, however. One participant's workplace experienced resurgence over the last year. She felt this growth period motivated them to keep their knowledge and skills current. "Especially within the last year we've all had to step up and teach each other new things all the time because our practice is growing so quickly." It is plausible that the exceptional changes in OR routines may have influenced participant's perceptions about safety and quality. It is beyond the scope and time constraints of this study to research the extent that the COVID pandemic may have incurred, however I acknowledge the potential for effect.

Demographics

Study participants worked as ORRN circulators at in- and out-patient surgery settings in the United States having four to 10 ORs. All participants worked fewer than four years as circulators after they completed an orientation with Periop 101. None worked or volunteered in the OR prior to hire as a circulator. To reach this purposive sample, I collected demographic data with a 15-item survey to screen for inclusion criteria. Fifty-nine people volunteered for the study over the recruitment period. Thirteen volunteers met inclusion criteria. The five nurses who interviewed and completed conditions for study participation and are referred to as participants. Their demographic characteristics are shown in Table 1.

Table 1

Characteristics of Participants

Age ranges	n
< 25 yrs.	1
26-40 yrs.	4
41+ yrs.	0
Sex	**n**
Female	5
Academic training	**n**
Bachelors	3
Associates	2
OR setting	**n**
Inpatient	3
Outpatient	2
OR workplace size	**n**
≦3 ORs	0
4-10 ORs	5
*Employment in OR	
Less than 18 mos.	2
19-36 mos.	2
37-48 mos.	1
*OR circulating experience	
2 yrs. or less	4
More than 2 yrs.	1
*Length of Periop 101 program	n
< 6 mos.	3
6 mos. or more	2

*Note.** Characteristics were grouped to protect anonymity of participants.

Data Collection

Data collection procedures were consistent with those described in Chapter 3. Interviews were conducted with five participants over a period of seven months. Durations of interviews ranged 16 to 44 minutes. I used a semi-structured interview guide (See Appendix C: Interview Guide) styled with open-ended prompts to encourage freedom to talk about any aspect of safety and quality in the OR. Questions in the interview guide were designed to elicit descriptive data from participants about safety and quality in perioperative nursing. Probing questions were used to elicit responses about experiences where safety or quality conditions were met. Some participants recalled other times when safety and quality challenges existed.

For three of five interviews, I also recorded the researcher introduction portion of interview to enable self-assessment of interview techniques employed during the interview and offer credibility to the process. All interviews were accomplished by phone and were audio recorded using a speech-to-text transcription application (Otter.Ai) on a MAC Book. One participant spoke with broken English, and interview communication was disjointed and halting because I frequently did not understand responses to questions and asked for clarifications or to repeat the response. I used multiple open- and closed-ended prompts to validate understanding. Only this participant returned the transcript with significant changes to the transcription during the member-check process, editing areas where the transcript had been poorly interpreted. I used this participant's edited version for coding since the speaker felt this version best expressed the desired language and meanings. No changes were requested by other participants with member-checking. Audio recordings and transcripts, along with literature and artifacts pertinent to the study,

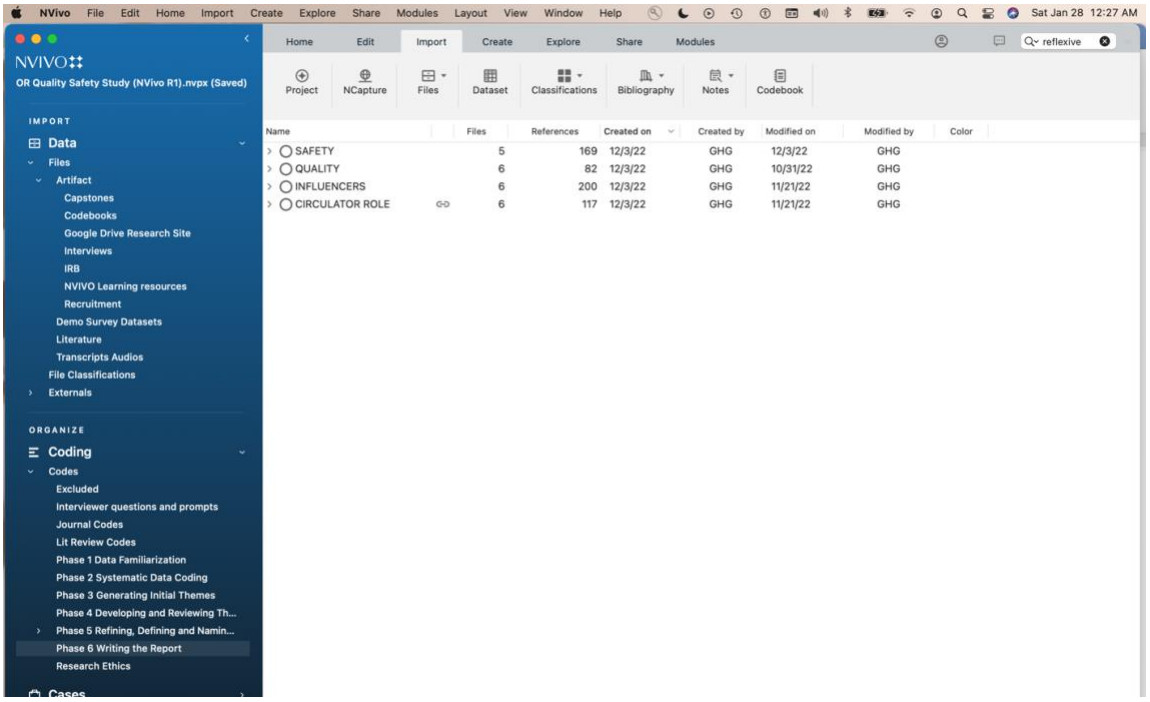
were saved to a secured cloud-based storage location through NVivo/Citavi, and data was backed up on my password-protected MAC Book in an encrypted format. The laptop was secured when not in use.

Data Analysis

The data analysis approach was modeled on RTA as described by Braun and Clarke (2020). The six phases of RTA are: 1) familiarization with data, 2) systematic data coding; 3) generating initial themes, 4) developing and reviewing themes, 5) refining, defining, and naming themes, and 6) writing the report (2020). Coding and themeing across six phases were conducted using the file structure for RTA demonstrated in NVivo by Meehan (2021). I used NVivo 12 and later version 14 to house and organize data as well as conduct and document processes of coding, theming, and reflexive examination. In Phase 6, four parent codes were dominant: Safety, Quality, Influencers, and Circulator role. In Figure 1, the file structure and coding schema appear in the blue column. Parent codes are listed in the white viewing pane.

Figure 1

Screenshot of NVivo Data File and Coding Structure With Phase 6 Parent Codes



Coding and themeing processes with each phase necessarily overlapped since interview dates were spread across seven months, February to September 2022. Coding, pattern seeking, and theming were circular and iterative processes rather than linear. I expanded some codes, collapsed others, recategorized them and excluded a few throughout the course of seeking meaning and relationships. Data analysis was organized with Braun and Clarke's 6 Phases of RTA. A description of activities for phases follows.

Phase 1-Data Familiarization

During the data familiarization phase, I read through transcripts and listened to the interview audios repeatedly, writing reflectively in memos and documenting processes in journal entries as coding passes were conducted. As planned, datasets from the demographic survey with codable and classifying data were exported for analysis.

Datasets were helpful when making comparisons among participants. I also used this dataset to re-familiarize myself with participant quantitative characteristics like age range, workplace size and work setting later in the analysis phases. As I initially read transcripts, in Phase 1, I assigned speaker turns, and corrected transcription errors. No coding was performed in Phase 1.

Becoming familiar with transcripts involved re-reading, coding, recoding/un-coding/combining, and reflecting on those decisions. In this sense, as I reread transcripts in parts and as wholes on multiple occasions across the reflexive phases my familiarity continued to grow.

Phase 2-Systematic Data Coding

When I open coded transcripts for Phase 2, I followed an inductive, data-driven process. Since interview dates were spaced over seven months, coding in phase 2 for a transcript would occur simultaneously with theming in Phase 4 or 5 for another transcript. I arbitrarily stopped Phase 2 coding after the fifth interview was completed. During Phase 2, 148 codes were generated, and parent-child relationships were observed. When coding stopped for Phase 2, there were 70 parent codes, 62 child codes, and 16-3rd generation codes. Most commonly occurring codes for Phase 2 are shown in descending order in Table 2.

Table 2

Phase 2 Parent Codes Common to Four or More Participants

Code	# participants	# references
TEAMWORK	5	34
Human factors	5	30
Circulator role	4	19
Influencer	4	12
Cognitive processes	4	11
Infection prevention	4	11
Medication safety	4	6
Learning process	4	9

Note. *The upper case code was considered a parent code during this phase.*

Phase 3-Generating Initial Themes

As code relationships were examined, some codes were substructed, and other new codes were generated using an inductive coding process. This reduced the number of parent codes from 70 to 56 but the overall number of codes increased with generation of additional 3rd generation codes. There were 71 child codes, 70-2nd generation codes, and 13-3rd generation codes at the conclusion of Phase 3.

Codes for safety, teamwork, and adverse events emerged as parent codes with presence in four transcripts. Six parent codes occurred across all interviews during Phase 3: circulator role, influencer, actions to improve safety, processes, quality, safety topics.

Most commonly occurring parent codes with the number of participant references are shown in Table 3.

Table 3

Phase 3 Parent Codes Common to Four or More Participants

Code	# participants	# references
Actions to improve safety	5	48
Circulator role	5	53
Influencer	5	79
PROCESSES	5	35
QUALITY	5	76
Safety topics	5	35
adverse events	4	13
SAFETY	4	61
TEAMWORK	4	32

Note. The upper case codes were overarching parent codes during this phase.

Early in Phase 3 analysis, I established Safety and Quality as overarching parent codes and considered them as functional themes because the interviews focused on safety and quality. Additional overarching codes were established and are shown as capitalized codes in Table 3. Although I iteratively coded, merged, renamed, and excluded child codes under all these parent codes, a long list of single codes remained. At the close of Phase 3, there were over 30 single codes with a single source transcript. This large number of single codes prompted my reflection on their significance in answering the research question, and whether relationships existed and if they might be better defined and related. Throughout this phase, I continued to refine definitions for parent codes using literature to support this.

Phase 4-Developing and Reviewing Themes

At the conclusion of Phase 4, there were five overarching codes present in all transcripts: Safety, influencers, quality, circulator role, and processes. See Table 4 for

frequencies of overarching parent codes and references for them. Two parent codes, processes and research ethics, remained, but were not overarching thus are not shown in Table 4.

Table 4

Phase 4 Overarching Parent Codes

Code	# participants	# of references
Safety	5	118
Influencers	5	117
Quality	5	92
Circulator Role	5	77
Processes	5	32

For codes common to two or three transcripts, I reiteratively read transcripts and deductively coded any missed references. It is possible that my enthusiasm to see commonalities during the cross-reference process may have skewed my interpretations toward over-inclusion because I presumed more references existed, and I had simply missed them in earlier coding passes. Data files were uncoded at this time if they did not align with code definitions. I again search for supporting literature when writing code definitions and their hierarchical relationships.

Phase 5-Refining, Defining, and Naming New Themes

I excluded the code for processes early in Phase 5. Processes had 59 associated child codes which captured cognitive and physical processes I recognized in participants' descriptions. These codes were aspects of learning that participants conveyed as significant to understanding the complexity of theoretical and practical knowledge types every circulator uses. Forty cognitive process codes were identified in all participants' transcripts, and 59 codes for physical processes were present in four of five transcripts.

With reflection, I felt this group of codes did not add substantially to answering the research question although they may merit future reflection (Journal entry 09.27.2022).

After excluding processes code, the four remaining themes in Phase 5 were: circulator role, influencers, quality, and safety. Phase 5 codes were copied into Phase 6. The codebook for Phase 6 was considered a final data set for analysis on December 3, 2022. I made rare code additions, deletions, or reorganizing actions to this dataset. In Table 5 are code frequencies for overarching parent codes in Phase 5 compared to those in Phase 6.

Table 5

Phase 5 and 6 Overarching Parent Codes

Code	# participants	# references Phase 5	# references Phase 6
Influencers	5	199	201
Safety	5	173	162
Circulator Role	5	125	119
Quality	5	82	85

Theming from these codes involved alternately reviewing codes, refining code definitions, looking for relationships among codes and searching literature to inform and validate findings. Within the influencer code, teamwork code was heavily loaded (50 codes/5 participants). I followed a similar cross-transcript comparison process for parent codes in Phase 5 and 6 to search for themes among the remaining overarching codes Safety, Quality, Circulator Role codes. Theme details are in reported later in Chapter 4.

As the coding and analysis of all transcripts began to hint at themes, I arrived at a point where I felt I had exhausted the ways I might further interrogate the data that would add further value. At this point, fewer codes were forthcoming. I arbitrarily chose to

cease coding for Phases 2-5, and saved Phase 2-5 codebooks on those dates to establish an audit trail for data analysis, organization and management. Phase 5 codes were copied into Phase 6. Variations in code frequencies between phases are also shown in Table 5.

Phase 6-Writing up the Report

Braun and Clarke (2019) encouraged researchers to expound on themes which are defined as, "patterns of shared meaning . . . united by a . . . central organizing concept" (p. 11). Throughout the study, I reflected in journal entries and memos about possible meanings and themes, recording my subjective perceptions, as well as study processes, literature annotations and reviews. I reflected on these and also scrutinized code frequencies in Phase 6 looking for meanings and relationships. Intermittently, I returned to the transcripts to clarify and verify meanings and conclusions in answer to the research question. Ultimately, I did not recognize the value of further efforts to query data for codes.

Still questions arose after I felt I had exhausted inductive coding phases and themes were generated. As I began to write the results, it was not overtly apparent whether participants' perceptions were characteristic of those Benner expected in competent nurses, thus my theoretical lens for understanding participants as learners was not yet analyzed. I also wondered if participants' transcripts reflected topics in Periop 101 content. After consideration of the time needed to answer these questions using a deductive approach, I further coded with codebooks derived from Benner's developmental concepts and from Periop 101 Module Topics to reveal elements that informed an answer these questions and of competence and knowledge.

Through Benner's Lens

Because the study premise that early career nurse competence was viewed through Benner's (2001) lens of nursing development, I necessarily interrogated transcripts for evidence of these concepts described by Benner: maxims, sets, paradigm cases, and rule-following, a characteristic common in novice to competent nurses. Proficient and expert practitioners may communicate through 'maxims,' a type of jargon or language where only others with similar experiences will comprehend (Benner, 2001, p. 10). 'Sets' are "a predisposition to act in certain ways in particular situations" (Benner, 2001, p.7), and nurses use sets to manage care. I coded nurses' exemplars of 'paradigm cases' where a powerful "event refines, elaborates, or disconfirms this foreknowledge" (Benner, 2021, p. 8). Last, I coded examples where participants spoke about practical experiences and gave examples of theoretical knowledge. Benner (2001) acknowledged the differences between and the necessity for both types of knowledge to advance skills. I approached transcripts deductively, coding by Benner's concepts already mentioned. Results are in Table 6.

Table 6

Code Frequencies for Benner Categories

Code	# Source transcripts	# Codes
Maxim	0	0
Set	5	12
Paradigm Cases	5	15
Rules	5	39
Practical Knowledge	5	49
Theoretical Knowledge	5	34

No maxims were recognized or coded in transcripts. This finding would align with Benner's (2001) understanding that at proficient and expert practice levels, nurses may use maxims when speaking with peers, however, others outside of the practice context will not comprehend the meaning. I coded sets from practices described by all five participants. All participants shared with me personal experiences that shaped their perceptions. These were viewed through the lens of paradigm cases as Benner (2001) described. Rule-following is a characteristic that Benner observed in competent nurses. Participants referenced situations where rule-following was critical to safety. Both practical and theoretical knowledge (Benner, 2001) references were made by all participants, but practical knowledge was coded more frequently.

Periop 101 Content

To determine the presence of Periop 101 content observed in participants' accounts, I returned to the transcripts with a codebook containing code for 23 module topics in Periop 101 Core Curriculum (2021 HealthStream version, store.healthstream.com/products/01t30000000mEiLAAU). Table 7 depicts module names and the number of references made about the topics.

Table 7

Periop 101 Code Frequencies Across Transcripts

Code	# Source transcripts	# References
Medications	5	10
Organizational influences & Pt. outcomes	5	21
Patient. Safety	5	25
Transmissible infection prevention	5	10
Periop Assessment	4	9
Professionalism	4	5
Patient Positioning	4	7
Skin antisepsis	4	7
Safe use of equipment	4	7
Sterile technique	3	8
Surgical draping	3	4
Surgical Hand Antisepsis & attire	3	7
Anesthesia	2	5
Endoscopic surgery	2	2
Environmental cleaning	2	6
Healthcare information management	2	3
Post-anesthesia care	2	2
Patient and family education	2	9
Sterilization processes	2	2
Surgical instruments	2	5
Surgical specimens	2	3
Hemostasis	1	1
Wound closure and healing	1	1

All 23 module codes were referenced at least once. Four topics mentioned by all and coded most densely were medication administration, organizational influences and patient outcomes, patient safety, and transmissible infection prevention.

Within the overarching safety code, I recognized eight safety topics that overlapped those in Periop 101. Where contents topics overlapped is shown in Table 8.

Table 8

Cross-Reference of Participants Safety Topics to Periop 101 Module Code

Participants' safety topic	Periop 101 Module topic
Infection prevention	Transmissible infection prevention; environmental cleaning; sterile technique; surgical hand antisepsis & attire; Pt. skin antisepsis
Adverse events: burns, falls, unintended fractures, wrong implant/site/procedure	Safe use of equipment; Professionalism
Medication safety	Medications
Protecting nurses	Safe use of equipment; Professionalism
Protecting patients	Pt. safety; Periop assessment; surgical specimens; Professionalism
Safe patient handling	Pt. safety
Safe patient positioning	Pt. positioning
Sharps safety	Safe use of equipment

While it would not be plausible to assume participants learned about safety exclusively from Periop 101 modules, it is plausible to say that Periop 101 offers content on safety topics that are present in accounts of safety by early career ORRNs.

Evidence of Trustworthiness

Credibility

Immersion

Actions taken to improve trustworthiness were consistent with study plans described in Chapter 3. I listened to audios immediately after each interview to begin the familiarization phase. To promote confidence in the data during later analysis phase, and make findings credible, I used a speech-to-text application to record and transcribe audios verbatim. When interviews are transcribed verbatim, speaker meanings may remain unclear when speaker's voice patterns are absent. Voice characteristics offer context in

spoken language. However, transcription in speech-to-text mode is not 100% accurate. To more accurately represent participants' meanings, I edited the speech-to-text transcriptions on my initial review to match the corresponding audio recordings. On the initial pass, I also assigned speaker turns.

Member-Checking

Transcripts were returned to participants for member checking. Four transcripts were returned without changes, the fifth participant made corrections and additions to their transcript. Once member-checking concluded, I initiated at least one open coding pass on every transcript within 30 days after interview dates. Transcripts were annotated with references to supporting materials, personal reflections Journal entries and memos that described details about processes and decisions during coding and themeing were uploaded to NVivo as evidence of the project timeline and of steps taken in thematic development.

Prolonged Engagement

One strategy I used to prolong engagement with participants. I introduced myself briefly at the start of each interview (See Appendix C: Interview Guide). To help mediate the potential power imbalance between myself in the dominant researcher role with study participants who have vulnerabilities, I communicated with respect in spoken and written forms. During interviews, I spoke at a moderate rate and used middle-range voice tones. I paraphrased the introduction script to produce a conversational, non-threatening mood. I offered open-ended prompts to permit participants to lead the topic direction. In certain cases, I used rephrasing to clarify my interpretations. With the first two interviews I did

not record or transcribe the interview self-introduction portion of the script, however for the final three interviews these are present in transcripts.

Transferability

When readers comprehend contextual details, it may be possible for them to determine whether data may also 'fit' in their own settings, in turn facilitating the use of study findings in a variety of practice settings (Stenfors et al., 2020). Data about the participants' workplace size and setting, their age range and educational background were among demographic variables collected to help portray contextual details about participants while continuing protection of their identities. I was able to collect rich data about participants' experiences and thoughts on safety and quality in the perioperative setting which may assist readers with assessing fit of findings for other locations.

Dependability

Consistent with the plan for maintaining audit trails as evidence of dependability, see Appendix F: Codebook Exports. Codebooks were exported at the end of data analysis phases and codes are arranged in alphabet order. The code lists transform across the phases of theming and refining. This is evident in development of parent child relationships, the addition of some codes and deletions of others. Still some codes underwent renaming across the phases. Note created dates for codes along with recently modified dates as evidence of data immersion.

Confirmability

As planned in Chapter 3, Bradshaw et al.'s (2017) suggestions to establish confirmability were followed. Journal entries were composed before the initial interview and continued over the course of data analysis. Journal entries addressed content in

NVivo that was currently under scrutiny, references and reflections on the coded content, and steps taken to ascertain themes from codes. Journal entries were uploaded to NVivo as artifacts for confirmation of analytic processes. The audit trail in NVivo is available to make the study more confirmable because data, codes, and themes in NVivo were date/time stamped which established a chronology for creation and modification of codes and ideas. Transcripts were returned to participants for member-checking for accuracy. Demographic data is linked to transcripts to make findings more credible and quotes from participants are used to support findings.

Results

Research Question

This study was conducted to inform the question: What are the perceptions of early career ORRNs who have completed the Periop 101 curriculum about quality and safety in the OR care setting? Data about the role of the ORRN in quality and safety contribute to the body of knowledge about the subset of the OR circulator population which has largely not been explored. Themes were constructed by reflecting on what meanings the data appeared offer at face value, and how data might inform to the research question. Creating themes was at times an arduous, convoluted, yet iterative process of teasing out meanings from codes, considering relationships among them, then recoding and uncoding for clarity. One hundred seventy-five individual codes were present at the advent of Phase 6. These were subsumed by four overarching parent codes which scaffolded theme generation throughout Phase 6: safety, quality, influencers, and circulator role. I assigned safety and quality codes to overarching positions after the initial interview purely to manage the data corpus. This decision facilitated sorting quotes

about safety from those about quality. In addition, codes for influencers and circulator role were generated as parent codes across the study period as additional participants shared experiences with quality and safety. What follows is a discussion of themes resulting from synthesis of participants' perceptions of 1) quality; 2) safety; 3) influencers on quality and safety; and 4) the role of the circulator to quality and safety.

Safety Themes

The safety code was defined as, "An overarching parent code that contains references to physical and cognitive actions with exemplars of safety within the context of the operating room." the safety parent code contained 165 child codes which were produced through an inductive coding process as Phase 6 began. Safety codes were first analyzed as a corpus for themes and later with data from influencer and circulator role codes. A discussion follows of three safety themes that were generated:

- Theme 1 - I am accountable for safety
- Theme 2 - Teamwork can influence safety
- Theme 3 - Experiences changed my behaviors

Theme 1 - I am accountable for safety

Theme 1 culminated from personal observations shared by participants about the use of *I* and *we* in nurses' accounts of experiences when they recognized their decisions or actions played a role in creating and maintaining safety. Yin et al., (2022) suggested that when 'I' is used, communications may be perceived in a relatively concrete way. 'I' communications usually occur within the context of specific situations, while 'we' communications more often address abstract ideas that may transcend multiple practices or aspects (Yin et al., 2022). The "we" pronoun is often used to reference self as one in a

group of people with commonalities. Gillis (2003) suggested that nurses who use ‘I’ when talking about their work do convey a sense of personal accountability and may reflect feelings of empowerment to make a difference. Participants shared concrete examples of perioperative safety from personal experiences. Their accounts illustrated their perceptions of personal accountability for safety and accountabilities in conjunction with team members. In Table 9, quotes convey situations where nurses reflected perceptions of personal accountability for safety.

Table 9

Exemplars of Personal Accountability

Participant	Example quotes
Vol 3	I think about the one time I didn't tighten the stirrup as well as I should have. And when I'm at the bedside, I try to just be more conscious of each thing that I do. So, I have a tendency to rush and so kind of just reminding myself to breathe, and remember all the things that could go wrong, but won't go wrong because I've already thought about them and already done something to prevent them. And I remember one of the first times on my own. I stood back after we kind of got through that busy phase. And realized that everything has gone really well. I didn't, I didn't stumble for the steps.
Vol 14	There was a time I thought I had made a mistake when giving the medicine and I thought I had given an overdose to my patient . I always ensure that I verify all medical procedures before administering them and always check the welfare of the patient before I leave. I always ensure that patients would get the medicine at the required time or at the expected time."
Vol 53	I feel like we primarily are focused on like, efficiency and turnover in an outpatient surgery center. So, we try to minimize in our turnover times. I feel like in those instances, it increases the chances are like incidents to occur, but just making sure that we have like a very good routine based on safety and like just knowing our room because, like what myself I have like a habit. Just checking to make sure that the bed is locked or checking to make sure that the safety straps on the bed during turn over the room. You know that we don't like? Just like forget about those things because we're moving so quickly. And then like making sure that I utilize my floats wisely. You know, since we're so busy that someone was able to like you know, count and give meds and make sure that they're dispensing the correct medications to the field, stuff like that, like that's what we do in a very fast paced, efficient environment to make sure that everything is still safe for the patient. I feel like I'm one of the primary people accountable for safety.
Vol 54	I have to make sure all the equipment's in there and make sure all the equipment's clean. I have to make sure all the trays are in there. That every instrument is in the trays correctly. Because we have to do the instrument counts. That's another part of safety I like to do a little extra things too that, you know if we're doing like an exploratory bowel resection or something, the patient is at a higher risk of possibly coding or things like that. I try to keep a band of IOBAN in the room so that way if for some reason we had to do CPR, we can close the incision site with the IOBAN."

Alternately, Vol 43 talked about safety in the workplace using plural pronouns more frequently. This exemplar demonstrated a perception of accountability to team members to follow safety protocols that prevent wrong implant insertions.

> . . . we double verify with our Surgeon, the implant that is going in. So, our orthopedic representative from the company of the implantation verifies before, and then, as the circulator, I verify with the tech as well as the surgeon, and PA, as I'm passing it off to the sterile field.

The workplace culture was perceived as one with shared accountability.

> . . . we have a manager Yes. But leadership comes from everybody. Everybody has to play a role. There's no There's no hierarchical standpoint. Everybody kind of has their little niche, like certain people grasp on to things differently. And so we teach and educate each other. Nobody's per se a preceptor, we all precept to one another. Especially within the last year we've all had to step up and teach each other new things all the time because our practice is growing so quickly. We all contribute to what needs to be.

Regardless of pronoun usage, all five participants' transcripts conveyed a sense of personal accountability for safety.

Theme 2-Teamwork can influence safety

Teamwork (52 codes) was one of eight child codes nested under the influencer parent code along with sibling codes (code frequencies in parentheses): human factors (81), education (25), infrastructure system (16), experiences of safety in the OR (8), practice changes based on evidence (6), mentoring (3), and COVID (1). Throughout interviews, as participants recounted working with multidisciplinary team members

within the context of safety, they identified teammate roles. Wahr (2013) observed that the care of surgical patients requires many deliberate steps by multiple care givers across time (pre-, intra-, post-, rehab-phases). Teamwork, with adequate preparation and coordinated efforts may improve surgical procedure safety, along with efficiency, effectiveness, and efficacy (Deshpande et al., 2021; Umali & Castillo, 2020). Vol 3 characterized teamwork as members having a common cause and using open clear communication; Vol 43 related as 'family' with others and valued having shared leadership. Vol 53 described supporting each other, and Vol 54 felt accountable for her own area, but helped others if needed. Table 10 contains quotes that reveal some of the roles on these participants' teams alongside participants' perceptions of the nature of teamwork.

Table 10

Quotes About Teamwork

Participant	Who are team members	Nature of teamwork
Vol 3	. . . case that was not going very well. . . losing a lot of blood and a lot of different specialties were asked to come in. We had a couple general surgeons, a urologist, . I remember working with the CRNA to administer blood. . . it's being able to work with her for one part of all that was going on around us.	everyone in the room has the same idea in mind - to keep the patient from harm
Vol 3	And we kind of talked through the surgery with scrub tech and anesthesiologists like these are the things that we plan to do once we come in the room.	. . . taking the right steps and working as a team, open communication between team members and being very clear about what's going on each moment of the operation
Vol 14	I always inquire what I'm supposed to do when I'm not sure. . . [of] physicians and other colleagues whom we are working together.	I always inquire from him anything that was hard for me to understand and we always work close and share ideas together

Participant	Who are team members	Nature of teamwork
Vol 43	We have . . . scrub techs. We have. . . nurse anesthetists . . . no anesthesiologists. . .	. . . and constant conversation happens between all of us on what's going to be best for our patients. We discuss fire risk . . talk about movement being safe as we move our patients throughout the bed and the OR space. . . verifying what we're putting in our patients. But leadership comes from everybody. Everybody has to play a role. There's no There's no hierarchical standpoint. we work together the best because we've picked quality candidates that fit on our team, not just the next person.
Vol 53	you know there's a great group of nurses and doctors involved and scrub techs, and you know, everyone's looking out for the patient and for each other and I feel like we have a pretty good system.	
Vol 54	. . . a couple of my surg techs have . . . taught me how to scrub in and how to put on sterile gloves and how to set up a sterile field . . . I do heavily rely on my surg techs with any or first assists too - with any questions I have when it comes to that type of environment, or you know to meet their needs for the procedure.	There are certain things that each team member is responsible for making sure that happens, whether it be the correct instruments are available, the patient's positioned correctly, things like that
Vol 54	I have to make sure I know who's going to be part of the procedure, how many techs I have, how many anesthesia I have, the surgeon PAs, Reps who might be in the room, things like that	

To develop a visual representation of teamwork code relationships, I used NVivo to construct a word cloud from a word frequency query across all transcripts. In Figure 3, team member role codes are scattered throughout the cloud in a smaller size font with font dimensions relative to frequency mentioned.

Figure 2

Teamwork Word Cloud Phase 5

Participants talked about teams, teamwork, and team members, but within the text data, the word *patien*t recurred most frequently thus, it is centrally located and in largest font in the teamwork cloud figure. Cloud words shown in decreasingly smaller sizes were less frequently occurring. Reading the word cloud from left to right, top to bottom, I noted codes shown in intermediate font sizes conveyed a remarkable visually dominant

message: “hierarchical control always techs scrub family everyone listening conversation close nurse PATIENT conversations hospital surgeon going actually working everybody department standpoint together.” Participants perceived teamwork as a structural element of safety and perceived themselves as team members. Their perceptions of safety were influenced by relationships with team members, including scrub techs, anesthesia providers, and surgeons.

Theme 3: Experiences changed my behaviors

Not all experiences invoke learning. Psychologists and learning experts believe learning may be enhanced when associated with either negative or positive emotions experienced at the time of the learning experience (Hourihan et al., 2017; Sakaki et al., 2014; Szekely et al., 2019). A participant recalled a patient positioning event when a leg stirrup was not affixed securely to the OR table rail (See Table 10). The memory of the stirrup and patient leg falling off the table became a pivotal one, consistent with what Benner (2001) called a paradigm experience, where an “event refines, elaborates, or disconfirms” what a nurse already knows or extends their practical knowledge. As a result of the experience, this nurse began to double check stirrups to improve safety. In another event, the participant recounted feeling valued by a team member after working as a team through an emergency, “and I remember working with the CRNA to administer blood. And she had come up to me after the case and said thank you for being calm, like having you in there and like being so calm in that situation was really helpful.”

A nurse observed how others performed their duties saying, “I always learn from the mistakes of others” but later recounted a memorable incident where she almost made a medication error and was fearful that a patient had received an overdose. The

recollection of this near miss elevated her awareness of risks with medication administration. A nurse recalled an eventful case where a femur was fractured incidentally during a procedure to place a stemmed prosthesis. In a subsequent case, she recognized a similar pattern was occurring during the procedure. She reported:

> There's particular times where I've come across unsafe circumstances. And it's a lot of asking questions. I have a few older surgeons that are, sometimes take on something that might be over their head. And so, it's getting them to - ask . . . asking them appropriate questions that maybe lead to us even calling in somebody else. Having one of their colleagues come in and help them finish.

In this experience she advocated for a patient's safety by respectfully engaging with the surgeon to invite a partner surgeon to scrub in and assist. This situation bolstered the nurse's sense of empowerment for in advocating for patient safety. She remarked later, "we've had that situation happen where we've had to go and do more extensive work because of that femur in the future and just not- if we caught it in the moment then we can prevent the issue of back to the OR in a short amount of time frame."

One nurse, after experiencing a patient fall situation during spinal administration, later worked with an interdisciplinary team to make future patient positioning practices safer. Another recounted an emotionally laden event when observer/ visitors entered the sterile suite without changing into OR scrubs. Attire compliance is an element of many aseptic techniques practiced to prevent SSIs. Observers were not in compliance with the attire policy. This passage is a chronologically presented series of quotes from her account of the event:

> I guess something that kind of changed the way I practiced was . . . first time I ever kind of stood up for my patient and myself It was a doctor who came into the operating room with his assistant . . . they were wearing the same color scrubs that we utilize at my facility for sterile scrubs, but they were definitely not our scrubs . . . and I spoke with his assistant and I said hey, I'm really sorry to have to do this but you guys are going to have to step out and change your scrubs into the hospital sterile scrubs because outside scrubs are not allowed in our operating rooms . . . Once you relayed the news to the surgeon, he got extremely angry and was blaming me for delaying this patient's procedure and kind of going off on a tangent about stuff about how he (observer) was in a sterile gown, so it didn't matter. And all these other things and I ah, it was terrifying, but I was like well, I'm really sorry if you disagree. . . So, you can go change to me - you can go change your scrubs and we can move on with this procedure and finish it and then afterwards we can figure out what best practice is. And it was very hard for me to kind of contain my emotions as well because I was very scared. . . so that moment kind of reassured me that I was doing the right thing and that I need to continue to speak out for my patients even with little things. . . So really Yes, from now on, I'm more confident when I do speak up about things and I feel that if I can back myself up like hey, it's either hospital policy or it's not safe for the patient due to this reason.

The emotional components within these exemplars elevated these experiences to the level of paradigm experiences as Benner (2001) described (2001). Nurses were motivated to think and act intentionally to recognize and decrease risks to patient safety.

Quality Theme

During thematic analysis about quality, I incorporated data from all four child code groups: actions that promote quality, QI indicators, quality definitions/ examples, and unfamiliarity with quality to generate a single broad quality theme: Quality care is patient-focused and outcome oriented. The quality code structures with code frequencies that existed during thematic analysis are depicted in Table 11.

Table 11

Quality Code Hierarchy

Quality (136 coded references)	References	Participants n=5
Actions that promote quality	75	
Attracting best staff-surgeons	3	1
Community hiring process	1	1
Efficiency	3	3
Nurse-patient communications	3	2
Observing sterile technique	5	2
Patient education	5	2
Patient focused care	15	5
Planning & preparation	4	2
Practice resources	19	5
best practices	4	2
evidence-based	5	3
follow guidelines	3	3
Updating policies	2	1
QI Indicators	20	5
Hand hygiene	1	1
Medication safety	5	3
Patient satisfaction	3	2
Postop patient outcomes	6	3
Patient falls	1	1
RFID tags	1	1
Surgical Site Infection (SSI)	2	2
Quality examples	23	5
Familiarity with QI indicators	13	4

Note. Second and third generation quality codes are indented, and the number of source transcripts with contributing data for themeing.

Of the quality aspects mentioned by participants, some were categorized as processes and others were outcomes which fits consistently with Donabedian's (2005) model for

measuring quality. There were no overt references to Donabedian's third domain of measurement, organizational structure. However, there are inferences in transcripts that infrastructures were in place to vet new hires, conduct hand hygiene observations, work in multidisciplinary teams to improve care, update policies, and report patient falls rates on an organizational quality dashboard.

Quality care is patient-focused and outcome oriented

When asked about perceptions of quality, participants most frequently talked about resources (19) they used to understand quality standards, and about giving patient focused care (15). While they mentioned some elements of QIs, participants did not perceive these as part of an organizational quality measurement system.

During the earlier literature review, the six undergraduate and graduate level QSEN competency domains were implicated as an important foundation for the Periop 101 Core Curriculum and are featured in each module learning plan. Based on the expectation that QSEN-related content could be present in transcripts, I retrospectively undertook a comparison of study findings to QSEN domains. In Table 12, QSEN-related code frequencies are shown alongside corresponding QSEN domains.

T**able 12**

QSEN-Related Code Frequencies

QSEN domains	Related codes in study	# participants n=5	# Coded references
Patient-centered care	Patient-focused care	4	11
	Patient Education	2	5
	Nurse-Patient communications	2	3
Teamwork and collaboration	Teamwork	5	52
Evidence-based practice (EBP)	Evidence-based	2	2
Quality improvement	Quality improvement definition	4	9
	Actions that promote quality	5	68
Safety	Safety	5	162
Informatics	Audits	2	1
	Database	1	1

Note. Source, Cronenwett et al. (2007)

Four participants mentioned three different quality-related processes that were related to medications: accurate and complete medication labeling with scrub person verification (1); give preop medications at the correct time (1); and reconcile medication usage with pharmacy (1). Two participants mentioned postoperative patient outcomes when talking about quality. One said "our hospital, actually videotaped surgeries, specifically, our robotic assisted surgeries from start to finish. So, we have those available for patients to be able to see what measures we do take in protecting them and preventing them especially from infection." Two mentioned SSI outcome, and two were aware of patient satisfaction scores. One was familiar with patient falls reports on an organizational dashboard. One participant spoke at length about quality and reporting in her workplace saying,

> Work's changing so much that I don't know what data they are, besides our patient satisfaction scores which we do get on that quart . . monthly basis. I don't know exactly what numerics come about on a daily basis or the periodic basis that they are run. I do know that we track things like post op infections and but those numbers for the most part are so minuscule that they don't get shared. They haven't been shared on a day-to-day, and I think that is changing now as we've gotten more new leadership into higher levels within our hospital system.

When prompted to talk about QIs, one participant said, "I definitely don't know what quality indicators are." However, when prompted if she was familiar with the term 'dinged' which staff often use after re-accreditation surveys reveal poor practices, she spoke about her experiences with auditing hand hygiene (HH) compliance for a quality improvement activity where she observed others' using an audit tool and entered data into a house-wide database. She was aware how the data was used or who used it. Hand hygiene compliance rates are reported to accrediting bodies like The Joint Commission and Accreditation (TJC), and Association for Ambulatory Health Care (AAAHC). Vol 14, when asked about quality, was aware that "first thing they would look for is the cost they would incur and how they are handled and served by medical staff." Vol 43 mentioned staying current with professional guidelines and education to maintain quality.

> We spend a lot of time on . . . updating our policies to meet what the newest guidelines are as well as looking if we have to change what the status quo has been, being able to provide the education on why this isn't doesn't meet our status quo anymore as well as working with our quality, safety representative for the

hospital making sure that we are educating all the nurses not just the perioperative nurses.

One participant connected audits using RFID tracking and specialty medication tracking as quality-related. One was a hand hygiene auditor who entered observation data into an organizational database as part of quality tracking. Another said. “I think the main thing to improve quality is to have education.” Saying later, “quality improvement just involves continuing to research, look at evidence based practice, you know, tweak your own practices to see if it can fit the narrative you're trying to achieve.”

Three participants said it was important to know and follow best practices to create quality care. One participant gave examples of quality assessment: observing aseptic techniques during a sterile procedure and adhering to a safe medication labeling process. She added, “Quality improvement isn't necessarily like having new strategies for how to do things, but like learning the best practice for each strategy we kind of already know” and she cited AORN information sessions as a resource for determining best practices. Another participant indicated the costs of care and how patients are “handled and served by the medical staff” constituted quality. A third felt quality care depended on using evidence to guide practice as well as “keeping up on the latest research to bring the best situation to our patients.”

Influencer Theme

Beyond teamwork, participants named seven other factors they perceived as influencing quality and safety. The influencer code was defined in NVivo as: Internal and external forces identified by participants that influenced their abilities to observe (follow) or/ and create safety and quality conditions. Childs codes incorporated factors that may

have motivated, hindered, or were integral in quality and safety situations. The influencer code hierarchy is shown in Table 13.

Table 13

Influencer Codes

Code	Code frequencies	# participants n=5
Human factors	81[b]	5
Emotions [a]	37	5
Core values	13	5
Self-awareness	6	4
Anticipation	4	2
Present in the moment	3	1
Consistency	2	1
Forgetfulness	2	2
Reflective ability	2	2
Assertiveness	1	1
Detail oriented	1	1
Meticulous	1	1
Mindlessness	1	1
Missing a step	1	1
Teamwork [c]	52	5
Education	25	4
Continuing education	13	4
Preceptor	8	4
Clinical training	1	1
Nursing school	1	1
Periop 101	1	1
Infrastructure / system	16	3
Staffing	10	2
Shared leadership	2	2
Rapid change	1	1
Experiences	10	4
Practice changes based on evidence	6	4
Mentoring	3	2
COVID	1	1

Note. [a] Second-generation codes are indented. [b] Parent code frequencies are aggregated. [c]See teamwork codes results with safety Theme 2.

Influencer Theme: Internal and External Factors Influence Quality and Safety

Human factors code was the most heavily loaded influencer code and all participants pointed out human factors when speaking about quality and safety. Human factors were considered influencers in keeping with Ballangrud et al.'s (2017) definition,

"environmental, organizational and job factors, and human and individual characteristics which influence behaviour at work in a way that can affect health and safety." Aaberg et al (2021) defined human factors as "a discipline devoted to studying and improving the interactions among humans and other elements of a system." In addition to human factors, education was coded when participants mentioned past educational experiences (nursing school, Periop 101) which they perceived as influential to knowing about safety, and when participants referred to sources of knowledge to improve quality of care (professional journals, mentors, preceptors et al.). Three participants talked about their influences of organizational structures indirectly as they gave examples of safety and quality.

Circulator Role Theme

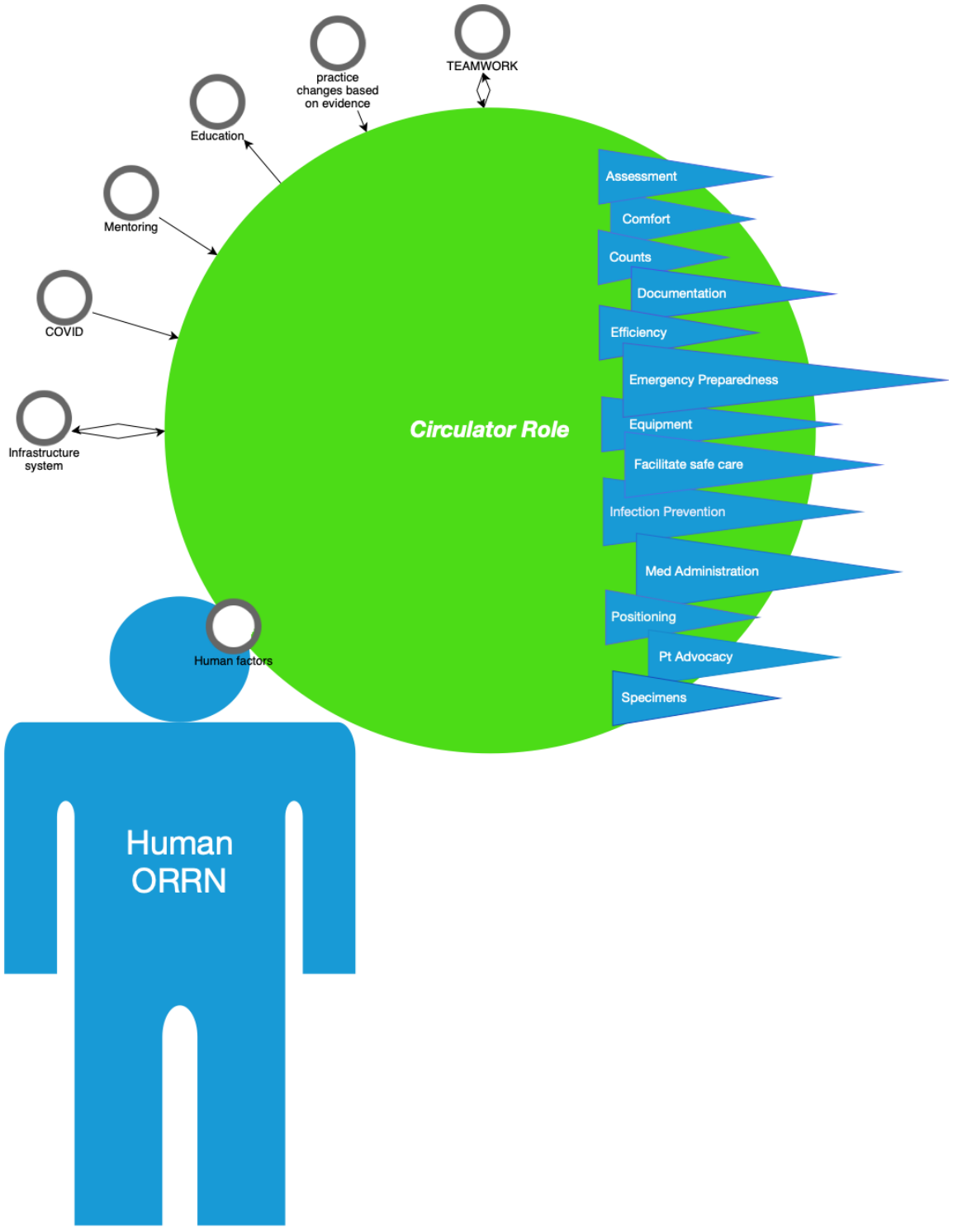
There were 119 codes generated about circulator role across all five transcripts, with infection prevention / aseptic techniques loaded most heavily (38 codes / 5 transcripts), along with 12 other sibling codes: patient advocacy (9/4), assessment (8/3), medication administration (5/4), equipment (4/2), efficiency (4/2), positioning (3/2), emergency preparedness (3/2), comfort patients (3/1), facilitate safe care (2/2), specimens (1/1/), documentation (1/1/), counts (1/1).

The circulator role contributes to patient quality and safety

When participants talked about what they did as circulators within the context of safety and quality, codes were assigned to actions. All coded acts were aligned with module topics from Periop 101. From this data, I speculated about the relationship among participants, influencers and circulator role codes. These relationships are depicted in model shown in Figure 3.

Figure 3

The Circulator Role Within the Universe of Quality and Safety



External influencers are represented peripherally in the upper left corner. Vectors indicate the primary direction of influence. The circulator is portrayed as a human ORRN figure with human factors represented by a connecting or overlapping circle between the ORRN and the circulator role. Human factors exert internal influence on nurse decision-making. The role of circulator is presented as an *entity* on the shoulder of the ORRN conveying that this role is 'carried' by the ORRN and that it has external forces acting on it as well.

Summary

Data obtained from participant interviews revealed that these nurses perceived themselves as integral to creating safety in the OR. Through their examples, theoretical knowledge and practical experiential knowledge that supported safe decision-making in their workplaces was evident. Furthermore, in the circulator role, participants perceived they were important members of the perioperative team. Participants mentioned 22 of 23 Periop 101 module topics during the interviews, and participant attitudes listed in QSEN domains were represented in participants' accounts. Participants were initially uncertain about terms related to quality, such as quality improvement, quality measures, and QIs. Nurses recalled two quality measures in their workplaces: falls and hand hygiene. However, in conversation they identified components of seven formal QIs but did not expressly recognize data was collected and reported about them. In Chapter 5, themes are situated relative to literature about the history of healthcare quality and safety. Themes are then interpreted through Benner's (2001) theoretical lens of the competent early career ORRN and are aligned to requisite theoretical knowledge presented in Periop 101.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

Because shortages of experienced OR nurses continue to occur, and OR vacancies are being filled with newly graduated novice nurses at a time when the American healthcare system remains under pressure to demonstrate quality and safety with reduced costs, it is important to prepare nurses who are able provide high quality safe care. Scholars have not examined how early career ORRN circulators perceive quality and safety in the OR after they complete Periop 101, a widely used standardized perioperative nursing core curriculum. This study examined the unique perceptions about quality and safety of a diverse group of five early career nurses from a variety of perioperative contexts who were prepared for practice with Periop 101.

Purposes and Nature

The purposes of this QD study were to add to what is known about how early career ORRNs perceive quality and safety after they complete Periop 101, and to illuminate factors that influence KSAs surrounding safety and quality in the perioperative setting. Guided by the research question, 'What are the perceptions of early career ORRNs who have completed the Periop 101 curriculum about quality and safety in the OR care setting?', transcript data from semi-structured interviews with five early career OR nurses were inductively coded and analyzed for themes. I employed Braun and Clarke's (2020) 6-Phase approach for RTA. NVivo was used to manage data from verbatim transcripts of interviews.

Multiple safety-related themes were generated along with associated themes about influencers and the role of OR circulator. A single broad quality-related theme was

generated. Participants' defined quality in their perceptions of what quality. Some focused on quality improvement processes and indicators in their workplaces after prompted in the interview, and some spoke without prompts about patient-focused and outcome-oriented care relative to quality. Because there were diverse attributes coded for quality, the theme is necessarily broad: Quality care is patient-focused and outcome oriented.

Key Findings

Diversity in demographics can reveal broad and disparate perceptions, yet in this study there were commonly held perceptions of safety reflected in the KSAs of participants despite differences in work settings. In addition, quality and safety data was threaded with content found the Periop 101 Core Curriculum. The presence of curricular content may well indicate knowledge translation using a constructivist lens as Thomas et al. (2014) understood it. Findings add to what is known about quality and safety perceptions in ORRNs who are in the early stages of their circulating career. Themes were generated about safety, quality, influencers, and the role of the circulator. In this chapter themes are interpreted through the lenses of literature reviewed before and throughout this study and take into account Benner's (2001) unique characteristics of the competent nurse within study population. A discussion of the limitations of the study is included in this chapter as well as indications and value of the study for social change.

Although these early career ORRNs had fewer than four years' experience as circulators, they recognized and described a variety of areas of perioperative practice where they recognized nursing actions impacted safety and quality of patient care. They acknowledged the importance of following steps, directions, guidelines and standards,

double-checking work, and collaborating with team members who they accounted were integral to safety and quality. While participants' perceptions and actions were consistent with theoretical content presented in Periop 101, participants were also conscious of their personal roles in creating and maintaining care. They were cognizant of obstacles to safe high quality care, and attributed influences from a variety of factors on safety and quality beyond those presented in Periop 101.

Interpretation of Findings

Themes were generated from participants' data using a constructivist lens and interpreted using Benner's and Bloom's theoretical frameworks of learning that were presented early in this paper. While a summary of these frameworks concludes theme interpretation, they are interwoven with theme interpretation. Each of the six themes are considered alongside literature that grounded the study as well as those more recently published.

Safety Themes

Cognition in healthcare has been explored by others and found to influence patient safety (Potter et al., 2005; van Dalen et al. 2022). Throughout data analysis for safety themes cognitive processes became evident, including but not limited to using memory, valuing continuous learning, planning care, recognizing risks, self/situational awareness, and collaboration to create safety. All participants perceived safety as a priority, offering a multitude of ideas, and examples that were perceived as necessary to create and sustain safety.

Safety topic codes were generated from transcripts where participants perceived risks to safety, and these codes aligned with safety topics found in perioperative quality

and safety literature, including adverse events (NQF, 2011), safe patient positioning and medication safety (AORN, 2017b; Brown & Aronow, 2016; Wu et al., 2017), infection prevention (CMS, 2020; Myers, 2018), protecting nurses from injury (AACN QSEN Educational Consortium, 2012), safe patient handling (Hauk, 2018), and protecting patients from unintended events (van Wagtendonk et al., 2010). This group of early career circulators' knowledge, skills, and actions were consistent with those expected of competent nurses (Benner, 2001).

Although participants did not specifically implicate the nursing shortage as an influencer on safety, participants verbalized they needed additional skilled staff to ensure safe care in high risk situations like patient transfers, when initiating regional anesthesia, during emergencies, and during patient positioning. These observations were consistent with literature that implicated adequate nurse staffing is necessary for patient safety and quality (AACN, 2012). Having other knowledgeable, skilled, and willing team members was implicated as important to safety as well. Participants appreciated working with team members who had effective technical and non-technical skills. Non-technical skills are a subset of human factors according to the systems engineering initiative for patient safety (SEIPS) model that places persons, patients and caregivers, at the center of the work system (Casali, 2019; Gordon et al., 2012; Holden et al., 2013). Person(s) factors thought to affect processes and outcomes included skill levels, past experiences with the procedure, age, cognitive function, attitudes, and personal preferences concerning the procedure (Holden et al., 2013). The SEIPS model situated participants' perceptions about safety within an environment influenced by internal and external forces. According to SEIPS, the nurse as a person uses physical, cognitive, and social/behavioral processes

to produce measurable outcomes for patients, professionals, and organizations (Holden et al., 2013). An alternative method used to assess non-technical skills was the SPLINTS questionnaire consisting of closed-ended items and qualitative observations during simulated clinical practice scenarios. Using this tool, observers captured data on situation awareness, communication and teamwork, and task management, that included evidence of assessment, awareness, anticipation, assertive actions, exchanging information, coordinating with team members, planning & preparing, adhering to standards, and dealing with stress (Mitchell et al., 2012). These cognitive processes were consistent with many of the elements in both models.

Safety risks to self were mentioned by two participants when they described perceptions of OR safety. While nurse safety was not a focus during the literature review and study, according to the QSEN Safety Domain skills competencies, graduate-level nurses are able to "integrate strategies and safety practices to reduce risk of harm to patients, self and others" (AACN QSEN Educational Consortium, 2012).

The corpus of safety-related data yielded the greatest number of themes which were robustly supported with exemplars in the findings section: Theme 1-I am accountable for safety; Theme 2-Teamwork can influence safety; Theme 3-Experiences changed my behaviors. These are interpreted independently.

Safety Theme 1: I am accountable for safety

In Theme 1, the perceptions by nurses of accountability for safety was consistent with the professional obligations set forth by ANA (Neuman, 2012) in tenets of the social contract between nursing and the public. Nurses in this study felt accountable for safety after they experienced adverse events, near misses, or patients who experienced

healthcare acquired conditions. In AORN's explication of Provision 4 of ANA Code of Ethics 2017 (https://www.aorn.org/docs/default-source/guidelines-resources/clinical-research/aorn-periop-explications-for-ana-code-of-ethics-2017.pdf?sfvrsn=dba73b4d_1) perioperative nurses are to act accountably by "being answerable to oneself, patients, peers, the profession, and society for judgments made and actions taken as a perioperative RN" (p. 21). In Krautsheid's 2014 literature review, nursing judgements, acts and omissions of care, and following standards of care were included in a synthesized definition of professional accountability to patients. Participants' perceptions of accountability for safety were consistent with understandings in current and foundational nursing literature.

Safety Theme 2-Teamwork can influence safety

Theme 2, teamwork can influence safety, was evident in exemplars when collaborative interactions were valued, preserved, and credited for safety. Participants perceived their team members shared the common goal of safety. Safety accounts reflected the two of IOM's aims to improve healthcare: safety and patient-centeredness (IOM, 2001). Mazzocco et al. (2009) observed teamwork behaviors of surgical team members and then compared scores with 30-day patient outcomes, including indicators of patient harm. Mazzoco et al. found when teamwork was poor, patients were at higher risk for complications and death. Leonard et al. (2004) studied communication among team members using the SBAR tool to attempt to mediate differences in communication styles, perceived hierarchies and power inequalities, and cultural norms of blaming. Similarly, participants' perceived team members who shared a common goal as effective in creating safety and they implicated leadership style as an important factor in both quality and

safety. In participant accounts, exemplars of shared experiences with team members reflected undergraduate QSEN competencies in all domains but at a granular level, not all graduate-level QSEN KSAs were represented (Cronenwett et al. (2007). Since graduate-level QSEN competencies are embedded in Periop 101, employers anticipate new nurses are prepared to practice these. It was of interest that advanced knowledge and skills were less often reflected in data. However, in all, participants' accounts reflected advanced practice attitudes in all six QSEN domains. If interviews had been more in-depth and explorative in nature, it is possible that all participants might mention aspects that met every KSA in all six domains, but that is speculative. KSAs were most commonly observed in safety, patient-centered care, and the teamwork and collaboration domains in transcripts. Less frequently observed but still occurring were KSAs in the evidence-based practice, the quality improvement, and the informatics domains (AACN QSEN Educational Consortium, 2012). Participants did not use QI jargon when speaking about quality perceptions. Instead, their exemplars subtly pointed to formal QI and quality measures when they described actions and decisions to create safe high quality care. Awareness of and participation in formal organizational QI planning, measuring, analyzing, and evaluating processes to improve care, which are higher-level competencies, were limited. However, skills and attitudes were evident for graduate-level teamwork competencies in some accounts.

Safety Theme 3-Experiences changed my behaviors

This group of early career circulators had 1 to 4 years of clinical experience as OR as circulators. According to Dreyfus' skill acquisition model that Benner (2001) adopted and modified, nurses who learned experientially in a consistent and supportive

environment moved from novices to competent practitioners between Years 1 and 4 of practice. Dreyfus and Dreyfus's (1980) theory of skills acquisition underpinned Benner's (2005) descriptions of how nurse thoughts, actions, and attitudes changed across nurse career paths. Participants' characteristics aligned with those of early career stage competent nurses, competent nurses, demonstrating perspectives that were informed by their experiences over 1-4 years of practice. Data were consistent with Benner's (2001) observations of nurses moving from knowing 'what' at the novice through advanced beginner stages, to knowing 'how' at the competent stage. Benner and Benner (https://www.educatingnurses.com/facilitating-students-learning-from-practice-the-centrality-of-experiential-learning-in-practice-disciplines/) emphasized the contribution of paradigm clinical experiences to growth and development of nursing skill. Through the experiences participants reported about safety, it became obvious that some experiences were pivotal and influenced changes in clinical practices such as routinization, double-checking, and strict adherence to verification protocols. Often these were paradigm experiences that were near-miss situations.

Quality Theme: Quality care is patient-focused and outcome oriented

Participants perceptions and the overarching theme of quality were focused on patients and were outcome oriented. Patient-focused care and patient outcomes are two of five key quality domains of healthcare improvement that are consistent with the IOM improvement initiatives launched in 2001 (IOM, 2001). Five of six QSEN undergraduate competencies (Cronenwett et al., 2007) were evident in participants' accounts, including patient-centered care, teamwork and collaboration, evidence-based practice (EBP), and

safety. Less data was present about quality improvement, and references to informatics, the sixth QSEN competency domain of quality and safety, were rare.

While perioperative quality measure data have been captured, reported, and benchmarked for over a decade, the formalized structures in healthcare organizations were mentioned rarely by these participants. One participant connected hand hygiene audits to quality but was not certain who used the data or what it revealed. Other participants addressed aspects of patient outcome QIs such as patient satisfaction reports (Chen et al., 2018), patient fall rates (Otani et al., 2020), positioning injuries (Waters et al., 2011), SSI and VTE. Those who experienced adverse events in the workplace named medication errors, wrong side/site/implant/procedure, and unintentional patient injuries as important to quality but did not identify related pertinent quality measures.

Undergraduate-level QSEN quality improvement competencies include abilities and motivation to gather information about quality of care, to be curious and scientific about how best to improve quality, to recognize normal and unexpected variations in work, and to develop ideas about how to improve quality-related outcomes (https://docs.google.com/document/d/1ASXJbHSPcG9KO2WLXZsMp0h-y4pgPTAI/edit).

I presumed nurses would offer evidence of KSAs that reflected QSEN graduate-level domains because these are embedded in Periop 101. Instead QSEN undergraduate KSAs were reflected in transcripts, and graduate level knowledge and skills e were notably absent in transcripts. QSEN domains for graduate-level nurses include advanced KSAs for building and evaluating strategies for quality improvement, translating evidence to practice, benchmarking, using national QIs to interpret quality of care,

reporting meaningful clinical outcomes, and implementing changes to improve quality based on evidence (https://www.qsen.org/competencies-graduate-ksas).

With reflection, I realized another unfounded presumption that participants would use the quality improvement jargon familiar to me and mention key QIs. The graduate level QSEN domains indicate KSAs of nurses who are competent practitioners in quality measurement and improvement and are present in the Periop 101 curriculum. In fact, participants did not use familiar QI jargon, nor did they report participation in quality improvement programs. There was limited evidence of competency in graduate-level QSEN quality improvement domains. Although, one nurse overtly experienced working with a formalized team to improve quality of care after a root cause analysis on a patient fall. This participant did not use the term 'root cause analysis' but was evident in the description of events that unfolded after the patient fall. Others' descriptions of quality pertained to adherence to guidelines and evidence based practices applied to aseptic technique, implant verification, medication administration, and communication practices during emergency situations. Two of five nurses were vaguely familiar with established QIs but were unaware of perioperative indicators. Organizational structure and processes (Donabedian, 2005) were inferred however, when nurses talked about vetting new hires, collecting hand hygiene data, working in multidisciplinary teams to analyze and improve care, updating policies based on evidence, and hearing about patient satisfaction surveys. Participants felt processes contributed to quality when they were routinized, evidence-based, and followed established guidelines. Participants responses pointed to efficiency and reliability measures, but no one mentioned formal process indicators such as on-time starts and room turnover times for these.

Influencer Theme: Internal and external factors Influence Quality and Safety

The influencer theme, internal and external factors influence quality and safety, encapsulates diverse factors participants described. Internal factors included human factors, knowledge of and value for evidence-based practices, in the context of past experiences. External influencers were team members, system infrastructures and supports such as preceptors and mentors. While the COVID-19 pandemic, which occurred throughout the early part of this study, was potentially an influencer due to staffing shortages, a single participant pointed to the pandemic as a direct influencer on quality and safety. No participants mentioned the nursing shortage as directly influencing safety and quality; however, staff shortages at critical times like patient transfers and emergencies was mentioned.

In literature, human factors were found to influence safety and quality. Participants mentioned multiple individual characteristics, which are a subset of Casali et al.'s (2019) human factors model, addressed 'non-technical skills' in common with those Wahr et al. (2013), and 'person/people' characteristics described in the SEIPS 2.0 model of human factors (Holden et al., 2013; Holden & Carayon, 2021). The core values influencing quality and safety and reported most often by nurses in this study included human characteristics of conscientiousness, honesty, good work ethic, and pride in being the best, and these align values with the AACN Domain 9: Professionalism in *The Essentials* (https://www.aacnnursing.org/essentials, 2021), which includes integrity, altruism, inclusivity, compassion, courage, humility, advocacy, caring, autonomy, humanity, and social justice. The AACN Essentials Domain 5: Quality and Safety established quality and safety as core values in nursing and anticipated nurses would act

individually and in conjunction system infrastructures to create high quality safe care. Competencies in both domains were present in participants' accounts.

Circulator Role Theme: The circulator role contributes to patient quality and safety

Circulators are OR nurses whose patients are most often anesthetized or sedated and therefore unable to perform acts for themselves that would ensure high quality, safe care. Therefore, the circulator role encompasses tasks and accountabilities to advocate for patients, with willingness to perform the tasks patients would if they could, on their own behalf, and advocacy is considered crucial to high-quality, safe care (AORN, 2014). As the number of early career ORRNs is increasing proportionally and the experienced ORRNs population is declining, there is interest in exposing what this important segment of circulating nurses perceives and do to create high quality safe surgical care, especially after completing a standardized specialty curriculum like Periop 101 which is available as either a fee for user or organizational license format. Incorporated in Periop 101 modules are principles and practices aimed at enhancing patient outcomes, safety, and overall efficiency in the perioperative setting. Lesson plans introduce theoretical foundations for circulating nurses alongside practical applications for aseptic practices of sterile and non-sterile team members, medication and solution administrations, perioperative assessments of patients and the surgical environment risks, and safe patient handling and positioning patient and worker safety, and sterilization. This core curriculum delineates guidelines and standards that are evidence-based, and patient focused (AORN, 2017b). Accounts from this group of ORRN circulators demonstrated their awareness and applications of safety content from Periop 101 curriculum, and their recognition of some perioperative QIs.

A latent study aim developed after reflections on transcripts revealed robust data about actions by circulators to accomplish safe high quality care. I took the opportunity to catalog the concrete actions in addition to perceptions by these ORRNs that may influence quality and safety of perioperative patients. Most referenced data were circulator actions taken to prevent postoperative infections, followed closely by steps for safe medication administration, and finally, assessment skills.

Theoretical Frameworks

In the interpretations of six themes in this chapter, I incorporated three theoretical frameworks presented earlier in this study. In particular, Benner's concepts of competence and emphasis on experiential learning were interwoven with Safety Theme 3-Experiences changed my behaviors. The QSEN competency domains which are organized by KSAs, are constructs that parallel Bloom's cognitive, psychomotor, and affective aspects of learning and are widely used in nursing education curricula. The QSEN undergraduate and graduate-level competencies demonstrate the transition of KSAs of competent nurses, and beyond. KSAs, in participant accounts, comparatively aligned with transcript data to determine presence or absence of knowledge, skills and attitudes commensurate with those levels. Finally, the constructivist perspective espoused by von Glasersfeld (1992) shaped interpretations from planning, implementation, analysis, and interpretation of themes by viewing, participants as unique individuals who possessed diverse worldviews and perspectives that culminated from their own experiences.

Limitations of the Study

Limitations to this study include personal bias and small sample size. The potential limiting effects of these are explored in this section.

Personal Bias

Interpretations of study findings were influenced by personal experiences in healthcare and life. Because every human perceives and interprets life in unique manner, and values and acts are based on personal interpretations of reality, themes generated in this study were unavoidably influenced by my unique life experiences thus may not reflect those of other professional nurses. In fact, nurses with similar preparation and experiences might generate entirely different codes and themes from the data. This does not negate the value of these study findings, however. While personal bias may skew interpretations, familiarity with perioperative nursing practice and teaching and quality improvement in a multitude of settings across my career afforded me intimate knowledge about diversity in perioperative settings and informed interpretations. To identify personal biases and mitigate them, I journaled reflectively throughout the study, recording emotional and cognitive responses to data, reflecting on personal experiences, and chronicling research processes to increase credibility. Journal entries also documented real-time significant events in my personal life that may have exerted influence on the pace of data analysis.

Sampling

Some experts suggested larger sample sizes for qualitative study and others a smaller number of participants appropriate for qualitative inquiry methods (Vasileiou et al., 2018). Data from small samples are thought by some to limit the transferability of

findings and provoke doubt whether saturation is possible (Materud et al., 2016; Vasileiou et al., 2018). However, if data is rich and the researcher is fully immersed in data, depth of meaning may be generated from fewer sources (Braun & Clarke, 2013). The number of participants for this study was small. While 13 of 59 volunteers met inclusion criteria, only five nurses completed interviews over the course of nine months with multiple waves of recruitment. To facilitate recruitment, the AORN membership database was utilized with IRB permission. The purposive nature of the sample design targeted the largest segment of perioperative nurses, but inclusion criteria hindered participation. Not all circulating nurses maintain AORN professional membership after completing Periop 101; therefore, non-AORN members were excluded, and perceptions were not represented in this study.

Recommendations

In this seminal study there were common perceptions among early career OR nurses about quality and safety that may be of import to multiple stakeholders. Although the sample size was limited, safety related data sets from nurses' transcripts revealed commonly perceived safety risks and prioritization of patient safety. Their knowledge of safety topics aligned with content in the Periop 101 curriculum. Further exploration of early career ORRNs as a group is needed to improve data diversity and similarity, and therefore confidence in findings. Integrating coding and themes from this primary study with data from more ORRNs will offer a clearer vision of how specialty education with Periop 101 influences new ORRNs. I recommend further study with QD methodology using the RTA approach because it offered an excellent framework to organize data and therefore led to answers to the research question. With the strength of resulting data

combined, two further avenues of research may help educators and learning technology designers to answer related questions. How do early career ORRN's KSAs change with experience and time? What factors are most influential in developing advanced KSAs? First, it is accepted that KSAs continually change over a lifespan. A longitudinal study of these ORRNs at periodic intervals may capture changes in quality and safety KSAs that are pertinent to ensuring OR quality and safety improvement. Subsequent studies may distinguish if any and what quality and safety KSAs are maintained across circulating careers and settings and are therefore considered core to the circulator role. This avenue of study would be better assisted by a quantitative methodology using a tool derived from data and themes in the primary inquiry as well as Periop 101 content. A possible sequelae of these studies might be a deeper understanding of how ORRNs construct quality and safety in each of the competence levels Benner described offering direction to education designers about what content and perceptions are meaningful to nurses at various clinical practice stages.

Professional and organizational leaders also need to better understand relationships between quality and safety perceptions and how applications of Periop 101 may influence quality and safety. Current findings suggest knowledge may be translated from Periop 101 into clinical practices, but transfer may be limited without experiential learning. Educators may find this information beneficial in planning simulations and case studies for new perioperative nurses. Further studies of additional early career OR nurses could extend what is known about knowledge translation after orientation after ambulatory, orthopedic, or OB versions of Periop 101. Long-term investigations of this population across the developmental spectrum may reveal changes in perceptions and

actions that signal advanced practices and high-level critical thinking skills that are both unique and necessary by ORRNs practicing at the expert level. Since a significant gap was revealed in this group about the role of informatics in quality measurement and improvement, exposure to models of improvement with guided project implementations using informatics are recommended.

Implications

Quality and safety challenges in the OR continue to impact millions of lives, and societal concerns about nurse competence have been propagated by media reports of clinical errors, omissions of care, and poor patient outcomes. Because surgical interventions occur with increasing frequency and complexity and nearly all people will undergo a surgical procedure at some time in life, it is important for society to trust that nurses are competent to care for patients at their most vulnerable state during surgical procedures. Study findings implicated a benefit of using a standardized perioperative education curriculum to help early career circulating nurses develop professional identities as well as prepare them to identify and mitigate surgical risks. There is evidence that this group of nurses valued evidence-based standards and tried to adhere to principles of safety they learned during the program. While these findings suggest that confidence may be had in the quality and safety of care by early career nurse circulators, and that Periop 101 may be an important component of preparing nurses to value high quality safe care, there is yet concern that some academic and healthcare organizations do not go far enough to support nurses in understanding quality improvement. This study points to the complexity of the OR environment and some of the infrastructures and human factors that should be considered when trying to improve care. Findings also

revealed the importance of the circulator role to in this endeavor and suggested that early career ORRNs can work effectively to improve care with others who are supportive. A gap remained evident in the skill sets needed to lead perioperative quality improvement projects in this group of nurses which may result from lack of exposure to formal QI measures during orientation and afterward. There is a need to foster skills for measuring and planning quality improvement, and the early career ORRN may need additional time and continuing education to master these.

Conclusion

In conclusion, a standardized perioperative curriculum like Periop 101 should be considered a valuable element in preparing new nurses to become competent in the early career stage, but healthcare administrators must not expect completion of this theoretical content to produce competent nurses. The results of this study indicated that these nurses recognized surgical risks and acted to reduce them, but their perceptions about quality and safety were also shaped by their experiences of collaborative teamwork in cultures that were focused on patients. Nurses also identified continuing education, having collegial support, and sharing a common vision as essential for high quality safe care. As a result, perioperative administrators should give consideration to the presence these other elements may exert on nurse competence as they evaluate returns on investment from Periop 101. These findings also suggest the need for more emphasis on and exposure to informatics and other technologies that detect, measure and report indicators of quality care.

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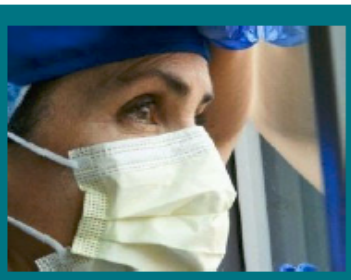
Appendix A: Recruitment Materials



PARTICIPATE IN A RESEARCH STUDY

Help advance research about safety and quality in operating room nursing.

Learn More

I am a doctoral student studying how early career circulators perceive the current state of quality and safety in the OR after they complete Periop 101 in orientation.

Why participate?

Your experiences may help others recognize and better understand factors that contribute to safety and quality in the OR.

Who can participate?

OR RN nurse circulators who worked as a circulator in the same OR for 1 - 4 years, and who:

- Completed Periop 101
- Read and speak English
- Were hired into the OR right after graduation
- Had no prior healthcare or OR-related employment or volunteer history
- Are able to interview using the internet or phone within the next 2 months.

Interested participants will be asked to:

Participate in an audio recorded telephone or web-based interview at the time of your choosing. Questions will focus on your perceptions and OR experiences regarding safety and quality in the perioperative field.

Benefits:

You will receive a $25 gift card after completing the study. This research may help others understand the complexity of OR nursing and the role of the ORRN in safe and high quality care.

Risks:

Your responses will be kept confidential and stored securely.

To volunteer, please click the link below:

VOLUNTEER

Appendix B: Demographic Collection Section

Participant Demographics Section

1. Age (in years): < 25 yrs. 26-40 yrs. 41-55 yrs. 56+yrs.
2. Gender: Male Female Non-binary Prefer not to say
3. Nursing degree held when hired into OR:
   Diploma Associate Bachelors Other/specify:
4. Highest degree held in any NON-nursing field:
   None Diploma Associate Bachelors Other/specify:
5. Date of graduation from nursing program (month/year): _____
6. During your nursing program, did you have clinical experiences in the OR? Yes No
7. Your current employment status: Full time Part-time/Per diem
8. Number of months you have been employed in the OR: _____ mos.
9. How long was your orientation period to the OR?: _____ mos.
10. Number of months to complete Periop 101 online modules: _____ mos.
11. Number of months working as a circulator after orientation: _____ mos.
12. Do you now primarily work in the OR as a circulating nurse? Yes No
13. Before your hire as an OR nurse, did you work in the OR in a non-nursing capacity?
    (e.g., CST, Rad Tech, NA, Core Tech, SPD Tech, other) Yes No
14. Are you currently a member of AORN? Yes No

Please indicate the type and size of the organization where you are employed You must answer all questions.

What is your workplace setting (type)? inpatient outpatient

What size is your workplace (size)? ≦ 3 ORs. 4-10 ORs. > 10

Appendix C: Interview Guide

Date:		
Interviewer:	Gilda H. Gilbert	
Interviewee initials:		
Recording device:		Folder name:
File ID:		
Start time:		
End time:		

Personal contact information that the participant shared with me at the end of the interview
(Write in)

Participant desires copy of interview	(circle)	Yes No
Participant desires copy of dissertation	(circle)	Yes No

Opening Script

"Thank you for volunteering to participate in this interview today. My name is Gilda Gilbert, and I am a doctoral nursing student at Walden University. I work in a surgery center currently, and in the past, I worked in a variety of nursing roles in perioperative environments. I consider myself an educator. I am married with adult children and my husband is also an OR nurse first assistant. Welcome, it is great to meet you. There are some things I want you to know before we begin recording, and if you have questions, let me know.

First, I want to remind you that your identity and personal information will be protected throughout data collection, storage and retrieval, and reporting in my dissertation so others will not recognize your information. Before our meeting today you received a consent form and a personal information survey. Thanks for completing both documents. I have your information sheet in front of me. Is there anything you want me to know about yourself or your workplace that is not on your sheet? OK. (Record responses here). Next, I'll go ahead and let you know a little more about this interview.

This interview is part of a qualitative descriptive research study for my doctoral dissertation. The purposes of my study are to describe how nurses like yourself understand OR quality and safety and learn what you feel influenced/es your knowledge, your practice, and attitudes about quality and safety.

My last point is that the interview will take between 30-60 minutes of your time. You may stop the interview at any time for any reason, just let me know. I will only record your voice in this interview for three reasons: I do not want to miss any of your comments; an audio recording captures everything you say faster than I can copy what you say. I will be typing every word said later in a transcription, so the recording makes it

possible to accurately capture your comments. And last, 'voice-only' recordings add a layer of protection for your identity since there is no video component. During your answers I will be taking some notes. Do you have any questions? Is it okay to proceed if there are no more questions? I will begin recording the interview now" (Click the 'record' button).

Interviewer Leadout Script

"During your first year in the OR, as part of your specialty orientation, you completed AORN's Core Curriculum called Periop 101. A number of course modules addressed safety in the OR, and some covered aspects of delivering and improving the quality of OR care. Within the Periop 101 lesson plans, QSEN quality and safety competencies are specifically referenced. Based on your experiences since you began working in the OR . . ."

- Safety focus questions -
  - Safety-1.When you think about safety in the OR, what comes to mind?
    - What is it?
    - What makes an OR safe?
    - How do you determine if things are safe during care?
    - Can you give me some examples?
  - Safety-2.How did you arrive at this point in your thinking?
    - How did you learn what safe care is in the OR?
    - What influenced you? People, experiences, training, reading et al.
    - What difference has it/have these things made, if any?
  - Safety-3.Tell me about a time when you felt you gave safe care in the OR.
    - What happened that made you feel that way?
    - What did you do to create a safety?
    - Do you have any other examples?
  - Safety-4.Is there a time when you felt safety was threatened? Tell me more about that?
    - What did you do?
    - How did things turn out?
    - What stands out to you about that situation?
- Quality focus questions -
  - Quality-1.When you think about quality and quality improvement in the OR, what comes to mind?
    - Can you give me some examples?
    - Share with me some personal experiences involving OR quality or QI.
  - Quality-2.How did you come to understand what quality in the OR means?

What do you think influenced your ideas about quality in the OR?
How have your ideas of quality in the OR influenced what you do?
Quality-3.Would you say the care you give is high-quality? Why or why not? How do you know what the quality of care is?

Interviewer Wrap-up Script
"We are at the end of our time together. Is there anything else you would like to share about quality or safety at this point? If there is nothing else, thanks for your participation in my study and especially for volunteering your valuable time and perspectives for this interview.

Points of future contact:
I will email a copy of your transcript for you to verify accuracy.
*I may want to clarify something you said today at a later time.
*I may need your consent to quote you.
*I will email you a summary of the paper at the time it is published.
What is the best method to contact you?

To get in touch with me, please use this email address. (Say the email address, refer to the contact info in emails I sent to them). Please email me if you have questions later or would like to withdraw from the study for any reason. Your participation is entirely voluntary. (email link here)

Thanks again for talking to me today. I am going to stop our recording now and will hang up.

Appendix D: Codebooks

Phase 2 Codes

Name	Files	Refer...	Created on	Created...	Modified on	Modified by	Color
actions that promote qua...	3	10	Monday, June 20, 2022 at 10:35 AM	GHG	8/7/22, 3:36 PM	GHG	
adverse events	1	3	Friday, July 22, 2022 at 3:54 PM	GHG	7/23/22, 2:27 PM	GHG	
patient fall	1	1	Friday, July 22, 2022 at 4:31 PM	GHG	7/23/22, 2:27 PM	GHG	
attracting best staff-surg...	1	3	Friday, June 24, 2022 at 8:01 AM	GHG	7/23/22, 2:27 PM	GHG	
best practices	3	5	Friday, February 25, 2022 at 8:13 PM	GHG	9/8/22, 2:47 PM	GHG	
circulator role	4	19	Saturday, March 12, 2022 at 10:53 AM	GHG	7/24/22, 2:14 PM	GHG	
accountability	2	5	Friday, July 22, 2022 at 3:54 PM	GHG	9/8/22, 2:11 PM	GHG	
choosing the right equ...	1	1	Saturday, April 9, 2022 at 5:31 PM	GHG	7/24/22, 12:53 PM	GHG	
monitoring	2	2	Sunday, July 24, 2022 at 2:14 PM	GHG	9/8/22, 2:32 PM	GHG	
Codable-04.04.2022-Inf...	2	161	Friday, July 22, 2022 at 3:54 PM	GHG	7/24/22, 1:58 PM	GHG	
Comments	1	40	Friday, July 22, 2022 at 3:54 PM	GHG	7/23/22, 2:27 PM	GHG	
Date(s) I invited declin...	1	40	Friday, July 22, 2022 at 3:54 PM	GHG	7/23/22, 2:27 PM	GHG	
Interview DateTimeIen...	1	40	Friday, July 22, 2022 at 3:54 PM	GHG	7/23/22, 2:27 PM	GHG	
Invited	1	40	Friday, July 22, 2022 at 3:54 PM	GHG	7/23/22, 2:27 PM	GHG	
Codable-07.18.22-Inform...	1	265	Sunday, July 24, 2022 at 1:40 PM	GHG	7/24/22, 1:43 PM	GHG	
Cognitive processes	4	11	Sunday, July 24, 2022 at 12:45 PM	GHG	7/24/22, 2:37 PM	GHG	
planning	3	4	Friday, February 25, 2022 at 8:35 PM	GHG	9/8/22, 2:08 PM	GHG	
prior knowledge	2	3	Friday, February 25, 2022 at 7:58 PM	GHG	9/8/22, 2:43 PM	GHG	
recognizing risks	1	2	Sunday, July 24, 2022 at 2:09 PM	GHG	7/23/22, 2:27 PM	GHG	
remember prior incident	1	2	Sunday, July 24, 2022 at 2:09 PM	GHG	7/24/22, 2:43 PM	GHG	
communication	4	10	Friday, February 25, 2022 at 8:02 PM	GHG	7/23/22, 2:27 PM	GHG	
Ask for help	3	4	Friday, July 22, 2022 at 3:13 PM	GHG	7/22/22, 4:32 PM	GHG	
asking questions to ale...	1	1	Friday, July 22, 2022 at 3:13 PM	GHG	7/23/22, 2:27 PM	GHG	
community hiring process	1	1	Monday, June 20, 2022 at 10:10 AM	GHG	7/23/22, 2:27 PM	GHG	
compliance with standards	2	2	Friday, February 25, 2022 at 8:37 PM	GHG	8/9/22, 8:12 AM	GHG	
connecting the dots	1	1	Friday, July 22, 2022 at 3:54 PM	GHG	7/23/22, 2:27 PM	GHG	
contamination	1	1	Tuesday, June 28, 2022 at 2:57 AM	GHG	7/23/22, 2:27 PM	GHG	
continuing education	3	10	Friday, February 25, 2022 at 8:25 PM	GHG	8/7/22, 3:27 PM	GHG	
transfer CE	1	1	Friday, July 22, 2022 at 3:54 PM	GHG	7/23/22, 2:27 PM	GHG	
Costs	1	1	Monday, April 11, 2022 at 8:38 PM	GHG	7/23/22, 2:27 PM	GHG	
education method is diffe...	1	1	Monday, June 20, 2022 at 10:39 AM	GHG	7/23/22, 2:27 PM	GHG	
education on new things	1	1	Monday, June 20, 2022 at 10:31 AM	GHG	8/8/22, 1:15 PM	GHG	
efficiency	2	3	Friday, July 22, 2022 at 3:54 PM	GHG	8/7/22, 3:37 PM	GHG	
electrosurgical safety	1	1	Tuesday, June 28, 2022 at 2:12 AM	GHG	7/23/22, 2:27 PM	GHG	
EMOTIONS	1	1	Sunday, July 24, 2022 at 2:39 PM	GHG	7/24/22, 3:05 PM	GHG	
feeling it went well	1	2	Saturday, March 12, 2022 at 10:57 AM	GHG	7/23/22, 2:27 PM	GHG	
feels capable	1	1	Friday, July 22, 2022 at 3:54 PM	GHG	7/24/22, 2:38 PM	GHG	
evidence-based	3	3	Friday, February 25, 2022 at 8:27 PM	GHG	9/8/22, 2:47 PM	GHG	
EXEMPLAR-Lapse in judg...	1	1	Saturday, March 12, 2022 at 11:28 AM	GHG	7/23/22, 2:27 PM	GHG	
Exemplar-Medication error	1	1	Friday, July 22, 2022 at 3:54 PM	GHG	7/23/22, 2:27 PM	GHG	
exemplar-patient educati...	2	3	Friday, June 24, 2022 at 8:37 AM	GHG	9/11/22, 3:12 PM	GHG	
Exemplar-Safe care	4	6	Sunday, May 8, 2022 at 1:19 PM	GHG	8/29/22, 8:21 PM	GHG	
exemplar-Teamwork	1	1	Sunday, May 8, 2022 at 1:16 PM	GHG	7/23/22, 2:27 PM	GHG	
experience	2	6	Friday, February 25, 2022 at 7:52 PM	GHG	7/24/22, 2:42 PM	GHG	
experience safety in OR	1	2	Friday, July 22, 2022 at 3:54 PM	GHG	7/19/22, 2:51 PM	GHG	
Fire risk	2	2	Monday, June 20, 2022 at 8:59 AM	GHG	7/24/22, 3:00 PM	GHG	
foundations-basic knowl...	1	6	Friday, February 25, 2022 at 8:13 PM	GHG	7/23/22, 2:27 PM	GHG	
Human factors	5	30	Sunday, May 8, 2022 at 12:52 PM	GHG	9/8/22, 2:03 PM	GHG	
confidence	2	3	Friday, February 25, 2022 at 8:09 PM	GHG	7/23/22, 2:27 PM	GHG	
conscientious	1	3	Friday, February 25, 2022 at 8:09 PM	GHG	7/23/22, 2:27 PM	GHG	
Core values	1	2	Sunday, July 24, 2022 at 2:06 PM	GHG	7/24/22, 2:29 PM	GHG	
honesty	1	1	Friday, July 22, 2022 at 3:54 PM	GHG	7/23/22, 2:27 PM	GHG	
forgetfulness	2	2	Friday, February 25, 2022 at 8:29 PM	GHG	7/23/22, 2:27 PM	GHG	
mindlessness	1	1	Sunday, July 24, 2022 at 2:27 PM	GHG	7/24/22, 2:28 PM	GHG	
missing a step	1	1	Monday, June 27, 2022 at 4:16 PM	GHG	7/23/22, 2:27 PM	GHG	
present in the moment	1	3	Friday, February 25, 2022 at 7:57 PM	GHG	7/23/22, 2:27 PM	GHG	
pride in being best	1	4	Monday, June 20, 2022 at 10:06 AM	GHG	7/23/22, 2:27 PM	GHG	
self-awareness	4	6	Sunday, July 24, 2022 at 3:09 PM	GHG	7/24/22, 1:09 PM	GHG	
infection prevention	4	11	Saturday, April 9, 2022 at 5:29 PM	GHG	9/8/22, 2:40 PM	GHG	
Influencer	4	12	Friday, February 25, 2022 at 8:45 PM	GHG	8/7/22, 3:12 PM	GHG	
acceptance in orientati...	1	1	Monday, June 20, 2022 at 10:38 AM	GHG	7/23/22, 2:27 PM	GHG	
leadership	2	3	Monday, June 20, 2022 at 10:08 AM	GHG	7/23/22, 2:27 PM	GHG	
Infrastructure system	1	1	Friday, July 22, 2022 at 4:17 PM	GHG	7/23/22, 2:27 PM	GHG	
instrumentation	2	3	Friday, June 24, 2022 at 8:00 AM	GHG	9/8/22, 2:06 PM	GHG	
internal scripting	1	1	Saturday, March 12, 2022 at 11:24 AM	GHG	7/23/22, 2:27 PM	GHG	
Interviewer Question	4	136	Saturday, May 7, 2022 at 1:23 PM	GHG	8/8/22, 1:20 PM	GHG	
learning process	4	9	Monday, April 11, 2022 at 7:59 PM	GHG	8/8/22, 1:16 PM	GHG	
medication administration	3	5	Friday, February 25, 2022 at 8:44 PM	GHG	7/23/22, 2:27 PM	GHG	
medication error	1	1	Saturday, May 7, 2022 at 2:48 PM	GHG	7/19/22, 2:52 PM	GHG	
Medication safety	4	6	Monday, April 11, 2022 at 8:46 PM	GHG	9/8/22, 2:07 PM	GHG	
Medications QI	2	3	Friday, July 22, 2022 at 3:54 PM	GHG	7/23/22, 1:59 PM	GHG	
Mentoring	2	4	Monday, April 11, 2022 at 8:13 PM	GHG	7/23/22, 2:31 PM	GHG	
mobilization CE	1	1	Friday, July 22, 2022 at 3:54 PM	GHG	7/23/22, 2:27 PM	GHG	

Phase 3 Codes

Name	Files	Refer...	Created on	Created...	Modified on	Modified by	Color
actions to improve safety	5	48	Thursday, September 8, 2022 at 11:12 AM	GHG	9/6/22, 6:16 PM	GHG	
allergy assessment	1	1	Thursday, September 8, 2022 at 11:12 AM	GHG	9/6/22, 6:01 PM	GHG	
prevention	3	3	Thursday, September 8, 2022 at 11:12 AM	GHG	8/9/22, 8:48 AM	GHG	
Ask for help	2	4	Thursday, September 8, 2022 at 11:12 AM	GHG	9/6/22, 6:01 PM	GHG	
ask questions to alert...	1	1	Thursday, September 8, 2022 at 11:12 AM	GHG	9/6/22, 6:01 PM	GHG	
be thorough	1	1	Thursday, September 8, 2022 at 11:12 AM	GHG	9/6/22, 6:01 PM	GHG	
check all of your steps	1	1	Thursday, September 8, 2022 at 11:12 AM	GHG	9/6/22, 6:01 PM	GHG	
continuing education	4	19	Thursday, September 8, 2022 at 11:12 AM	GHG	9/11/22, 3:03 PM	GHG	
CE anatomy refresher	1	1	Thursday, September 8, 2022 at 11:12 AM	GHG	8/21/22, 4:53 PM	GHG	
CE pt transfer safety	1	1	Thursday, September 8, 2022 at 11:12 AM	GHG	8/21/22, 4:43 PM	GHG	
education on new th...	2	3	Thursday, September 8, 2022 at 11:12 AM	GHG	9/6/22, 6:01 PM	GHG	
practice changes ba...	1	1	Thursday, September 8, 2022 at 11:12 AM	GHG	8/21/22, 4:48 PM	GHG	
review basics	1	1	Thursday, September 8, 2022 at 11:12 AM	GHG	7/23/22, 2:27 PM	GHG	
delegating	1	2	Thursday, September 8, 2022 at 11:12 AM	GHG	9/6/22, 6:24 PM	GHG	
follow guidelines	1	1	Thursday, September 8, 2022 at 11:12 AM	GHG	9/6/22, 6:01 PM	GHG	
internal scripting	1	1	Thursday, September 8, 2022 at 11:12 AM	GHG	9/6/22, 6:01 PM	GHG	
verifying	1	4	Thursday, September 8, 2022 at 11:12 AM	GHG	9/6/22, 6:23 PM	GHG	
Side-site-implant ve...	2	3	Thursday, September 8, 2022 at 11:12 AM	GHG	8/7/22, 3:48 PM	GHG	
verify medications	2	2	Thursday, September 8, 2022 at 11:12 AM	GHG	9/8/22, 2:07 PM	GHG	
verify procedures	1	1	Thursday, September 8, 2022 at 11:12 AM	GHG	9/6/22, 5:55 PM	GHG	
verify pt. identity	1	1	Thursday, September 8, 2022 at 11:12 AM	GHG	9/6/22, 6:23 PM	GHG	
adverse events	4	13	Thursday, September 8, 2022 at 11:12 AM	GHG	8/14/22, 8:53 PM	GHG	
medication error	1	1	Thursday, September 8, 2022 at 11:12 AM	GHG	7/19/22, 2:52 PM	GHG	
patient fall	3	5	Thursday, September 8, 2022 at 11:12 AM	GHG	9/8/22, 5:29 PM	GHG	
unintended fracture	1	2	Thursday, September 8, 2022 at 11:12 AM	GHG	8/7/22, 3:48 PM	GHG	
wrong implant	1	2	Thursday, September 8, 2022 at 11:12 AM	GHG	8/7/22, 3:48 PM	GHG	
wrong site surgery	1	1	Thursday, September 8, 2022 at 11:12 AM	GHG	8/7/22, 3:48 PM	GHG	
anticipation	1	3	Thursday, September 8, 2022 at 3:03 PM	GHG	9/8/22, 2:44 PM	GHG	
assertiveness	1	1	Thursday, September 8, 2022 at 3:03 PM	GHG	9/8/22, 2:21 PM	GHG	
attire	1	2	Thursday, September 8, 2022 at 3:03 PM	GHG	9/8/22, 2:02 PM	GHG	
circulator role	6	53	Monday, August 8, 2022 at 11:19 AM	GHG	10/2/22, 12:47 PM	GHG	
accountabilities	5	10	Monday, August 8, 2022 at 11:19 AM	GHG	9/6/22, 5:42 PM	GHG	
choosing the right e...	1	1	Monday, August 8, 2022 at 11:19 AM	GHG	9/6/22, 5:52 PM	GHG	
Monitor sterility	2	2	Monday, August 8, 2022 at 11:20 AM	GHG	9/8/22, 2:32 PM	GHG	
monitoring	1	1	Monday, August 8, 2022 at 11:19 AM	GHG	7/24/22, 2:13 PM	GHG	
positioning	2	2	Monday, August 8, 2022 at 11:20 AM	GHG	8/20/22, 4:49 PM	GHG	
skin assessment	1	2	Sunday, August 7, 2022 at 3:55 PM	GHG	9/16/22, 2:28 PM	GHG	
Quality circ role examp...	3	6	Monday, August 8, 2022 at 11:20 AM	GHG	8/26/22, 3:23 PM	GHG	
comfort	1	1	Thursday, September 8, 2022 at 3:03 PM	GHG	9/8/22, 2:53 PM	GHG	
consistency	1	1	Thursday, September 8, 2022 at 3:03 PM	GHG	9/8/22, 2:06 PM	GHG	
counts	1	1	Thursday, September 8, 2022 at 3:03 PM	GHG	9/8/22, 2:06 PM	GHG	
COVID	1	1	Thursday, September 8, 2022 at 3:03 PM	GHG	9/8/22, 2:50 PM	GHG	
detail oriented	1	1	Thursday, September 8, 2022 at 3:03 PM	GHG	9/8/22, 2:39 PM	GHG	
electrosurgical safety	1	1	Thursday, September 8, 2022 at 11:12 AM	GHG	7/23/22, 2:27 PM	GHG	
EMOTIONS	2	3	Monday, August 8, 2022 at 11:20 AM	GHG	9/8/22, 2:50 PM	GHG	
experience safety in OR	1	2	Monday, August 8, 2022 at 11:20 AM	GHG	7/19/22, 2:51 PM	GHG	
Fear	1	1	Saturday, August 20, 2022 at 5:29 PM	GHG	9/8/22, 2:20 PM	GHG	
feeling it went well	1	2	Monday, August 8, 2022 at 11:20 AM	GHG	7/23/22, 2:27 PM	GHG	
feels capable	1	1	Monday, August 8, 2022 at 11:20 AM	GHG	7/24/22, 2:38 PM	GHG	
Exemplar-attire complica...	1	1	Thursday, September 8, 2022 at 3:03 PM	GHG	1/7/23, 1:51 PM	GHG	
EXEMPLAR-Preceptor ski...	1	1	Thursday, September 8, 2022 at 3:03 PM	GHG	9/8/22, 2:41 PM	GHG	
Fire risk	2	2	Thursday, September 8, 2022 at 11:12 AM	GHG	7/24/22, 3:00 PM	GHG	
flash sterilization	1	1	Thursday, September 8, 2022 at 3:03 PM	GHG	9/8/22, 2:31 PM	GHG	
hand scrub	1	1	Thursday, September 8, 2022 at 3:03 PM	GHG	9/8/22, 2:28 PM	GHG	
Influencer	6	79	Monday, August 8, 2022 at 11:20 AM	GHG	9/2/22, 4:38 PM	GHG	
acceptance in orientati...	2	2	Monday, August 8, 2022 at 11:20 AM	GHG	9/2/22, 4:45 PM	GHG	
appreciation by team...	1	1	Tuesday, August 9, 2022 at 8:22 AM	GHG	8/9/22, 8:22 AM	GHG	
education method is di...	1	1	Monday, August 8, 2022 at 11:20 AM	GHG	7/23/22, 2:27 PM	GHG	
Human factors	5	35	Monday, August 8, 2022 at 11:20 AM	GHG	9/8/22, 2:54 PM	GHG	
confidence	3	5	Monday, August 8, 2022 at 11:20 AM	GHG	9/8/22, 2:25 PM	GHG	
Core values	3	7	Monday, August 8, 2022 at 11:20 AM	GHG	8/29/22, 8:16 PM	GHG	
conscientious	2	5	Monday, August 8, 2022 at 11:20 AM	GHG	8/29/22, 8:08 PM	GHG	
honesty	1	1	Monday, August 8, 2022 at 11:20 AM	GHG	7/23/22, 2:27 PM	GHG	
forgetfulness	2	2	Monday, August 8, 2022 at 11:20 AM	GHG	7/23/22, 2:27 PM	GHG	
mindlessness	1	1	Monday, August 8, 2022 at 11:20 AM	GHG	7/24/22, 2:28 PM	GHG	
missing a step	1	1	Monday, August 8, 2022 at 11:20 AM	GHG	7/23/22, 2:27 PM	GHG	
present in the mom...	1	3	Monday, August 8, 2022 at 11:20 AM	GHG	9/2/22, 4:44 PM	GHG	
pride in being best	2	4	Monday, August 8, 2022 at 11:20 AM	GHG	9/8/22, 2:43 PM	GHG	
self-awareness	4	5	Monday, August 8, 2022 at 11:20 AM	GHG	9/2/22, 4:43 PM	GHG	
Infrastructure system	1	1	Monday, August 8, 2022 at 11:20 AM	GHG	7/23/22, 2:27 PM	GHG	
memorable experiences	5	14	Monday, August 8, 2022 at 11:20 AM	GHG	9/2/22, 4:55 PM	GHG	
Mentoring	2	4	Monday, August 8, 2022 at 11:20 AM	GHG	7/23/22, 2:31 PM	GHG	
Periop101	1	1	Monday, August 8, 2022 at 11:20 AM	GHG	7/24/22, 3:07 PM	GHG	

Phase 4 Codes

Name	Files	Refer...	Created on	Created...	Modified on	Modified by	Color
circulator role	6	77	Friday, September 9, 2022 at 5:43 PM	GHG	10/2/22, 12:47 PM	GHG	
accountabilities	5	34	Friday, September 9, 2022 at 5:43 PM	GHG	9/11/22, 3:18 PM	GHG	
choosing the right e...	1	1	Friday, September 9, 2022 at 5:43 PM	GHG	9/6/22, 5:52 PM	GHG	
comfort patients	1	1	Friday, September 9, 2022 at 5:43 PM	GHG	9/11/22, 3:05 PM	GHG	
counts	1	1	Friday, September 9, 2022 at 5:43 PM	GHG	9/8/22, 2:06 PM	GHG	
Fire risk	2	2	Friday, September 9, 2022 at 5:44 PM	GHG	7/24/22, 3:00 PM	GHG	
flash sterilization	1	1	Friday, September 9, 2022 at 5:44 PM	GHG	9/8/22, 2:31 PM	GHG	
infection prevention	4	10	Friday, September 9, 2022 at 5:45 PM	GHG	9/10/22, 4:02 PM	GHG	
hand scrub	1	1	Friday, September 9, 2022 at 5:44 PM	GHG	9/8/22, 2:28 PM	GHG	
Monitor patient	1	1	Friday, September 9, 2022 at 5:43 PM	GHG	9/10/22, 9:43 AM	GHG	
Monitor sterility	2	2	Friday, September 9, 2022 at 5:43 PM	GHG	9/8/22, 2:32 PM	GHG	
positioning	2	2	Friday, September 9, 2022 at 5:43 PM	GHG	8/20/22, 4:49 PM	GHG	
pt advocacy	1	2	Friday, September 9, 2022 at 5:45 PM	GHG	9/11/22, 3:08 PM	GHG	
skin assessment	1	1	Friday, September 9, 2022 at 5:43 PM	GHG	8/7/22, 3:55 PM	GHG	
Skin prep	2	4	Friday, September 9, 2022 at 5:45 PM	GHG	9/10/22, 11:06 AM	GHG	
prep supplies	1	1	Friday, September 9, 2022 at 5:44 PM	GHG	9/8/22, 2:29 PM	GHG	
sterile supplies	1	1	Friday, September 9, 2022 at 5:47 PM	GHG	9/8/22, 2:28 PM	GHG	
surface disinfection	1	1	Friday, September 9, 2022 at 5:47 PM	GHG	9/8/22, 2:29 PM	GHG	
using equipment saf...	2	2	Friday, September 9, 2022 at 5:47 PM	GHG	9/8/22, 5:17 PM	GHG	
Quality circ role examp...	3	6	Friday, September 9, 2022 at 5:43 PM	GHG	9/10/22, 4:00 PM	GHG	
Exemplar-attire com...	1	1	Friday, September 9, 2022 at 5:44 PM	GHG	9/10/22, 3:57 PM	GHG	
INFLUENCERS	7	117	Friday, September 9, 2022 at 5:44 PM	GHG	9/11/22, 2:48 PM	GHG	
acceptance in orientati...	2	2	Friday, September 9, 2022 at 5:44 PM	GHG	9/2/22, 4:45 PM	GHG	
Education	0	0	Sunday, September 11, 2022 at 2:49 PM	GHG	9/11/22, 2:52 PM	GHG	
education method i...	1	1	Friday, September 9, 2022 at 5:44 PM	GHG	7/23/22, 2:27 PM	GHG	
Periop101	1	1	Friday, September 9, 2022 at 5:44 PM	GHG	7/24/22, 3:07 PM	GHG	
preceptor	4	8	Friday, September 9, 2022 at 5:44 PM	GHG	9/10/22, 4:04 PM	GHG	
EXEMPLAR-Prec...	1	1	Friday, September 9, 2022 at 5:44 PM	GHG	9/8/22, 2:41 PM	GHG	
training	2	4	Friday, September 9, 2022 at 5:44 PM	GHG	10/2/22, 4:37 PM	GHG	
EMOTIONS	2	4	Friday, September 9, 2022 at 5:44 PM	GHG	9/11/22, 3:04 PM	GHG	
appreciation by tea...	1	1	Saturday, September 10, 2022 at 4:05 PM	GHG	8/9/22, 8:22 AM	GHG	
confidence	3	5	Friday, September 9, 2022 at 5:44 PM	GHG	9/9/22, 5:54 PM	GHG	
Fear	1	1	Friday, September 9, 2022 at 5:44 PM	GHG	9/10/22, 10:53 AM	GHG	
experience safet...	1	2	Friday, September 9, 2022 at 5:44 PM	GHG	7/19/22, 2:51 PM	GHG	
feeling it went well	1	2	Friday, September 9, 2022 at 5:44 PM	GHG	7/23/22, 2:27 PM	GHG	
feels capable	1	1	Friday, September 9, 2022 at 5:44 PM	GHG	7/24/22, 2:38 PM	GHG	
role conflict	1	1	Friday, September 9, 2022 at 5:45 PM	GHG	9/8/22, 2:17 PM	GHG	
Tension	1	1	Friday, September 9, 2022 at 5:47 PM	GHG	9/11/22, 2:52 PM	GHG	
Human factors	6	39	Friday, September 9, 2022 at 5:44 PM	GHG	9/11/22, 2:43 PM	GHG	
confidence	3	5	Friday, September 9, 2022 at 5:44 PM	GHG	9/8/22, 2:25 PM	GHG	
Core values	3	7	Friday, September 9, 2022 at 5:44 PM	GHG	8/29/22, 8:16 PM	GHG	
conscientious	2	5	Friday, September 9, 2022 at 5:44 PM	GHG	8/29/22, 8:08 PM	GHG	
honesty	1	1	Friday, September 9, 2022 at 5:44 PM	GHG	7/23/22, 2:27 PM	GHG	
detail oriented	1	1	Friday, September 9, 2022 at 5:43 PM	GHG	9/8/22, 2:39 PM	GHG	
forgetfulness	2	2	Friday, September 9, 2022 at 5:44 PM	GHG	9/9/22, 6:04 PM	GHG	
meticulous	1	1	Friday, September 9, 2022 at 5:44 PM	GHG	9/8/22, 1:58 PM	GHG	
mindlessness	1	1	Friday, September 9, 2022 at 5:44 PM	GHG	7/24/22, 2:28 PM	GHG	
missing a step	1	1	Friday, September 9, 2022 at 5:44 PM	GHG	7/23/22, 2:27 PM	GHG	
present in the mom...	1	3	Friday, September 9, 2022 at 5:44 PM	GHG	9/2/22, 4:44 PM	GHG	
pride in being best	2	4	Friday, September 9, 2022 at 5:44 PM	GHG	9/8/22, 2:43 PM	GHG	
self-awareness	4	5	Friday, September 9, 2022 at 5:44 PM	GHG	9/2/22, 4:43 PM	GHG	
work ethic	1	1	Friday, September 9, 2022 at 5:47 PM	GHG	9/8/22, 2:51 PM	GHG	
Infrastructure system	1	1	Friday, September 9, 2022 at 5:44 PM	GHG	7/23/22, 2:27 PM	GHG	
memorable experiences	5	14	Friday, September 9, 2022 at 5:44 PM	GHG	9/2/22, 4:55 PM	GHG	
Mentoring	2	4	Friday, September 9, 2022 at 5:44 PM	GHG	7/23/22, 2:31 PM	GHG	
rapid change	1	1	Friday, September 9, 2022 at 5:44 PM	GHG	9/10/22, 4:06 PM	GHG	
shared leadership	2	2	Friday, September 9, 2022 at 5:44 PM	GHG	8/9/22, 8:29 AM	GHG	
staffing	3	9	Friday, September 9, 2022 at 5:47 PM	GHG	9/10/22, 3:59 PM	GHG	
COVID	1	1	Friday, September 9, 2022 at 5:43 PM	GHG	9/8/22, 2:50 PM	GHG	
recruit others	1	2	Friday, September 9, 2022 at 5:47 PM	GHG	7/23/22, 2:27 PM	GHG	
TEAMWORK	4	34	Friday, September 9, 2022 at 5:47 PM	GHG	9/11/22, 2:51 PM	GHG	
collaboration	0	0	Friday, September 9, 2022 at 5:47 PM	GHG	8/8/22, 1:13 PM	GHG	
common cause	1	1	Friday, September 9, 2022 at 5:47 PM	GHG	8/8/22, 1:13 PM	GHG	
listening to each oth...	1	1	Friday, September 9, 2022 at 5:47 PM	GHG	8/8/22, 1:13 PM	GHG	
shared leadership	2	2	Friday, September 9, 2022 at 5:44 PM	GHG	8/9/22, 8:29 AM	GHG	
support of team me...	2	2	Friday, September 9, 2022 at 5:47 PM	GHG	8/8/22, 1:13 PM	GHG	
team communications	4	14	Friday, September 9, 2022 at 5:47 PM	GHG	9/10/22, 9:34 AM	GHG	
team members	3	5	Friday, September 9, 2022 at 5:47 PM	GHG	8/8/22, 1:13 PM	GHG	
PROCESSES	5	32	Friday, September 9, 2022 at 5:45 PM	GHG	9/11/22, 3:17 PM	GHG	
Cognitive processes	5	30	Friday, September 9, 2022 at 5:45 PM	GHG	9/6/22, 6:12 PM	GHG	
connecting the dots	1	1	Friday, September 9, 2022 at 5:45 PM	GHG	7/23/22, 2:27 PM	GHG	
learning	4	10	Friday, September 9, 2022 at 5:45 PM	GHG	9/6/22, 6:10 PM	GHG	
planning	3	7	Friday, September 9, 2022 at 5:45 PM	GHG	9/8/22, 2:40 PM	GHG	

Phase 5 Codes

Name	Files	Refer...	Created on	Created...	Modified on	Modified by	Color
CIRCULATOR ROLE	6	125	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 2:06 PM	GHG	
facilitate safe care	2	2	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 1:42 PM	GHG	
pt advocacy	4	9	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 2:16 PM	GHG	
counts	1	1	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 1:42 PM	GHG	
infection prevention-A...	6	35	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 1:42 PM	GHG	
Skin prep	3	9	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 1:42 PM	GHG	
prep supplies	1	1	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 1:42 PM	GHG	
EXEMPLAR-Prec...	1	1	Friday, September 16, 2022 at 2:22 PM	GHG	11/21/22, 1:42 PM	GHG	
hand scrub	1	1	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 1:42 PM	GHG	
surface disinfection	1	2	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 2:20 PM	GHG	
flash sterilization	1	1	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 1:42 PM	GHG	
sterile supplies	1	1	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 1:42 PM	GHG	
Monitor sterility	3	7	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 1:42 PM	GHG	
attire	1	5	Friday, September 16, 2022 at 2:22 PM	GHG	11/21/22, 1:42 PM	GHG	
Exemplar-attire c...	1	1	Friday, September 16, 2022 at 2:22 PM	GHG	11/21/22, 1:42 PM	GHG	
PPE	1	1	Friday, September 16, 2022 at 2:22 PM	GHG	11/21/22, 1:42 PM	GHG	
comfort patients	1	1	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 1:42 PM	GHG	
positioning	2	3	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 2:16 PM	GHG	
efficiency	3	7	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 1:42 PM	GHG	
Costs	3	3	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 1:42 PM	GHG	
medication administrat...	4	5	Tuesday, September 13, 2022 at 2:15 PM	GHG	11/21/22, 2:22 PM	GHG	
Equipment	2	4	Tuesday, September 13, 2022 at 4:01 PM	GHG	11/21/22, 1:42 PM	GHG	
using equipment saf...	2	3	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 1:42 PM	GHG	
choosing the right e...	1	1	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 1:42 PM	GHG	
emergency preparedn...	2	3	Tuesday, September 13, 2022 at 4:39 PM	GHG	11/21/22, 1:42 PM	GHG	
Documentation	1	1	Friday, September 16, 2022 at 2:22 PM	GHG	11/21/22, 1:42 PM	GHG	
Assessment	5	16	Tuesday, September 20, 2022 at 3:37 PM	GHG	11/21/22, 1:42 PM	GHG	
Fire risk	3	3	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 1:42 PM	GHG	
skin assessment	1	1	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 1:54 PM	GHG	
patient welfare	4	7	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 1:42 PM	GHG	
allergies	1	2	Tuesday, September 13, 2022 at 4:20 PM	GHG	11/21/22, 1:42 PM	GHG	
preop pt assessment	1	3	Friday, September 16, 2022 at 2:22 PM	GHG	11/21/22, 1:44 PM	GHG	
specimens	1	1	Monday, November 21, 2022 at 2:06 PM	GHG	11/21/22, 2:15 PM	GHG	
SAFETY	6	172	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
protecting nurses	3	4	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
actions to improve saf...	5	73	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
internal scripting	1	1	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
be thorough	1	1	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
PPE	1	1	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
routinization of steps	2	2	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
ask questions to ale...	1	1	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
follow guidelines	3	4	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
delegating	1	2	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
continuing education	4	22	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
education on ne...	2	6	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
practice changes...	3	3	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
review basics	2	3	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
Ask for help	4	6	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
slow down	1	1	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
assess patient	2	3	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
prevention	3	3	Tuesday, September 13, 2022 at 2:06 PM	GHG	8/9/22, 8:48 AM	GHG	
verifying	2	5	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
Side-site-implant...	3	5	Tuesday, September 13, 2022 at 2:06 PM	GHG	9/30/22, 4:25 PM	GHG	
verify procedures	1	1	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/6/22, 4:44 PM	GHG	
verify pt. identity	1	1	Tuesday, September 13, 2022 at 2:06 PM	GHG	9/9/22, 5:27 PM	GHG	
same name	1	1	Tuesday, September 13, 2022 at 2:06 PM	GHG	8/7/22, 3:48 PM	GHG	
verify medications	2	2	Tuesday, September 13, 2022 at 2:06 PM	GHG	9/16/22, 2:17 PM	GHG	
the right steps	3	10	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
duplicative checks	2	3	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
protecting patients (2)	1	2	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
safety resource	2	2	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
origins of safety	1	2	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
Safety Topics	6	54	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
adverse events	3	12	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
Burns	0	0	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
Fire risk	2	2	Tuesday, September 13, 2022 at 2:06 PM	GHG	7/24/22, 3:00 PM	GHG	
electrosurgical...	2	2	Tuesday, September 13, 2022 at 2:06 PM	GHG	10/2/22, 12:40 PM	GHG	
patient fall	1	2	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
wrong implant	1	2	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
unintended fract...	1	2	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
wrong site surgery	1	1	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
safe patient handling	3	10	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	
Medication safety	3	7	Tuesday, September 13, 2022 at 2:06 PM	GHG	11/21/22, 4:26 PM	GHG	

Phase 6 Codes Nested Under Parent Codes

Circulator Role Child Codes, Phase 6

CIRCULATOR ROLE		6	119
Assessment		3	8
allergies		1	2
Fire risk		2	2
preop pt assessment		1	3
skin assessment		1	1
comfort patients		1	3
anxiety about surgery		1	1
counts		1	1
Documentation		1	1
efficiency		2	4
emergency preparedness		2	3
Equipment		2	4
choosing the right equipment		1	1
using equipment safely		2	3
facilitate safe care		2	2
infection prevention-Aseptic techniques		6	38
attire		1	5
Exemplar-attire complicance		1	1
PPE		1	1
flash sterilization		1	1
hand scrub		1	1
Monitor sterility		3	7
Skin prep		3	9
EXEMPLAR-Preceptor skin prep		1	1
prep supplies		1	1
sterile supplies		1	3
surface disinfection		1	2
traffic patterns		1	1
medication administration		4	5
positioning		2	3
pt advocacy		4	9
patient welfare		4	7
specimens		1	1

Influencers Child Codes, Phase 6

INFLUENCERS	6	201
COVID	1	1
Education	5	25
AORN media for safety education	1	1
clinical training	1	1
continuing education	4	13
education on new things	2	3
review basics	1	4
teach each other	1	3
nursing school	1	1
Periop101	1	1
preceptor	4	8
EXEMPLAR-Preceptor skin prep	1	1
experiences of safety in OR	4	10
Human factors	6	81
anticipation	2	4
assertiveness	1	1
consistency	1	2
Core values	5	13
conscientious	3	6
honesty	1	1
pride in being best	2	4
work ethic	1	1
detail oriented	1	1
EMOTIONS	6	37
acceptance in orientation	2	2
appreciation by team member	1	1
confidence	3	6
Fear	1	1
feeling it went well	1	2
feels capable	1	1
memorable experiences	5	14
role conflict	2	2
Tension	1	1
forgetfulness	2	2
meticulous	1	1
mindlessness	1	1
missing a step	1	1
present in the moment	1	3
reflective ability	2	2
self-awareness	4	6
Infrastructure system	3	16
rapid change	1	1
shared leadership	2	2
staffing	2	10
lack of sleep	1	1
recruit others	1	2
Mentoring	2	3
practice changes based on evidence	4	6

Teamwork Child Codes, Phase 6

TEAMWORK	5	52
characteristics	3	8
common cause	2	2
shared leadership	2	2
communication verbs	3	12
team members	5	22
anesthesia provider	2	2
surgeons	4	5
surgical assistants	1	1
vendor reps	1	1

Quality Child Codes, Phase 6

QUALITY	6	132
actions that promote quality	6	68
attracting best staff-surgeons	1	3
community hiring process	1	1
Efficiency	3	3
Nurse-patient communications	2	3
observing sterile technique	3	5
patient education	2	5
patient focused care	4	11
Planning & Preparation	2	4
practice resources	4	18
best practices	2	4
evidence-based	2	2
follow guidelines	3	3
updating policies	1	2
Familiarity with QI indicators	5	26
limited quality feedback	2	4
quality improvement definition	4	9
QI Indicators	5	20
QI-hand hygiene	1	1
QI-Medications	3	5
Preop prophylaxis	1	1
QI-patient satisfaction	2	3
QI-PostOp outcomes	3	6
QI-Pt Falls	1	1
QI-RFID tags	1	1
QI-SSI	2	2
Quality circ role examples	5	14

Safety Child Codes, Phase 6

SAFETY	5	162
actions to improve safety	5	72
Ask for help	4	6
ask questions to alert others	1	1
assess patient	2	3
prevention	3	3
be thorough	1	1
continuing education	4	23
education on new things	2	5
practice changes based on evide...	3	3
review basics	2	3
delegating	1	2
follow guidelines	3	5
internal scripting	1	1
PPE	1	1
routinization of steps	2	2
slow down	1	1
the right steps	3	7
duplicative checks	2	3
verifying	2	5
Side-site-implant verification	3	5
verify medications	2	2
verify procedures	1	1
verify pt. identity	1	1
same name	1	1
Cognitive processes	5	32
learning	4	11
connecting the dots	1	1
planning	3	7
recognizing risks	3	4
remembering prior incident	1	2
using prior knowledge	1	2
origins of safety	1	2
Safety Topics	5	54
adverse events	2	9
Burns	0	0
electrosurgical safety	2	2
Fire risk	2	2
patient fall	1	2
unintended fracture	1	2
wrong implant	1	2
wrong site surgery	1	1
infection prevention	3	10
Medication safety	3	7
medication error	1	1
protecting nurses	3	4
protecting patients (2)	1	2
safe patient handling	3	10
safe patient positioning	4	9
Sharps safety	1	3