The Value and Viability of a Daily Job Satisfaction Measure in the Operating Room Setting

[The Morale-o-Meter Study]

Miriam James-Scotter

A thesis submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Nursing, The University of Auckland, 2021.

Abstract

Background: Job satisfaction in the operating room (OR) setting impacts on staff wellbeing, retention, burnout, and patient outcomes. There is currently no existing tool for managers wanting to measure and monitor job satisfaction in close to real-time in this setting.

Aim: This study aimed to: 1) collaboratively develop a daily measure of job satisfaction in the OR setting, 2) identify practical issues relating to the value, acceptability, and feasibility of implementing the tool in an OR setting, and 3) test the convergent and predictive validity of the daily-level single item job satisfaction tool with overall job satisfaction, affective commitment, and emotional exhaustion.

Method: Utilising an action research methodology, the researcher and OR personnel from within one New Zealand hospital created an innovative daily job satisfaction measure (Morale-o-Meter). Development, trial, and evaluation phases were conducted during the period of March 2018 to June 2019. A three-week trial was conducted from May 2019 to June 2019. All staff members that worked in the OR were invited to participate, using the tool once each shift. The tool took approximately one minute to complete. Following the trial, an online feedback and validation survey was emailed to all staff.

Results: A total of 269 staff members from a range of job roles in the OR participated in the Morale-o-Meter trial (78% response rate), with a total of 569 entries. The validation/feedback survey was completed by 38 participants post-trial (14% response rate). The validity analysis yielded highly significant results with overall job satisfaction strongly positively related to daily job satisfaction and affective commitment, and negatively related to emotional exhaustion. The key findings around the tool's feasibility for implementation related to 1) usability and accessibility, 2) access to resources and personnel, 3) communication from management and, 4) the degree of staff 'buy-in'.

Conclusion: As the morale-o-meter is developed further, it has the potential to increase the visibility of the voice of OR nurses and the wider team thereby allowing for timely and targeted interventions. This will increase overall accountability for and transparency of staff wellbeing in the OR setting.

Professional acknowledgements

This work has been proof-read by Isabella Mae from Refined Articles, an approved proof-reader for the University of Auckland. This process has followed the 'third party editing and proof-reading of theses and dissertations guidelines'.

I would like to thank the staff from the operating room department that participated in the study. This research would not have been possible without your contribution. I would also like to thank the senior staff that collaborated and participated in the creation of the tool. I enjoyed getting to know you and I am grateful for your willingness to allow me into your working world. I would also like to acknowledge the contributions and support from the i3 team.

Thank you to iPad Hire for going the extra mile to meet the unique needs of my study and providing a wonderful service and support throughout the whole trial.

Thank you to Justin James for helping with installing and packing down the iPads and stands in the OR department.

I would like to thank and acknowledge my advisors Michael Rodgers and Carlene Lawes from the Waitemata District Health Board for your ongoing support and commitment throughout the project.

Lastly, I would like to especially thank and acknowledge my wonderful supervisors, Dr Stephen Jacobs, Associate Professor Cameron Walker, and Dr Lixin Jiang. I have been fortunate to have such a great team of supervisors, I have appreciated your wisdom and guidance, support, advocacy, and willingness to challenge me when I need to be challenged. Each of you bring your own strengths and I have learnt something from all of you. To my lead supervisor Stephen, I have now worked closely with you for over five years. I am so grateful to have your ongoing support, encouragement, and belief in me. Thank you.

Personal acknowledgements

This journey has not been alone. I have been well supported and encouraged by friends and family over these past few years. I would like to extend a very special thank you to my family. To my children, Rayne, Antonio, and Thomas thank you for your patience through some pretty crazy times and your ongoing support and belief in me. Thank you to my mother Maria Rivera and sister and brother-in-law (Isabel and Rohan Evans) for your warmth and willingness to listen and be there.

To my husband and life partner Justin James, thank you for being there, for your friendship, your patience, your encouragement and willingness to help. Thank you for making me laugh when I need it. Thank you for helping me install and pack down 17 iPads in large heavy stands in and out of the hospital late at night and being prepared to wear scrubs.

I reserve the final acknowledgement to my father, David Scotter. I am not sure how I would have got through this without you. You have played a significant role in my life over the last few years, my mentor, my proof-reader, my therapist, and my friend, depending on the day. Thank you for your amazing ability to always say ‘just the right thing’ and your belief in my ability to succeed and learn, even in the times when I have lost faith in myself. You have walked this journey beside me, through laughter and tears. You have been prepared to listen to me go through every little detail, to bounce ideas, to work through data, and never seem bored. I have never felt alone on this journey, and that is thanks to you. I cannot thank you enough. I feel so lucky to have you.

Table of contents

List of figures

List of tables

Glossary

Abbreviations

OR – Operating room

CAS – Complex Adaptive System

DHB – District Health Board

HCA – Healthcare Assistant

HQSC – Health Quality & Safety Commission New Zealand

KPI – Key performance indicator

eNPS – Employee Net Promotor Score

NZ – New Zealand

Glossary of Terms

Absenteeism - the term given when an employee is habitually and frequently absent from work. This excludes paid leave and occasions where an employer has granted an employee time off.

Action research - a philosophy and methodology of research generally applied in the social sciences. It seeks transformative change through the simultaneous process of taking action and doing research.

Affective - relating to moods, feelings, and attitudes.

Anaesthetic technician - is an allied healthcare worker who assists with the administration and monitoring of anaesthesia.

Anaesthetist - a medical specialist who administers anaesthetics.

Burn-out - a state of emotional, physical, and mental exhaustion caused by excessive and prolonged stress.

Career satisfaction - the satisfaction one derives from the intrinsic and extrinsic aspects of his/her career over time.

Circulating nurse - a nurse who works in the operating room outside the sterile field in which the operation takes place and records the progress of the operation, accounts for the instruments, and handles specimens.

Cognitive - involving conscious intellectual activity, such as thinking, reasoning, or remembering.

Complex adaptive systems - A way of thinking that sees healthcare and other systems as a dynamic process. One where the interactions and relationships of different components simultaneously affect and are shaped by the system.

Complexity science - the study of complex systems.

Concurrent validity - measures how well a new test compares to a well-established test. It can also refer to the practice of concurrently testing two groups at the same time, or asking two different groups of people to take the same test.

Construct validity – is the degree to which a test measures what it claims to be measuring.

Contribution margin - dollar per unit of operating room time and the revenue generated by a surgical case.

Convergent validity- the degree to which two measures of constructs that theoretically should be related, are in fact related.

Daily diary - a research method that collects information by having participants record entries about their everyday activity or experiences that are being studied close to real-time.

Discriminative validity - tests whether concepts or measurements that are not supposed to be related are actually unrelated.

District Health Boards - are responsible for ensuring the provision of health and disability services to populations within a defined geographical area in New Zealand.

Face validity - the extent to which a test is subjectively viewed as covering the concept it purports to measure.

Hawthorne effect - a type of reactivity in which individuals modify an aspect of their behaviour in response to their awareness of being observed.

Healthcare assistant - are non-health professionals or support staff who work collaboratively with the health practitioners.

Intention to leave - is defined as the level to which a member contemplates leaving the relationship with their current employer.

Job satisfaction (employee satisfaction) - is a measure of workers' contentedness with their job, whether they like the job or individual aspects or facets of the job.

Key performance indicator - a quantifiable measure generally used to evaluate the success of an organisation in meeting objectives for performance.

Make-span - time the last patient of the day leaves the OR.

Māori – the indigenous people of New Zealand.

Medical fellows - a physician who has completed their residency and elects to complete further training in a speciality.

Metrics - a system or standard of measurement.

Middle management- is the intermediate management level of a hierarchical organisation that is subordinate to the executive management.

Operating room dashboard - a screen that presents and updates the results for all metrics.

Operating room utilisation - ratio of time spent by patients in OR to total OR time available.

Orderly – individuals who assist medical staff and transport patients, medical equipment, and supplies to and from wards and departments.

Organisational commitment - individual's psychological attachment to an organisation.

Perioperative - occurring or performed at or around the time of an operation.

Predictive validity - the extent to which a score on a scale or test predicts scores on some criterion measure.

Pulse survey - is a short, quick survey that is sent out to employees on a regular basis.

Registrars - a hospital doctor senior to a house officer but junior to a consultant, specialising in surgery.

Scrub nurse - A nurse responsible for maintaining the sterile field and passing supplies or instruments to the surgeons.

Single item scales - a questionnaire that includes one question and is generally used to represent global constructs.

The Treaty of Waitangi – the founding document in New Zealand outlining the partnership between Māori and the Crown.

Throughput - number of surgical cases per unit of time.

Time-series sampling - a sequence of numerical data points in successive order. In investing, a time series tracks the movement of the chosen data points.

Work engagement - a positive, fulfilling, work-related state of one's mind, characterised by vigour, dedication, and absorption

About the author

Miriam James-Scotter graduated as a registered nurse in July 2014, her nursing background has predominantly been in the community setting. Prior to nursing, Miriam worked in the adult education sector for over 10 years in a range of roles, one of which was developing workplace training programmes for companies. She brings her nursing, community and workplace experience with her into the way she has approached this research and collaborated with operating room personnel throughout this study.

Thesis structure

This thesis is divided into nine chapters and includes three journal articles, two published and one currently under review. The articles included in the chapters are presented as published. The University of Auckland's 2011 PhD Statute (2016) and the *Guidelines for Including Publications in a Thesis* (2014) have been followed. Reference to additional appendices has been embedded within the publications where appropriate. All pages, tables, and figures have been numbered consecutively throughout the thesis for continuity. References have been collated and included at the end of the thesis. An outline of the chapters is provided below. Due to the word limitations associated with publications, further analysis and discussion is included where appropriate in order to provide more breadth and depth of information relevant to the thesis as a whole.

The inclusion of articles has resulted in some repetition around the methods and background. However, maintaining the flow of the articles was deemed important and they, therefore, have remained as published. The hospital involved in the study has chosen to remain anonymous throughout all publications related to the study due to the sensitivity of the topic. They have been referred to as 'the hospital' or 'hospital personnel' throughout the thesis.

Chapter 1: Introduction

Chapter 1 introduces the context of the study and provides an overview of the overall aims and objectives.

Chapter 2: Measurement of job satisfaction

Chapter 2 provides background information relating to the study. It identifies common job satisfaction theories and models as well as exploring their measurement. The well-known links between job satisfaction and productivity, retention, and burnout are also discussed.

Chapter 3: Literature review

This chapter provides an integrative literature review (publication one) that seeks to establish what is known about job satisfaction in the OR, including an outline of commonly utilised measurements. An update of the literature since the time of publication is also provided and discussed.

Chapter 4: Methodology

This section provides the key theoretical frameworks underlying the study design, including a discussion of action research, complexity science, and implementation research.

Chapter 5: Study design

Chapter 5 provides an overview of the methods used to conduct the study throughout all three phases, including ethical considerations.

Chapter 6: The tool development process

Chapter 6 provides an outline of the action research process of collaboration between researchers and OR personnel in the creation of a daily job satisfaction tool (publication two). It also provides additional information relating to the pre-testing of the tool, tool modifications that were applied and refinements needed in the future.

Chapter 7: The value and feasibility of a real time measure in the operating room

Chapter 7 provides detailed findings from the three-week trial and the follow-up survey. It discusses these in relation to the overall value and feasibility of the daily measurement tool within the OR setting (publication three). It also provides further details and analysis from the job satisfaction data gathered during the tool trial, the validity findings, and further discusses the findings in relation to factors influencing job satisfaction across the OR team.

Chapter 8: Future Implementation

Utilising the Consolidated Framework of Implementation Science, this chapter discusses barriers and facilitators of implementation looking forward. It also includes discussion relating to interprofessional practise and implications for management.

Chapter 9: Final discussion

The final chapter integrates the overall findings and contributions from the study. It considers the study's strengths and weaknesses and the study findings in relation to future research and practice.

Chapter one: Introduction

This chapter introduces the study. It explains the background and context for the study and provides an overview of the OR setting within the New Zealand (NZ) context. Finally, it introduces the aims and objectives of the study.

1.1 Job satisfaction in healthcare

Research into job satisfaction has a long history within organisational psychology (Judge, Weiss, Kammeyer-Mueller, & Hulin, 2017). Employers in the healthcare sector are becoming increasingly aware of the importance of satisfied staff in the workplace setting due to its close relationship with burnout, organisational commitment and retention of staff (Hall, Johnson, Watt, Tsipa, & O'Connor, 2016; Hayes, Bonner, & Pryor, 2010; Lee, MacPhee, & Dahinten, 2020; Rama-Maceiras, Parente, & Kranke, 2012; Yin & Yang, 2002). For employees in the OR, job satisfaction is also a well-known contributor to employee safety attitudes (Makary et al., 2006), patient satisfaction, and the quality of care provided (Horinouchi et al., 2008a; Kutney-Lee et al., 2009; MacHe, Vitzthum, Klapp, & Groneberg, 2012).

The subjective and variable nature of job satisfaction makes measurement by quantifiable methods difficult. The traditional large multi-faceted survey methods can be met with reluctance in the healthcare setting, leading to poor response rates and a high risk of sampling bias. Additionally, they are often conducted infrequently, commonly resulting in dated information (Denscombe, 2014; Khan, Hussain, Plummer, & Minichiello, 2004; Mann & Harter, 2016). As a result, alternatives such as pulse surveys (frequent short surveys) are growing in popularity across multiple sectors in a bid to gather closer to real-time data (Mann & Harter, 2016; Stevenson, 2018; Welbourne, 2016). This form of measurement has had little investigation in the literature, particularly within healthcare, and even less so in the OR setting. This study explores the value, validity and overall feasibility of measuring job satisfaction in close to real-time in the OR setting.

1.2 The study context

This study was the initiative of the Chief of Surgery from within one NZ hospital OR department. The senior management team had recently been involved with a number of new initiatives that aimed to ensure optimal productivity and efficiency in the OR. As improvements and new and innovative approaches were developed and trialled, the senior management team were aware that these changes to operational systems had the potential to unsettle the workforce. They reported it took approximately six months to train a new OR nurse, and therefore retention of staff was a clear priority. Consequently, the senior management team decided to explore avenues through which staff wellbeing/morale could be measured and monitored alongside other key performance indicators (KPIs) in setting, such as patient outcomes, surgery durations and turnover times. This would require regular data as close to real-time as possible. The common practice was for the Human Resources Department to measure and manage job satisfaction by administering a job satisfaction survey once or twice per year. They reported it often had a low response rate and was not completed regularly enough to feel up-to-date. Furthermore, they found staff were generally resistant to filling in surveys. This OR department was looking for a way to include the 'morale' of their employees as part of their OR management productivity metrics, ideally monitored in a similar fashion on the OR dashboard (a screen that presents and updates the results for all metrics). They wanted to be able to monitor for an increase or decline, and potentially work towards some form of wellbeing target.

1.3 The operating room

The OR is a significant resource and key source of revenue for the hospital. It commonly contributes approximately two-thirds of a hospital's total revenue, although it also accounts for approximately 40% of total expenses (Oh, Phua, Tong, & Lim, 2011). The highly specialised and skilled OR team is therefore one of the hospital's most precious assets. It is important to ensure retention of the highly trained and specialised staff. The OR team is commonly made up of a combination of surgeons, anaesthetists, nurses (scrub nurse and circulating nurse) and technicians (NZ has anaesthetic technicians). Other supportive roles include orderlies, healthcare assistants and surgical or anaesthetist registrars/fellows (see Figure 1.1) (Gillespie, Chaboyer, Longbottom, & Wallis, 2010). The OR team members work closely, in intense conditions, often for long periods of time. Each role is heavily dependent on

the other roles to achieve the overall outcomes (Gillespie et al., 2010). Surgeries can be grouped into two categories, either acute (urgent or emergency surgery) or elective (surgery that can be scheduled in advance) (John Hopkins Medicine, 2020). The organisational management structure is variable; however, it often has the chief of surgery as the lead and includes operational management, nurse and anaesthetist clinical directors, anaesthetic technician managers, orderly managers, and a range of charge nurses for different specialities. Nurses make up the biggest workforce in the OR and play a crucial role in the running, rostering and managing of the OR setting (Karathanasi, Prezerakos, Maria, Siskou, & Kaitelidou, 2014; Kondrat, 2001).

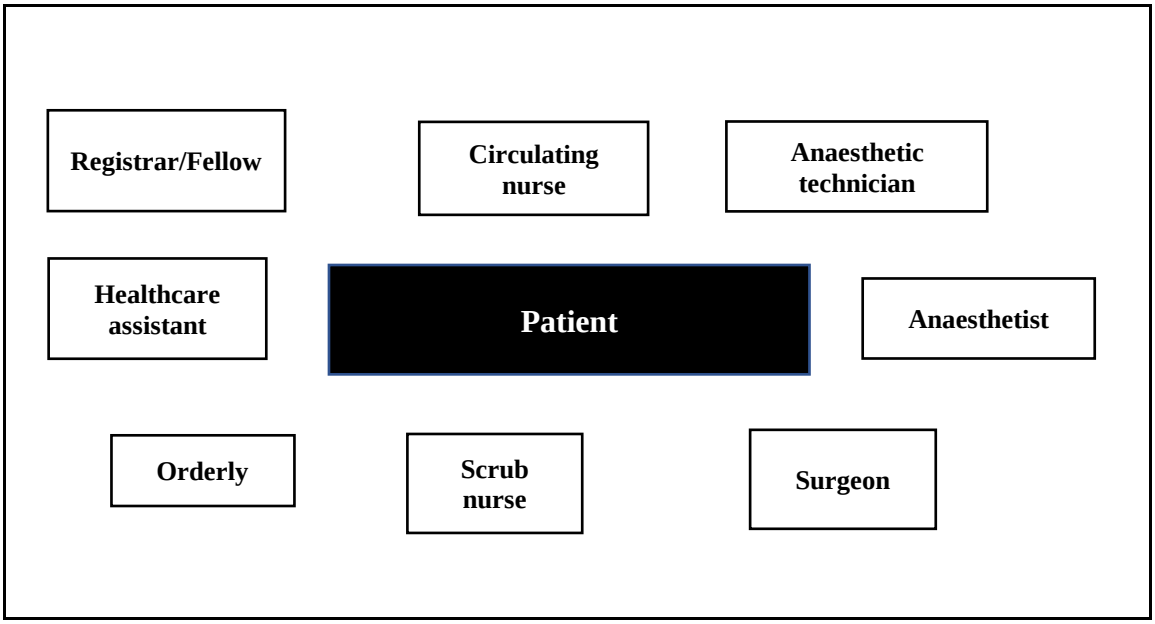


Figure 1.1: The operating room team

Productivity and efficiency are key priorities for management staff in the OR (Tsai, Sanford, Black, Boggs, & Urman, 2017). Productivity indicators in the OR tend to be related to: OR utilisation (ratio of time spent by patients in OR to total OR time available), throughput (the number of surgical cases per unit of time), waiting time of surgeons, overtime costs, contribution margin (dollar per unit of OR time and the revenue generated by a surgical case), make-span (time the last patient of the day leaves the OR), and cancellations (Oh et al., 2011). Productivity indicators are closely monitored in real-time and regularly reported to the executive management team in the hospital (Tsai et al., 2017).

1.4 The New Zealand context

NZ has a world-class healthcare system (Health Quality & Safety Commission New Zealand, 2015). It serves a population of approximately five million people and conducts approximately 335,000 public surgeries and approximately 165,000 private surgeries each year (Ministry of Health, 2019). Healthcare within the NZ context is geographically divided into 20 District Health Boards (DHBs) (Ministry of Health, n.d) and guided by the Treaty of Waitangi (Te Tiriti of Waitangi), a founding document in NZ outlining the partnership between Māori and the Crown. This document underpins the NZ health system and policy (including its OR workforce) (Ellison-Loschmann & Pearce, 2006).

The registered perioperative workforce in NZ is currently made up of approximately 6,649 employees (965 surgeons, 3,750 perioperative nurses, 880 practising anaesthetists, and 1,054 anaesthetic technicians) (Careers New Zealand, 2020; Medical Council of New Zealand, 2020; Nursing Council of New Zealand, 2015). There is however an increasing focus on retaining the health workforce in NZ, with many concerned about projected increasing staff shortages in the coming years (Rees, Crampton, Gauld, & Macdonell, 2018). Consistent with global trends, NZ has an ageing medical workforce with 40.1% of doctors aged 50 or over in 2015 and the average age of nurses in NZ being 46.3 years old (Ministry of Health, 2016). Nurse attrition rates are also high in NZ, with around 40% of nurses leaving the profession within the first eight years of practice (Nursing Council of New Zealand, 2015). Burnout among physicians in NZ has also received some recent attention and is of increasing concern with a NZ study suggesting that 50% of all NZ physicians experience symptoms of burnout (Chambers, Frampton, Barclay, & McKee, 2016). This is consistent with a landmark study conducted by Shanafelt et al. (2009) of 7,905 US surgeons which found over 40% of surgeons were burned out.

In line with global trends, OR safety culture has also become a key priority within the NZ OR system. Initiated by the NZ Health Quality and Safety Commission (HQSC), the World Health Organisation's surgical safety checklists, surgical team briefings and debriefings have now become an accepted part of the daily routine within many NZ ORs (Perry, Civil, Mitchell, Shuker, & Merry, 2015; Weller et al., 2018). Improving team communication and the

experience of leadership are also considered an important part of establishing the optimal safety climate, ultimately reducing errors (Health Quality & Safety Commission New Zealand, 2015).

This description of the NZ setting provides the context in which this study is placed. New innovations that support management to address staff wellbeing issues are very relevant to the NZ OR context where safety culture, retention, and burnout are current priorities.

1.5 Study aims and objectives

The overall aim of this study was to collaborate with OR personnel to explore how job satisfaction might be measured and monitored in close to real-time in the OR setting.

The study uses an action research approach to collaborate with theatre personnel from one NZ hospital to develop, trial, and evaluate a measurement tool. It explores the tool's value for management and staff, the validity of the data it generates and the viability for implementation within the OR setting.

The objectives are outlined below:

- To work together with key management personnel to identify the need, design, practicality, and significance of conducting the research within the OR setting.
- To collaboratively develop and pre-test a potential real-time job satisfaction tool for the OR setting.
- To trial an initial concept of a job satisfaction measurement tool across all OR staff for three weeks and then gather feedback via a survey.
- To test the convergent validity of daily job satisfaction with overall job satisfaction (the correspondence or convergence between constructs that are theoretically similar) (Devon et al., 2007).
- To test the predictive validity of the tool (the degree a score predicts performance on a future criterion) (Devon et al., 2007).
- To assess the overall value and feasibility of implementing the tool with the OR environment.
- To provide final recommendations regarding further trials and long-term implementation of the tool based on the research findings.

Chapter 2: Job satisfaction

2.1 Introduction

Job satisfaction is one of the most researched and debated concepts in organisational psychology (Judge et al., 2017). This chapter presents common theories and models relating to job satisfaction and discusses the well-known links between job satisfaction and patient safety, job performance, burnout, and retention in healthcare. It also explores the research relating to the measurement of job satisfaction and examines the ways it can be measured.

2.2 Defining job satisfaction

While there are many definitions and interpretations of job satisfaction, it is most commonly defined quite simply as the extent to which an individual likes or dislikes their job (Spector, 1997). Robert Hoppock (1935) presented the earliest definition of job satisfaction, describing it as any number of psychological, physiological, and environmental circumstances which leads a person to express satisfaction with their job. Other common definitions include identifying job satisfaction as a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences (Locke, 1976), and the overall appraisal of numerous features associated with one's occupation, including an individual's feelings, behaviours, and job prospects (Gambacorta & Iannario, 2013).

Nurse-focused definitions of job satisfaction have emerged in recent years. Castaneda and Scanlan (2014) identify job satisfaction for nurses as an affective reaction to a job that results from the incumbent comparison of actual outcomes with those that are desired, expected and deserved. Similarly, Liu, Aungsuroch, and Yunibhand (2016) define job satisfaction for nurses as a feeling of pleasantness when occupational desires or needs have been fulfilled.

It is now widely accepted job satisfaction is made up of both intrinsic factors (factors relating particularly to the individual) and extrinsic factors (the role of the working environment and employer) as well as consisting of both cognitive and affective components (Aziri, 2011; Dalal & Credé, 2013; Judge et al., 2017; Kaplan, Warren, Barsky, & Thoresen, 2009; Keller & Semmer, 2013). The cognitive element of job satisfaction refers to someone's thoughts or beliefs about aspects of their job, whereas the affective component relates to how

someone feels, or the emotions experienced about a job (Kaplan et al., 2009). Interestingly, cognitive and affective components of job satisfaction appear to predict different global attitudes (overall thoughts and feelings about one's job). Affect (which can be both a stable trait and a transient state) has now been found to play a more substantial role than once thought in reported satisfaction research (Kaplan et al., 2009).

It is also important to note that career satisfaction is in fact a different construct to job satisfaction. While career satisfaction is often similarly defined as the satisfaction one derives from the intrinsic and extrinsic aspects of their career (Greenhaus, Parasuraman, & Wormley, 1990), career satisfaction tends to focus on what psychological and work-related outcomes have been accumulated as a result of one's work experiences over time, rather than one's immediate job circumstances (Seibert & Kraimer, 2001). Career satisfaction is however considered a key facet of job satisfaction and the constructs are indeed closely correlated (Haar & Brougham, 2013; Judge, Cable, Boudreau, & Bretz, 1995). Furthermore, career satisfaction measurement tools in healthcare can be found to overlap with job satisfaction measures at times, therefore providing valuable information regarding job satisfaction outcomes at times (James-Scotter, Walker, & Jacobs, 2019).

2.3 Theories and models

The understanding of job satisfaction has evolved substantially over the past century and job satisfaction is now an accepted key determinant of workplace outcomes (Judge et al., 2017). While an extensive number of theories and models regarding job satisfaction have been explored and developed, the complexity which underpins job satisfaction continues to be researched (Coomber & Barriball, 2007).

Robert Hoppock was an early pioneer in job satisfaction research. His research in the 1930's was one of the first of its kind to explore a correlation between people's emotional adjustment, religion, social status, interest and age with job satisfaction (Hoppock & Robinson, 1949). He is well known for this landmark study that reported on the job satisfaction levels for a sample of APA vocational and industrial psychologists, his findings were challenging, suggesting that psychologists were no more satisfied than workers from other occupations (Wright, 2006). His survey methods and correlations of satisfaction and dissatisfaction were

considered ground-breaking for its time and his interest in the societal implications of dissatisfied workers as opposed to the business implications were also unique (Aziri, 2011; Ilies & Judge, 2002; Judge et al., 2017).

As research continued, a number of dispositional and humanistic theories emerged in the 1950s (Judge et al., 2017). Dispositional theories propose that job satisfaction is predominantly a 'within person' construct. They propose that individuals are born with either a more negative or positive disposition which then predicts the way in which they will view their job. For example, individuals who are prone to a negative disposition are more likely to feel dissatisfied with their job (Keller & Semmer, 2013). Dispositional theory has played an important role and contribution to how we understand job satisfaction, and led to the development of trait-based job satisfaction models that focus on the role of personality (Judge et al., 2017; Keller & Semmer, 2013). However, in more recent years, a number of longitudinal studies of disposition and attitudes have found that while some aspects of job satisfaction are reasonably stable over time, genetics likely account for only approximately 30% of job satisfaction variance (Arvey, Bouchard, Segal, & Abraham, 1989; Li, Zhang, Stanek, Ones, & McGue, 2016).

Humanistic theories of job satisfaction are among the most well-known job satisfaction theories (Aziri, 2011). They propose that job satisfaction is achieved when each individual's need for growth, development, and meaning are met by the conditions of their work (Judge et al., 2017). McGregor was one of the most influential early researchers in this area, suggesting that managers could enhance employee satisfaction and engagement by providing opportunities to fulfil universal human needs for self-actualisation. He suggested that jobs should allow employees to grow, offer opportunities, provide guidance, and involve them in decision-making processes (McGregor, 1985). The most well-known humanistic theory however is Maslow's Hierarchy of Needs (1969). Maslow believed that people satisfied various personal needs in the context of their work (Stoyanov, 2017). His theory proposes a general pattern of needs and satisfaction and suggests that until one need is met, an individual cannot move on to the next. The model, presented as a pyramid, identifies the most basic needs at the bottom (needed for human survival) and with the ultimate goal of 'self-actualisation' at the top (Judge et al., 2017). This theory has been commonly applied to the understanding of job satisfaction in healthcare, raising important issues around the ability of healthcare employees to maintain motivation with increasing demands and reduced resources (Benson &

Dundis, 2003; Liu et al., 2016). The theory suggests that if healthcare employees are not getting their basic needs met around wages, training and sense of value, their job satisfaction will decrease, as will motivation and commitment (see Figure 2.1) (Benson & Dundis, 2003; Rama-Maceiras et al., 2012). Maslow's theory however, has been criticised due to the vagueness of terms such as 'self-actualisation', and the lack of testing around its theorical basis is of particular concern (Judge et al., 2017).

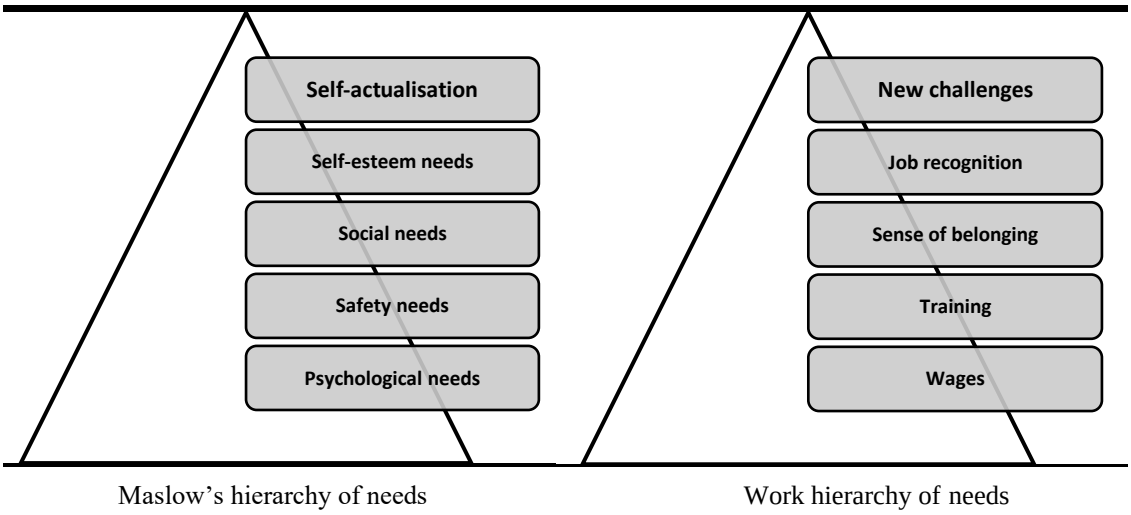


Figure 2.1: Maslow's hierarchy of needs viewed within the work environment – adapted from Rama-Maceiras, Parente, & Kranke (2012)

Emerging in the late 50s, Herzberg's (1959) Two Factor theory has become a prominent model of job satisfaction, regularly referred to in nurse job satisfaction research (Castaneda & Scanlan, 2014; Judge et al., 2017; Liu et al., 2016). Herzberg suggested that employee satisfaction and motivation were influenced more by how someone felt about their work, rather than the specific attributes of their job, such as pay and workplace surroundings (Castaneda & Scanlan, 2014; Liu et al., 2016). This model suggests that job satisfaction and job dissatisfaction should be considered separately. Herzberg proposes factors such as company policy, supervision, interpersonal relations, working conditions, and salary are 'hygiene factors', rather than motivators. While the absence of 'hygiene factors' can create job dissatisfaction, their presence however does not necessarily motivate or create satisfaction. He refers to 'Motivators' as elements that enrich a person's job leading to job satisfaction, including achievement, recognition, the work itself, responsibility, and advancement (Herzberg, 1959).

In the 1960s to 1980s, the concept of job satisfaction moved away from being viewed as a unitary construct, and more calculative models emerged. Job satisfaction began to be organised around theories that linked quantifiable features of a job with cognitive processes, of positive or negative attitudes, calculated with mathematical representations (Judge et al., 2017). These models focused more on specific cognitive processes underlying the positive and negative aspects of employment. Examples include the Investment Model which proposes that commitment to one's job exists when the internal calculation of the benefits associated with a job exceeds its costs (Farrell & Rusbult, 1981), the Cornell Model, which focuses on standards for evaluating the worth of a job relative to alternatives (Smith, 1974); and the Characteristic Theory, that proposes five facets needed for a satisfying job: autonomy, task variety, task identity, task significance, and feedback (Hackman & Lawler, 1971). Theories that focus on the role of contextual factors such as organisational structure, organisational climate, and the role of culture also began to unfold around this time (Lee et al., Judge et al., 2017).

A number of theories have also focused on the role of affect. Two of the most well-known include the Affect Theory of Job Satisfaction and Affective Event theory. The Affect theory (Locke, 1976) suggests that job satisfaction is the balance between employee expectations and values and their achievements/job features. When an individual values a specific aspect of work, their experience of job satisfaction is affected both positively and negatively compared to someone who does not value that same aspect. This theory suggests that the more an employee values a specific aspect of their job, the greater their dissatisfaction when it is not fulfilled. Affective Event theory (Weiss & Cropanzano, 1996) suggests that sudden emotional reactions can sometimes override previous attitudes leading to withdrawal. It proposes that job attitudes fluctuate within a person and are mood dependent (Judge et al., 2017). This has been the basis of a number of longitudinal studies finding that transitory affect (where emotions may come and go) predicts job satisfaction both with and between individuals (Ilies & Judge, 2002). There is a dynamic interrelationship between personality, mood, and job satisfaction. Employees' satisfaction with their job, measured at work, influences the affective states experienced by employees at home and vice-versa (Bowling, Eschleman, & Wang, 2010; Ilies & Judge, 2002). The magnitude of these influences varies however according to employees' trait affectivity (Bowling et al., 2010).

2.4 Job performance and patient safety

Job satisfaction has been linked with many factors in healthcare that impact on staff performance and patient safety (Hall et al., 2016; Lee et al., 2020). Williams, Manwell, Konrad, and Linzer's (2007) study of 426 primary care physicians found a negative correlation between job satisfaction and physician (self-reported) increase in the likelihood of making errors and instances of providing sub-optimal care. Similarly, Horinouchi et al. (2008) found an inverse relationship between procedural errors and job satisfaction in resident physicians. This is supported by Hall's (2016) systematic literature review of healthcare staff who found poor employee wellbeing to commonly be associated with poor patient safety outcomes including medical errors. Conversely, high job satisfaction of physicians and nurses has been strongly linked with patient satisfaction, quality of care, and communication (Kutney-Lee et al., 2009; MacHe et al., 2012; Scheepers, Boerebach, Arah, Heineman, & Lombarts, 2015; Tzeng, Ketefian, & Redman, 2002; Vahey, Aiken, Sloane, Clarke, & Vargas, 2004). Williams et al. (2017) found high job satisfaction to be associated with less chaos, more cohesion, and better communication.

Satisfied healthcare professionals have been found to be more committed to the work of their organisation (Lee et al., 2020; Rama-Maceiras et al., 2012). Job satisfaction is closely correlated to organisational commitment and it is generally accepted that the more satisfied employees are with their jobs, the more likely they are to develop an emotional attachment and commitment to their organisation (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002). A relationship between job satisfaction and task delegation, psychological empowerment and workplace empowerment is also suggested in emerging nursing research (Lee et al., 2020). There are also significant correlations between job satisfaction and work engagement for healthcare employees (Mache, Vitzthum, Klapp, & Danzer, 2014). The relationship between job satisfaction and work engagement is well established, with job satisfaction a known antecedent to engagement (Abraham, 2012). High engagement has been found to improve levels of positivity, sense of fulfilment, vigour and dedication one feels on their job, impacting on performance and productivity (Schaufeli, Salanova, González-romá, & Bakker, 2002).

Satisfied healthcare employees have also been associated with increased productivity and decreased treatment costs (Rama-Maceiras et al., 2012). This is well supported in organisational research with numerous meta-analyses from a range of disciplines finding there

is a positive relationship between job satisfaction and employee productivity (although this relationship is often described as weak) (Judge et al., 2017; Saari & Judge, 2004). Stronger correlations between job satisfaction and employee productivity have been identified when the complexity of the job is taken into consideration, with jobs of higher difficulty demonstrating a stronger job satisfaction-productivity correlation (Saari & Judge, 2004). A well-known meta-analysis of 8,000 business units within 36 companies found a significant positive relationship of practical significance between company performance outcomes and job satisfaction positively (Harter, Schmidt, & Hayes, 2002). Conversely, productivity pressures, staff shortages and high acuity patients are all factors that have been found to impact on job satisfaction and performance in healthcare (Hyman et al., 2011).

There is however debate about the relationship between job performance and job satisfaction, due to the likely influence of numerous work-related and dispositional elements. In many instances, it is impossible to be clear on how much job satisfaction is the reason for a change in performance, or alternatively how much job satisfaction could be the consequence of job performance (Davar & Bala, 2012; Iaffaldano & Muchinsky, 1985; Judge, Thoresen, Bono, & Patton, 2001).

2.5 Job satisfaction and burnout

There are increasing concerns in healthcare relating to the risk of employee burnout and as a result, burnout has become an area of significant focus within the healthcare sector (Hall et al., 2016; Rama-Maceiras et al., 2012; Shanafelt et al., 2009; Vahey et al., 2004). Health professionals are considered more susceptible to burnout than many other professions and the association between job satisfaction and burnout is very well supported by numerous studies involving a range of health professionals (Chambers et al., 2016; Lu, Barriball, Zhang, & While, 2012; Shanafelt et al., 2009; Williams et al., 2007). Burnout is conceptually defined as a state of vital exhaustion in response to chronic organisational stress resulting in feelings of work-related exhaustion (emotional exhaustion), depersonalisation and reduced personal accomplishment (Hall et al., 2016). It is those that are the most dedicated and motivated in their jobs that are indeed most susceptible (Shanafelt et al., 2009).

The impact of burnout on both a personal and professional level for physicians and nurses is significant, with links to increased substance abuse, depression and other mental health issues, physical illness, presenteeism, and turnover (Hyman et al., 2011; Khamisa, Oldenburg, Peltzer, & Ilic, 2015; Lee et al., 2020; Shanafelt et al., 2009). The negative relationship between job satisfaction and burnout is well accepted, that is, as job satisfaction increases, the risk of burnout tends to decrease and vice versa (Tsigilis, Koustelios, & Togia, 2004). Ramirez, Graham, Richards, Cull, and Gregory (1996) suggest that burnout is associated with low satisfaction in three domains: relationships with patients, relatives, and staff; professional status/esteem; intellectual stimulation.

Perioperative clinicians (particularly surgeons, anaesthetists and nurses) are at particular risk for burnout due to increasing production pressure, staff shortages, and the level of patient complexity and acuity (Hyman et al., 2011; Lee et al., 2020). A landmark study of 7905 surgeons via the American College of Surgeons membership found nearly 40% of surgeons met the criteria for burnout (Shanafelt et al., 2009). Burnout was the single greatest predictor of career satisfaction among surgeons. Older age and the absence of burnout were associated with greater career satisfaction and younger surgeons and those with children aged between 5 – 21 years were at higher risk (Shanafelt et al., 2009). Job satisfaction is considered a protective factor for burnout, with those more satisfied in their jobs at a lesser risk (Hall et al., 2016; Rama-Maceiras et al., 2012).

2.6 Job satisfaction and retention

An increase in surgical procedures and an increase in demand for nurses has led to difficulties recruiting and retaining perioperative nurses (Sveinsdóttir & Blöndal, 2014). In addition, the perioperative nursing workforce is older than the general nursing workforce, so retaining nurses is a clear priority (Gorgone, Arsenault, Milliman-Richard, & Lajoie, 2016). The implications of nurse turnover are significant, putting increasing strain and pressure on remaining staff (Fasbender, Van der Heijden, & Grimshaw, 2019). There is strong evidence, over many years of research, that low job satisfaction in the health sector is associated with intention to leave, increased turnover, and absenteeism, particularly for nurses (Borda & Norman, 1997; Cohen & Golan, 2007; Coomber & Barriball, 2007; Fasbender et al., 2019; Irvine & Evans, 1995; Lee et al., 2020). Intention to leave is considered the single best indicator of staff turnover (Hayes et al., 2010). Linzer et al. (2000) found that clinicians who were

satisfied with their job were over eight times as likely to indicate reduced intention to leave their practices compared to those who were not satisfied. Similarly, Yin and Yang's (2002) meta-analysis of 129 studies focusing on nurses, found that job satisfaction is one of the strongest individual and organisational factors influencing turnover. Poor organisational climate and working conditions, for example increased workload and shortages of nurses, are repeatedly identified as factors that negatively impact job satisfaction and intention to leave (Hayes et al., 2010; Lee et al., 2020; Sveinsdóttir & Blöndal, 2014). Other factors that have been linked to hospital nurses' job satisfaction and turn over intentions include leadership, organisational support, collaborative relationships, staffing, and burnout (Lee et al., 2020; Sveinsdóttir & Blöndal, 2014; Sveinsdóttir, Ragnarsdóttir, & Blöndal, 2016).

2.7 Measurement of job satisfaction

The abstract and somewhat subjective nature of job satisfaction makes measurement by quantifiable methods a challenging task (Rama-Maceiras et al., 2012). Research into the optimal approach for measuring job satisfaction also has a long history and continues to be an area of much debate (Judge et al., 2017). While there are a number of well-established questionnaires, to date there is no gold standard as to how one should measure job satisfaction. Four of the best-known questionnaires worldwide are the Job Descriptive Index, the Minnesota Satisfaction Questionnaire, the Job in General Scale, and the Faces Scale (Dalal & Credé, 2013; Judge et al., 2017; Kaplan et al., 2009). All are multi-facet surveys with the exception of the Kunin Faces Scale (1955). The Faces Scale utilises a global single-item satisfaction question, and instead of providing a numeric or written Likert scale, it provides a range of facial expressions and asks respondents to choose the expression that most accurately captures how they feel (Kunin, 1955). In many instances, including healthcare, it is not uncommon for organisations to develop their own facet-based questionnaire tailored to gather specific information (James-Scotter et al., 2019).

Tools for measuring job satisfaction can be loosely classified into two categories; 1) global measures of job satisfaction (which relate to the overall and general feelings related to one's job satisfaction) and 2) facet-based measures (exploring how one evaluates different aspects of the job) (Highhouse & Becker, 1993). Most approaches share the common method of utilising a questionnaire or survey design and generally use a single score of job satisfaction to indicate a person's attitude toward their job (Highhouse & Becker, 1993).

2.7.1 Multi-facet versus global measurement

The reliability of global measurements of job satisfaction compared to multi-faceted approaches has been debated among researchers (Dalal & Credé, 2013; Judge et al., 2017; Kaplan et al., 2009). The majority of job satisfaction measurement tools tend to be facet-based, generally defined by the sum of the facets. These facets typically include commonly identified factors such as pay, promotions, co-workers, supervision, the work itself, recognition, working conditions, and management (Gambacorta & Iannario, 2013). Global measures, on the other hand, ask employees one or more general questions about their overall job satisfaction (e.g., "All things considered, how satisfied are you with your job?" Scarpello and Campbell (1983)). It is a widely held view that facet-based tools predominantly measure cognitive responses — someone's thoughts and beliefs about the job (Dalal & Credé, 2013; Kaplan et al., 2009). With the increasing acceptance of the dominant role that affect (emotions) plays in the experience of job satisfaction, the facet-based approach to measuring job satisfaction has generated some criticism (Dalal & Credé, 2013; Judge et al., 2017). Many suggest that relying solely on cognitive standards to measure job attitudes is inadequate and that overall job satisfaction is best assessed via global measures rather than by combining individual facets (Dalal & Credé, 2013; Judge et al., 2017). A further concern relating to the purely cognitive facet-based approach is that such measurements make a number of assumptions in their analysis. Facet satisfaction scores assume that all facets are weighted equally in determining overall job satisfaction, that all are relevant to every employee, and that facets combine in a linear fashion adding up tidily to determine an individual's overall job satisfaction (Dalal & Credé, 2013).

Studies that compare global versus multi-facet measures of job satisfaction have found a low correlation between the sum of multi-facet measures and global scores. Even when studies have attempted to cater for every possible influence in a facet-based tool, the relationship remains weak, indicating that faceted and global measures do not measure the same construct (Highhouse & Becker, 1993; Judge et al., 2017). In other words, the whole is not the same as the sum of the parts, and therefore it cannot be assumed that the sum of facet-based measures gives an overall picture of one's job satisfaction (Kaplan et al., 2009; Scarpello & Campbell, 1983). Reasons may include that global measures may capture a broader perspective, individuals possibly compare and contrast qualities from their present and past experiences, and facet measures may not capture the affective variability and mood elements

as effectively as a global question might (Highhouse & Becker, 1993; Judge et al., 2017). When comparing the well-known measurement tools, the Kunin Faces Scale (1955) is considered one of the only tools to effectively capture both affective and cognitive assessments of satisfaction (Brief & Roberson, 1989). Nevertheless, it is important to note that regardless of whether a tool is predominantly affective or cognitive, both approaches provide potentially useful information regarding employee job satisfaction (Dalal & Credé, 2013; Highhouse & Becker, 1993). Finding the best measure ultimately depends on the values and goals of the organisation. As such, organisations and management must know what exactly they want to measure (Judge et al., 2017).

2.7.2 The single-item versus multiple items

Single item measures are an attractive alternative to the long multi-facet survey. Their appeal relates to short completion times, ease of administration, reduced expense, increased flexibility, and ease in interpretation (Dolbier, Webster, McCalister, Mallon, & Steinhardt, 2005; Nagy, 2002; Wanous, Reichers, & Hudy, 1997). Criticisms of a single-item measure are related to its inability to estimate the internal consistency and reliability or to use structural equation models (Wanous et al., 1997). In response to these concerns, many studies have established the suitability of their use as a measurement tool by finding evidence to support concurrent validity (the relationship between the tool's score and a related criterion at the same point of time), and convergent validity (the convergence between constructs that are theoretically similar). The correlation coefficients between single items and multi-facet scales range between 0.60 and 0.82 (Dolbier et al., 2005; Nagy, 2002; Scarpello & Campbell, 1983; Wanous et al., 1997). In many cases, single-item measures will have increased face validity (a subjective assessment by experts or laypeople as to whether it appears appropriate at face value) of single-item job satisfaction measures (Dolbier et al., 2011; Scarpello & Campbell, 1983; Wanous et al., 1997). Minimum reliability has also been established. Using the correction for attenuation formula Dolbier et al. (2011) estimated reliability of 0.73. Wanous et al. (1997) conducted a meta-analysis (n=17 studies) of single-item measures of job satisfaction, calculated minimum reliability using the correction for attenuation formula, and found a mean correlation of 0.63 (SD=.09) for 28 correlations between single-item measures and multiple-item measures of job satisfaction. Additionally, the convergent validity of single-item measures of job satisfaction with supervisor support (0.51), co-worker support (0.46),

positive affectivity (0.28), and turnover (0.26) have also been found (Dolbier et al., 2005). The literature points toward a single-item global measure of overall job satisfaction being preferable in situations that require an accurate picture of overall job satisfaction (Nagy, 2002; Scarpello & Campbell, 1983; Wanous et al., 1997).

2.8 The emergence of the new era of real-time measurement

As employers are become increasingly aware of the importance of job satisfaction, innovative strategies for gathering close to real-time data are becoming increasingly relevant for healthcare (Healthstream, 2015). Employers are being encouraged to place 'employee wellbeing' as a central priority within their organisation (Bersin, Flynn, Mazor, & Melián, 2017). The modern-day corporate industry is moving towards a more flexible, collaborative, and innovative work place within a humanistic environment. Many businesses are seeing the value of cultivating a happy, creative, and motivated workforce (Bersin et al., 2017). There is increasing criticism regarding the retrospective approach of the annual job satisfaction survey, and concerns within healthcare that it cannot keep up with a fast-changing workplace climate (Healthstream, 2015). As a result, there is a push within the business community for industries, including healthcare, to move beyond the annual or biannual job satisfaction survey to more frequent measuring of job satisfaction (Barton, 2016; Bersin et al., 2017; Harnish & Ross, 2013; West, 2016).

Very short frequent surveys or pulse surveys are seen as a viable solution and are quickly increasing in popularity (Barton, 2016; Bersin et al., 2017; Harnish & Ross, 2013). These are used to measure a wide range of constructs, including job satisfaction, engagement, and mood; or to ask specific company-related questions regarding the work environment or the experience of management. They may be used daily, weekly, fortnightly, or even monthly (Barton, 2016; Bersin et al., 2017; Harnish & Ross, 2013). Consequently, an explosion of digital and mobile tool options have appeared on the market over the last ten years. Employers who do not want to create their own tools can now choose from a wide range of engagement and happiness survey applications (apps), and feedback and workplace culture assessment tools (Bersin et al., 2017; West, 2016). Apps commonly involve smiley faces or traffic light systems for quick and easy use and provide employers with a dashboard to track and analyse the results (Harnish & Ross, 2013). An example is the well-known company 'Happy or Not'. This app

commonly asks employees ‘how was your workday today?’, users do not identify themselves and they choose from the four smiley face buttons provided. Employers monitor results on a dashboard provided (HappyorNot, n.d.). Another example is TINYPulse, which is a cloud-based service that sends out weekly emails with a question of the week and captures anonymous feedback (Harnish & Ross, 2013).

There are a number of large organisations that have begun using a form of pulse survey in their workplace. An example within healthcare is HealthStream, a US company which provides workforce and provider solutions for health organisations. It recently announced a new initiative called the ‘employee talkback’, a mobile/web platform that allows hospital administrators to obtain real-time feedback from their employees regarding issues or ideas (HealthStream, 2015). Another example has been developed by Hinsley et al. (2016) for use in a cardiac catheterisation lab and cardiovascular OR in a US hospital. They trialled a daily survey which aimed to provide a user-friendly platform to communicate perceptions of the health of the work environment via a smiley face response scale. The survey was offered in both paper and digital form and employees could choose if they wanted to remain anonymous. Similarly, Frampton et al. (2017) conducted a trial in a Bristol UK University hospital across 23 different hospital speciality areas. They developed and trialled a daily anonymous survey using a traffic light system that employees accessed via iPads at multiple kiosks around the hospital. This tool aimed to measure the ‘mood’ of staff and also provided a discussion forum. Other examples, outside of healthcare, include Atlassian (an Australian software company) who employ almost 600 people worldwide. They created an internal daily mood check application called the MoodApp, which was made available to employees via iPads scattered throughout their headquarters, including the elevators. The app asked questions like ‘how are you feeling today?‘ or ‘do you think Atlassian is a fun place to work?’ They report that employees appear happy to respond, with participation rates of between 55% to 75% and sometimes even as high as 90%. Atlassian does however warn that such surveys are not a substitute for conversations with employees. They advise pulse surveys should be a tool to promote conversations and that managers must respond to feedback quickly or people will feel ignored (Harnish & Ross, 2013). Another example is Forbes (a US global media company). They use a traffic light survey each day to measure employee mood and ask ‘what mood did you arrive in today? What mood are you leaving in today? On a scale of 1-4 ‘how much did you like the tasks you did today?’ The survey takes less than a minute using a google doc that is then analysed and collated. They have a feedback system where results are discussed every

Monday morning, which Forbes feel builds trust in the process. Action is then quickly taken, which they report is the key to success (Tomas, 2015).

A number of companies are also using the employee Net Promoter Score (eNPS) within their pulse surveys. The eNPS is a well-known but somewhat controversial measure within the field of organisational psychology. Popular among businesses, it was first introduced by Frederick Reichheld in 2003 and was originally designed to measure customer satisfaction. Its association with company performance led it to become known as the 'ultimate question' (Fisher & Kordupleski, 2019). It asked customers 'would you recommend [name of company] to your family and friends?'. It was then later modified for employees, claiming that it could be used to measure staff satisfaction, career satisfaction, engagement, and loyalty. It asked 'how likely are you to recommend [name of company] as a place to work?'. Users rate their response on a 1-10 scale The question is commonly followed by a request for further comment (Fisher & Kordupleski, 2019; York & McCarthy, 2011). Buuteeq (a Seattle-based marketing automation software company) ask their employees the eNPS every month. They supplement it with an additional weekly pulse survey question such as 'how likely do you see yourself working here in one year?' or 'how does your manager's leadership style impact on your productivity?' They are transparent about their results, sharing them during weekly meetings (Harnish & Ross, 2013). A modified version of the eNPS is commonly seen in the surgeon job satisfaction literature asking 'would you choose to be a surgeon again if you had the choice?' often followed by 'would you recommend your career to your children?' (Klimo et al., 2013; Kuerer et al., 2007; Shanafelt et al., 2009).

The validity of the eNPS continues to be debated among organisational psychologists, with some authors claiming that it has limited diagnostic capability, there is cultural bias, it doesn't consider the multi-dimensional aspect of the construct, and the way the numbers are interpreted is flawed (Fisher & Kordupleski, 2019). In contrast, there is some recent research that suggests there is concurrent validity of the eNPS, showing correlations between the eNPS and the more in-depth engagement indices. The eNPS is also considered a useful measure in terms of pointing leaders in the right direction (Brown, 2020).

Despite the growing number of reports of the benefits of real-time measures, stories of their success are mostly seen in business magazines and blogs. The validity of these new approaches to measurement appears variable, with some applications reporting that they have

their foundations in organisational psychology or business pertaining to existing tools or pre-tested questions, while the validity of many others is less clear (West, 2016). Moreover, there are very few academic studies relating to the value and validity of pulse surveys and other real-time measures in the literature published in peer-reviewed journals.

2.9 Chapter summary

Job satisfaction is a well-researched area in organisational psychology. It is a complex construct, influenced by multiple factors. The consequences of decreased job satisfaction in the workplace setting can be serious, impacting employee behaviour and retention. While there are a number of well-established survey options that enable employers to measure staff satisfaction, this chapter provides evidence that a previously validated single-item global measure is sufficient and more practical for those wanting to measure global job satisfaction. Despite the extensive existing research relating to job satisfaction, it continues to be an active area of research. New and innovative approaches to measurement continue to be developed and used in the workplace as the demand for real-time data increases.

Chapter 3: Literature review

3.1 Introduction

This chapter reviews literature related to job satisfaction across the OR team including its contributing factors. It also considers the range of tools that have been utilised in the OR job satisfaction studies as a starting point for tool development in this area. The original published review is presented, followed by an update of the literature over the last three years.

3.2 Article: An interprofessional perspective of job satisfaction in the operating room

James-Scotter, M., Walker, C., & Jacobs, S. (2019). An interprofessional perspective on job satisfaction in the operating room: a review of the literature. Journal of Interprofessional Care, 33(6), 782-794. doi: 10.1080/13561820.2019.1593118

Job satisfaction is one of the most important variables in work and organisational psychology and is a central indicator for the quality of working life (Dormann & Zapf, 2001). It ultimately reveals the extent to which employees like or dislike their jobs, arguably reflecting the success of an organisation's ability to meet its employees' needs. Highly satisfied employees care about the quality of their work, are more productive and engaged in their working environment, and are less likely to leave their job (Rama-Maceiras et al., 2012). For those working in the OR, reduced job satisfaction has been directly associated with rates of burnout, stress, medical errors, and reduced patient satisfaction (Jenkins & Wong, 2001; Klimo et al., 2013; MacHe et al., 2012; Raptis, Schlegel, Tschuor, & Clavien, 2012; Shanafelt et al., 2009; Sharma, Sharp, Walker, & Monson, 2008; Surgenor et al., 2009; Van Beuzekom, Akerboom, Boer, & Dahan, 2013; van Wulfften Palthe, Neuhaus, Janssen, Guitton, & Ring, 2016). Difficulties with recruitment and retention in the OR are of increasing concern for physicians and nurses alike (Ahmed et al., 2012; Gorgone et al., 2016; Jenkins & Wong, 2001). This is particularly relevant with the general surgery load expected to substantially increase in the next 20 years, predominantly due to an ageing population and surgery for those over 65 occurring at twice the rate of those younger (Ahmed et al., 2012; McIsaac, Jen, Mookerji, Patel, & Lalu, 2017). While extensive literature exists relating to job satisfaction for individual disciplines, very little is known about job satisfaction within the OR team. This literature review aims to synthesise the literature pertaining to job satisfaction for OR team members and

explore and compare key determinants between surgeons, anaesthetists, and nurses to provide essential information for management and policy development moving forward.

3.2.1 Methods

A sound integrative review follows a systematic procedure for searching and selecting the articles to be included (Whittemore & Knafl, 2005). The methodology for this review was guided by Whittemore and Knafl (2005) and was undertaken in November 2017. The search employed electronic and ancestral searching for the period from January 1997 – November 2017. The data were collected from CINAHL, Medline, PsychINFO, and ABI/inform databases. Keyword search terms included job satisfaction OR career satisfaction OR work satisfaction AND operating theatre OR operating room OR perioperative AND nurs* OR surgeon/s OR anaesthe* OR anethe* OR physician/s OR team (refer to Appendix 3.1 for a more complete outline of the search strategy). The search was limited to empirical studies, peer-reviewed articles, and online dissertations that were in English with full-text versions available through the University of Auckland library.

Inclusion criteria included job/work/career satisfaction and at least one contributing factor that had been purposefully measured, explored, or discussed. In addition, the sample was required to include OR nurses, anaesthetists, or surgeons (or a combination of). Studies that encompassed any of these job roles as part of a wider sample were considered on an individual basis and included in the review if they provided specific data relating to factors that influenced that subsample (Whittemore & Knafl, 2005). Studies were excluded if they were an intervention study or solely focused on new graduates, residents, trainees, nurse anaesthetists, technicians, or assistants. This is primarily due to large variations of these roles according to country and hospital. Quality appraisal of studies was done according to both methodological rigour and data relevance with reference to the NIH (2016) Quality Assessment Tool for Observational Cohort and Cross-Sectional Studies and Mays and Pope (2000). Studies were rated as good, moderate, or poor. As per Whittemore and Knafl (2005), no studies were excluded due to poor quality; however, those with lower ratings contributed less to the overall analysis. The majority of the studies were identified as moderate in quality and relevance. A summary of study characteristics and ratings is presented in Table 3.1. The search yielded a total of 927 results. After screening and duplicate removal, 101 full-text articles were assessed for eligibility. A final selection of 48 studies were chosen for the review. This process is

outlined in the flow chart as per PRISMA guidelines in Figure 1 (Moher, Liberati, Tetzlaff, & Altman, 2009).

Table 3.1: Study Characteristics

Author	**Setting**	**Sample**	**Study aim**	**Study type / Job satisfaction measurement tool**	**Quality appraisal**
(Leticia et al., 2015)	Conducted in one hospital in **Brazil**	Combination of 132 nurses, medical staff, pharmacy, lab technicians, trainees, administrative and environmental support staff and volunteers from a surgical Centre Response rate not provided	Assess the perception of safety culture	Cross-sectional survey design Safety Attitudes Questionnaire	Poor
(Flin, Yule, McKenzie, Paterson-Brown, & Maran, 2006)	Conducted across 17 hospitals in **Scotland**	352 OR staff – surgical consultants, trainees, nurses, and anaesthetic nurses 48% response rate	To explore surgical team member's attitudes to safety and teamwork in the operating theatre	Cross-sectional survey design Operating Room Management Attitudes Questionnaire	Moderate
(Carney, Mills, Bagian, & Weeks, 2010)	Conducted via the Department of Veteran Affairs medical team personnel prior to a medical team training programme in the **USA**	187 OR staff: 66 surgeons, 35 anaesthesia providers, and 86 nurses Response rate not provided	To explore the relationship between caregiver perceptions and gender differences when administering the Safety Attitudes Questionnaire	Cross-sectional survey design Safety Attitudes Questionnaire	Moderate
(Göras, Wallentin, Nilsson, & Ehrenberg, 2013)	Conducted across three hospitals in **Sweden**	332 OR staff members: physicians, nurses, technicians, and managers 61% response rate	To describe and compare attitudes to patient safety	Cross-sectional survey design Short questionnaire based on Safety Attitudes Questionnaire	Moderate

(Frank, McMurray, Linzer, & Elon, 1999)	Conducted via the American Medical Association database in the **USA**	4,501 Physicians, 133 surgeons, and 266 anaesthetists	To explore career satisfaction of women physicians	Cross-sectional survey design Two-question approach	Moderate
(Nylenna, Gulbrandsen, Førde, & Aasland, 2005)	Conducted via the Research Institute of the Norwegian Medical Association in **Norway.**	1,174 physicians, 99 surgeons, and 42 anaesthetists 73% response rate	To investigate a possible decline in professional and personal satisfaction among doctors by the turn of the century	Longitudinal – comparing survey from 1994-2002 same participants and survey Job Satisfaction Survey + extra purpose-specific questions	Moderate
Anaesthetists					
(Afonso et al., 2013)	Conducted via anaesthesiologists who attended an annual meeting in the **USA**	304 anaesthesiologists 95% response rate	To measure the parameter of job satisfaction among anaesthesiologists	Study-specific tool-being validated as part of the study	Moderate
(Chiron, Michinov, Olivier-Chiron, Laffon, & Rusch, 2010)	Conducted across eight hospitals in **France**	193 anaesthetists 193 (77 nurse anaesthetists) Response rate not provided	To explore job satisfaction, life satisfaction, and burnout in French anaesthetists	Minnesota job satisfaction, short-form MBI, satisfaction with life scale	Moderate
(Gaszynska, Stankiewicz-Rudnicki, Szatko, Wieczorek, & Gaszynski, 2014)	Conducted across 14 hospitals in **Poland**	134 anaesthesiologist consultants 84% response rate	To assess level of life and job satisfaction among anaesthesiologists	Used modified version of (Bovier & Perneger, 2003)	High
(Jenkins & Wong, 2001)	Conducted via Canadian Anaesthesiologist Society in **Canada**	946 anaesthetists 57% response rate	To assess overall job satisfaction among Canadian anaesthesiologists and examine contributing factors	Study-specific tool Not clear if reliability tested	High

(Kinzl et al., 2005)	Conducted across two hospitals in **Switzerland and Austria**	125 anaesthetists Response rate not provided	To explore job satisfaction, physical health, emotional wellbeing, and working conditions in anaesthetists	Global Job Satisfaction Survey	Moderate
(Kluger, Townend, & Laidlaw, 2003)	Conducted via the college of anaesthetists in **Australia**	422 anaesthetists 60% response rate	To explore job satisfaction, stress, and burn out of anaesthetists	Used Delphi process for questionnaire development	Moderate
(Koshy, Ramesh, Khan, & Sivaramakrishnan, 2011)	Conducted via attendees at a conference in **South India**	115 anaesthetists Response rate not provided	To explore job satisfaction and stress among anaesthesiologists	Study-specific tool	Poor
(Lindfors et al., 2007)	Conducted via the Finnish medical association in **Finland**	258 anaesthesiologists 60% response rate	To explore job satisfaction, work ability, and life satisfaction among Finnish anaesthesiologists	Study-specific tool	Moderate
(Van Beuzekom et al., 2013)	Conducted across three hospitals in the **Netherlands**	270 specialist, nurse, and trainee anaesthetists Response rate not provided	To investigate the extent that working conditions impact on job satisfaction, job stress and intention to leave for anaesthetists	Job satisfaction scale of the Leiden quality of work questionnaire	Moderate
(Wang et al., 2015)	Conducted via the Taiwan Society of anaesthesiologists in **Taiwan**	474 attending anaesthesiologists 61% response rate	To assess satisfaction with current work conditions	Study-specific tool	Moderate
Nurses					
(Beaman, 2005)	Conducted via the Nurses Association of New Brunswick Operating Room Nurses of Prince Edward Island (ORNPEI) group in **Canada**	160 OR nurses 62.5% response rate	To investigate levels of work-related stressors and job satisfaction including influencing factors	Five-item scale that was used by Pinikahana and Flappell (2004)	Moderate
(Chen, Lin, Wang, & Hou, 2009)	Conducted across seven hospitals in	121 perioperative nurses	To determine stressors, stress coping strategies,	Job Satisfaction	Moderate

	Taiwan	Response rate not provided	and job satisfaction of nursing staff in the OR	Scale	
(Cram, 2002)	Conducted across 33 hospitals in the **USA**	393 OR nurses 23% response rate	To explore if there is a link between consistent teams and job satisfaction	Job Satisfaction Scale	Moderate
(Donald, 1999)	Conducted via one hospital in **Canada**	10 OR nurses Response rate not provided	To examine the influence of environmental and organisation variables on the quality of work-life of OR nurses	Qualitative Formal interviews	High
(Eakin, 2017)	Conducted via one hospital in the **USA**	12 nurses and 12 nurse technicians Response rate not provided	To explore job satisfaction of OR nurses	Qualitative semi-structured interviews	High
(Eskola et al., 2016)	Conducted across four hospitals in **Finland**	96 OR Nurses (incl. nurse anaesthetists) Response rate not provided	To investigate the workplace culture in the OR and the factors associated with it	Nursing Context Index	Moderate
(Gurley, Spence, Briner, & Edwards, 2003)	Via three hospitals and one out-patient clinic in the **UK**	88 registered nurses, 12 practical nurses, and 10 care assistants (10 nurses from the OR and 5 from post anaesthesia care unit) Response rate not provided	To compare ideal job satisfaction and perceived job satisfaction levels	Study-specific questionnaire	Poor
(Heinzelman, 2014)	Conducted via one hospital in the **USA**	10 baby boomer OR nurses Response rate not provided	To understand the lived experience of baby boomer OR nurses and the meaning they attach to their satisfaction and remaining in their jobs	Qualitative semi-structured interviews	High
(Dunn, 2003)	Conducted via AORN membership in the **USA**	145 perioperative nurses Response rate not	To explore horizontal violence among nurses in the OR	Index of work satisfaction (IWS)	Moderate

		provided			
(Johnson, 2008)	Conducted via AORN membership in the **USA**	87 OR Nurses Response rate not provided	To investigate job satisfaction and cultural competence in OR nurses	Job descriptive index	Moderate
(Paglione, Vannuchi, Tenani, & Pissinati, 2016)	Conducted across one hospital in **Brazil**	26 OR nurses (*n*=5) and nurse technicians Response rate not provided	To examine job satisfaction of OR nurses in a Brazilian hospital	Index of work satisfaction (IWS)	Poor
(Reyka, 2015)	Conducted across four hospitals in the **USA**	45 OR nurses 31% response rate	To explore the impact of disruptive behaviour on OR nurse satisfaction	Index of Work Satisfaction (IWS)	Poor
(Stott & Johnstone, 2013)	Conducted via conference and two hospitals in **Australia**	Focus groups of 7-9 OR nurses	An investigation to explore job satisfaction exclusively with perioperative nurses	Qualitative - Focus groups	High
(Sveinsdóttir et al., 2016)	Conducted across one hospital in **Iceland**	187 nurses working in a surgical division 49% response rate	Investigating the influence of nurse unit managers' praise on nurses' practice, work environment, and job satisfaction	Job Satisfaction Scale plus one single job satisfaction question	Moderate
Surgeons					
(Ahmadiyeh et al., 2010)	Recruited via snowball sampling in the **USA**	18 surgeons- 12 female and 6 male	To understand variables leading to career satisfaction for women surgeons to better recruit, retain, and support them	Qualitative semi-structured interviews	High
(Ahmed et al., 2012)	Conducted via the Canadian Association of General Surgeons	32 general surgeons No response rate provided	To explore career satisfaction in Canadian general surgeons	Qualitative semi-structured interviews	High
(Ashton et al., 2013)	Conducted via international healthcare management consultancy in NZ	943 medical specialists (566 that conducted procedures) No response rate provided	To compare satisfaction between public and private settings	Cross-sectional survey design based on Finnish questionnaire & adapted	Moderate

(Bendorf, Helmer, Osland, & Tenofsky, 2010)	Conducted via members of the American Society of Breast Surgeons in the **USA**	772 breast surgeons 35.7% response rate	To assess how practice patterns of breast surgeons affect income and job satisfaction	Study-specific survey	Moderate
(Dowell, Westcott, McLeod, & Hamilton, 2001)	Conducted via the Medical Council of **NZ**	330 surgeons, 411 physicians, and 303 pharmacists No response rate provided	To assess job satisfaction, job-related stress, and psychological morbidity among NZ physicians, surgeons, and community pharmacists compared to GPs.	Job Satisfaction Scale	High
(Duffy & Richard, 2006)	Conducted via the American Medical Association in the **USA**	763 physicians (*n*=46 surgeons) No response rate provided	To examine physician job satisfaction across six major specialities	Two item scale 1-5 based on Spector (1997)	Poor
(End, Mittlboeck, & Piza-Katzer, 2004)	Conducted via the Institute for Empirical Social Research in **Austria**	206 female surgeons 58.7% response rate	To assess current professional and social characteristics of women surgeons in Austria, the perception of working conditions, and identify factors influencing professional satisfaction	Study-specific survey	Moderate
(Farley, Kramer, & Watkins-Castillo, 2008)	Conducted via members of the American Academy of Orthopaedic Surgeons in the **USA**	1,005 Surgeons 33.5% response rate	To explore the work satisfaction of orthopaedic surgeons over 50 years of age	Survey produced by the American Academy of Orthopaedic Surgeons	High
(Foulkrod, Field, & Brown, 2010)	Conducted via members of the associations for the surgery of trauma in the **USA**	412 trauma surgeons No response rate provided	To investigate if personality is correlated with job satisfaction in trauma surgeons	Minnesota satisfaction questionnaire (MSQ)	Moderate
(Grant, 2004)	Conducted via human services departments of hospitals in **NZ** and the **UK**	593 NZ and 795 UK doctors: 251 NZ and 380 UK surgeons	To compare and contrast levels of job satisfaction and job-related stress between	Cross-sectional survey design	Moderate

		92% response rate	doctors in NZ and the UK	Job satisfaction Scale	
(Harms et al., 2005)	Conducted via the university of Wisconsin with former surgery residents in the **USA**	110 former surgery residents from 1978 – 2002 No response rate provided	To explore personal and professional health and practice satisfaction over three decades	Study-specific questionnaire	Moderate
(Kang et al., 2015)	Conducted via members of the Korean surgical society in **Korea**	621 surgeons 14.5% response rate	To investigate stress and career satisfaction of Korean surgeons	Korean occupational stress scale	Moderate
(Klimo et al., 2013)	Unclear what setting sample came from in the-**USA**	85 neurosurgeons No response rate provided	To explore job satisfaction of neurosurgeons	Two-question approach and career and lifestyle survey	Moderate
(Kuerer et al., 2007)	Conducted via members of the Society of Surgical Oncology in the **USA**	549 surgical oncologists 36% response rate	To explore career satisfaction, practice patterns, and burnout among surgical oncologists.	Two-questions approach	Moderate
(Raptis et al., 2012)	Conducted via members of the American and European surgical associations across 16 **European countries, the USA and Canada**	439 surgeons: 170 north America 269 Europe 59% response rate	To identify factors influencing job satisfaction of academic surgeons within the first 10 years after certification	Global job satisfaction instrument (GJS)	High
(Shanafelt et al., 2009)	Conducted via members of the American college of surgeons in the **USA**	7,905 surgeons 32% response rate	To determine incidence of burnout, personal, and professional characteristics	Two-question approach	High
(Troppmann, Palis, Goodnight, Ho, & Troppmann, 2009)	Conducted via surgeons who had the American Board of Medical Specialties certification in the last 20 years	895 surgeons 25.5% response rate	To study career and lifestyle satisfaction among surgeons	Cross-sectional survey design Study-specific survey	Moderate
(Wai, Dandar, Radosevich,	Recruitment via management of 14 faculty	1,356 surgeons and	To identify critical factors associated with	Faculty forward	High

Brubaker, & Kuo, 2014)	medical schools in the **USA**	1,105 non-surgical physicians 70% response rate	surgeon satisfaction and intent to leave	engagement survey	

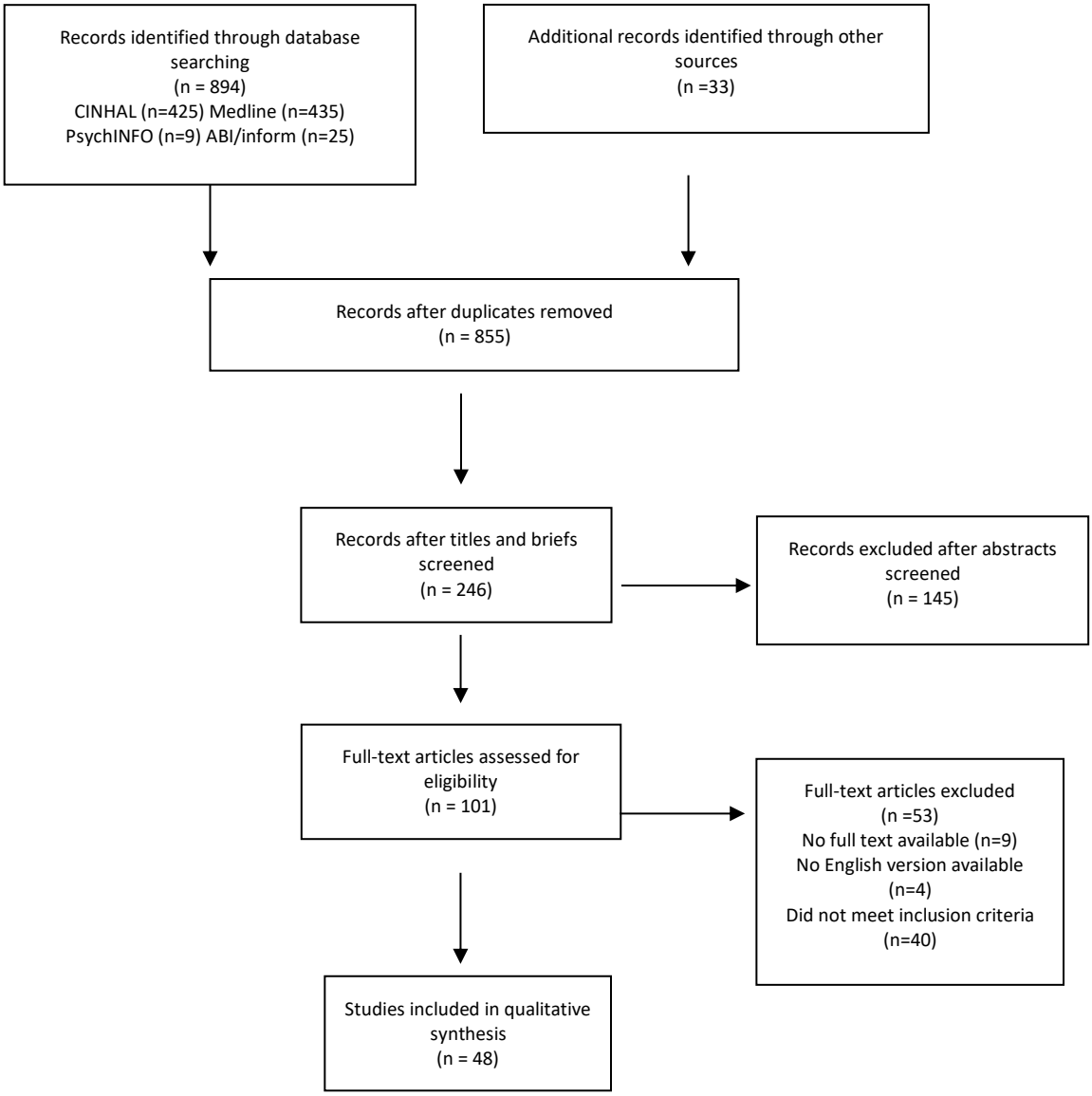


Figure 3.1: PRISMA flowchart

3.2.2 Findings

Of the 48 studies reviewed, 42 were quantitative studies, mainly cross-sectional survey design. Six were qualitative studies involving semi-structured interviews or focus groups.

These included fourteen nurse studies, ten anaesthetist studies, eighteen surgeon studies, and six studies that had a combination of disciplines. Due to a lack of studies that compared disciplines across the OR team, six studies were included that compared information on job satisfaction for more than one discipline despite not fully meeting the inclusion criteria. Four of these studies had a primary focus on 'safety attitudes' and two studies failed to explore an additional factor specific to the required disciplines. It was decided to include studies that used the same measurement tool to compare more than one discipline. This was due to the comparative nature of the review and the wide range of measurement tools utilised throughout the review. Studies that related to surgeon satisfaction were the most prominent and generally had the largest sample sizes. A wide variety of instruments were utilised to measure job satisfaction in the quantitative studies. Twenty-seven studies utilised a pre-existing standardised tool or a questionnaire based on a former study, with the remaining fifteen utilising a study-specific questionnaire. Many studies combined job satisfaction measurement with other measurement tools. The most commonly used pre-existing job satisfaction tools were the Warr, Cook, and Wall's Job Satisfaction Scale (Chen et al., 2009; Cram, 2002; Dowell et al., 2001; Grant, 2004; Nylenna et al., 2005; Sveinsdóttir et al., 2016) and the Stamp's Index of Work Satisfaction (Dunn, 2003; Paglione et al., 2016; Reyka, 2015). Also commonly used were two general questions to determine overall career satisfaction. These usually were: 'would you choose to be a surgeon again if you had the choice?', commonly followed by 'would you recommend your career to your children?'. For the purposes of this review, this measurement tool is referred to as the 'two-question approach' (Frank et al., 1999; Klimo et al., 2013; Shanafelt et al., 2009). A summary of all job satisfaction measurement tools utilised in the quantitative studies reviewed is presented in Table 3.2

Table 3.2: Summary of job satisfaction measurement tools utilised in quantitative reviewed studies

Job satisfaction measurement tool	Anaesthetists	Nurses	Surgeons	Mixed	Total studies
'Two-question approach' (career satisfaction focus)			3	1	4
Delphi process	1				1
Global satisfaction scale	1		1		2
Index of Work Satisfaction (IWS)		3			3
Job in a general instrument and descriptive index		1			1
Job satisfaction scale (JSS)		3	2	1	6
Korean occupational stress scale			1		1
Minnesota job satisfaction questionnaire	1		1		2
Nurses context index		1			1
OR management attitudes questionnaire				1	1
Study-specific questionnaire	6	1	7		14
Questionnaire based on another study	1	1	1		3
Safety attitudes questionnaire				3	3
Total	**10**	**10**	**16**	**6**	**42**

Job satisfaction was most commonly identified as moderately high across all three disciplines. Due to the heterogeneity of the samples and measurement methods, direct comparison between studies was often not possible. In the studies that provided an overall satisfaction percentage, nurse satisfaction ranged from 66%–96.2% (n = 4) (Beaman, 2005; Cram, 2002; Flin et al., 2006; Paglione et al., 2016), anaesthetist satisfaction ranged from 50%–82.6% (n = 5) (Gaszynska et al., 2014; Jenkins & Wong, 2001; Kinzl et al., 2005; Koshy et al., 2011; Lindfors et al., 2007), and surgeon satisfaction ranged from 49%–95% (n = 12) (Bendorf et al., 2010; End et al., 2004; Farley et al., 2008; Flin et al., 2006; Foulkrod et al., 2010; Harms et al., 2005; Kang et al., 2015; Klimo et al., 2013; Kuerer et al., 2007; Raptis et al., 2012; Shanafelt et al., 2009; Troppmann et al., 2009).

Three studies provided an overall team satisfaction mean score, utilising the Safety Attitudes Questionnaire. These studies were from the USA (n = 187), Sweden (n = 332), and Brazil (n = 132), with similar results of 77, 76.9, 78.9 out of 100 respectively (Carney et al., 2010; Göras et al., 2013; Leticia et al., 2015). Goras et al. (2017) and Carney et al. (2010) found little difference between nurse and physician (surgeon and anaesthetist) satisfaction, whereas a large study conducted across 17 different hospitals in Scotland (n = 352) utilising the OR Management Attitudes questionnaire found nurses were less satisfied than surgeons (this did not include anaesthetists) (78% v 92% respectively)(Flin et al., 2006). A longitudinal

Norwegian study of 1174 physicians found anaesthetists substantially less satisfied than surgeons (Nylenna et al., 2005). However, Frank et al. (1999) found relatively similar satisfaction results for female anaesthetists and female surgeons (89% v 84% respectively). A landmark study conducted by Shanafelt et al. (2009) measured the overall career satisfaction of 7905 US surgeons and found nearly three-quarters of surgeons would choose their profession again (74.0%), although only half (50.5%) would recommend the career to their children. Two further studies that also used the two-question approach found high satisfaction results for surgeons of 85.4% and 88% (Klimo et al., 2013; Kuerer et al., 2007). The largest study of anaesthetist job satisfaction was conducted by Jenkins and Wong (2001) (n = 946) and similarly, 75% of respondents reported high job satisfaction. Cram (2002) conducted a study with 393 OR nurses across 33 USA hospitals and found a lower result with 66% of nurses reporting high satisfaction.

Factors contributing to OR team job satisfaction

Understanding the key determinants of job satisfaction provides valuable information to guide the planning and implementation of strategies to improve rates of employee satisfaction. The articles reviewed found a variety of factors contribute to job satisfaction across the OR team. These can be grouped into eight central themes: personal characteristics, setting/speciality, work conditions, the clinical work, teamwork/professional relationships, autonomy, career development, and organisational factors/management.

Personal characteristics

Results relating to gender and job satisfaction are inconsistent, with five physician studies that suggest an association (Bendorf et al., 2010; Chiron et al., 2010; Kang et al., 2015; Raptis et al., 2012; Van Beuzekom et al., 2013) as opposed to ten studies that were unable to find a correlation. Eight studies reported no association with age, however, a small number of anaesthetist and surgeon studies found older age associated with an increase of satisfaction (n = 2) and middle–age was associated with a reduction in satisfaction (n = 2) (Chiron et al., 2010; End et al., 2004; Kinzl et al., 2005; Shanafelt et al., 2009). One nurse study reported that satisfaction reduced with older age (Eskola et al., 2016). Several studies identified tenure as contributing to satisfaction (two nurse studies, one anaesthetist study, and one surgeon study) (Beaman, 2005; Chiron et al., 2010; Cram, 2002; Duffy & Richard, 2006). Cram's (2002) study found that senior OR nurses were more likely to experience satisfaction in their roles. In

contrast, Kinzl et al. (2005) (*n* = 125) found that anaesthetists in leading positions and specialist roles had lower job satisfaction.

Other personal factors such as family situation have also been identified in two studies that suggest surgeons with children have a higher degree of satisfaction (Kang et al., 2015; Raptis et al., 2012). Four anaesthetist studies emphasise a correlation between good physical health and higher job satisfaction. These factors were not commonly explored in other disciplines (Gaszynska et al., 2014; Kinzl et al., 2005; Kluger et al, 2003; Lindfors et al., 2007).

Two nurse studies identified certain personalities as more likely to experience job satisfaction in the OR. Personality characteristics such as resilience, problem-solving ability, and being organised and methodical are thought to result in a higher degree of satisfaction (Chen et al., 2009; Stott & Johnstone, 2013). Stott and Johnstone's (2013) qualitative study proposed that those with more independent personalities and those that don't like working closely with others could be less satisfied in the OR setting. One physician study found qualities such as extraversion, emotional stability, conscientiousness, and openness were significant for satisfied trauma surgeons (Foulkrod et al., 2010).

Setting and speciality

While in-depth exploration into surgical specialities is beyond the scope of this review, the surgeon literature often refers to satisfaction in relation to speciality areas or type of practice (*n* = 10), a factor not commonly emphasised in anaesthetist or nurse literature (Ashton et al., 2013; Bendorf et al., 2010; Dowell et al., 2001; End et al., 2004; Farley et al., 2008; Harms et al., 2005; Klimo et al., 2013; Kuerer et al., 2007; Raptis et al., 2012; Shanafelt et al., 2009). Orthopaedic and paediatric surgeons are commonly reported as the most satisfied, whilst general surgery is commonly associated with a lower degree of career satisfaction. Studies are however inconsistent regarding many specialities, which may be due to methodological heterogeneity or may reflect the influence of additional variables.

Two studies suggest surgeons working in private practice may experience a higher sense of satisfaction than those in the public sector (Ashton et al., 2013; Dowell et al., 2001). According to Dowell et al. (2001) (*n* = 943) utilising the Job Satisfaction Scale, the private sector is particularly valued for the ability to work independently and apply one's own ideas in the workplace, even though the public sector is valued for its opportunities for further

development and education. Conversely, Shanafelt et al. (2009) identified that those in public practice settings have a higher overall career satisfaction based on the two-question approach.

The clinical role

A clinical role which is stimulating, challenging, and meaningful is a strong predictor of job satisfaction for team members across all three of the disciplines. Fulfilment from the work itself was identified as important to satisfaction in several nurse studies (Eskola et al., 2016; Stott & Johnstone, 2013). Qualitative studies found that the technological complexity of the role, nurse/patient interactions, and problem-solving opportunities, provided stimulation. Nurses in the OR enjoyed caring for one patient at a time compared to other areas of nursing with a higher patient/nurse ratio (Heinzelman, 2014; Stott & Johnstone, 2013). Anaesthetists often have varied clinical roles and may not work solely in the perioperative setting. The literature highlights how the quality of work, relationships with patients, and remaining intellectually stimulated utilising the full extent of their skills in a clinical role, are all important (Afonso et al., 2013; Gaszynska et al., 2014; Jenkins & Wong, 2001; Kinzl et al., 2005; Kluger et al., 2003). Similarly, surgeon studies report satisfaction from the clinical and technical aspects of their work, their relationships with patients, remaining intellectually stimulated, and solving patient problems quickly and effectively (Ahmed et al., 2012; Duffy & Richard, 2006; Kinzl et al., 2005; Klimo et al., 2013; Troppmann et al., 2009). Two studies suggest an association between increased time spent in the OR and improved career satisfaction (End et al., 2004; Shanafelt et al., 2009).

Autonomy/control over job

The importance of autonomy and having a sense of control over one's work decisions are commonly identified throughout the literature, particularly for surgeons ($n = 6$) and anaesthetists ($n = 5$) (Ahmed et al., 2012; Duffy & Richard, 2006; Gaszynska et al., 2014; Grant, 2004; Katz et al., 2010; Kinzl et al., 2005; Kluger et al., 2003; Lindfors et al., 2007; Raptis et al., 2012; Shanafelt et al., 2009; Van Beuzekom et al., 2013). Only two nurse studies identified autonomy as a key contributor to job satisfaction (Dunn, 2003; Paglione et al., 2016), although collaborating in decision-making processes was identified as an important factor in other studies (Donald, 1999; Heinzelman, 2014). Qualitative interviews with 32 surgeons found that they wanted more control over professional time and resources and they felt this contributed significantly to career satisfaction (Ahmed et al., 2012). Anaesthetists are in a difficult position in relation to autonomy as the use of their time is dependent on the schedules

of surgeons and other specialists, which reduces their professional control and efficacy (Lindfors et al., 2007). Many anaesthetists also identify a lack of clinical autonomy or lack of input into patient management as a key contributor to job dissatisfaction (Kluger et al., 2003; Lindfors et al., 2007; Van Beuzekom et al., 2013).

Team dynamics

Qualitative nurse studies highlight how satisfaction can be gained from the unique OR teamwork environment which involves a high level of intimacy and interdependence working together to achieve a particular goal. The nurse-physician relationship within the team is particularly significant (Donald, 1999; Eakin, 2017; Eskola et al., 2016; Heinzelman, 2014; Johnson, 2008; Stott & Johnstone, 2013; Sveinsdóttir et al., 2016). Eakin (2017) conducted a qualitative study with 12 OR nurses and found being acknowledged by the surgeon for their job performance was related to improved performance, increased confidence to speak up, and feeling more valued by other members of the surgical team. Dunn (2003) (n = 145) found that 73.4% of OR nurses did not feel acknowledged for their work and 79% felt commonly reprimanded in front of others. Flin et al.'s (2006) survey of team members found while nurses wanted better communication within the team, surgeons wanted more consistency in team composition. Similarly, for anaesthetists, positive team interaction and a relationship where skills and ideas are valued and recognised (particularly from surgeons) are emphasised in the literature (Afonso et al., 2013; Chiron et al., 2010; Gaszynska et al., 2014; Kinzl et al., 2005; Van Beuzekom et al., 2013). Jenkins and Wong (2001) found a significant association between those that felt highly regarded by surgeons and higher job satisfaction. Simple communication, such as being thanked at the end of a case, made a difference. Of note, this was less of an issue for older anaesthetists who felt they were held in higher regard than their younger counterparts. Surgeon satisfaction studies did not often explore the team dynamic in relation to work satisfaction, with only one study identifying good team relationships as a key factor associated with job satisfaction for surgeons (Raptis et al., 2012). Four studies emphasised the surgeon's relationship with other surgical colleagues as significant, acting as a key provider of social and emotional support (Ahmed et al., 2012; End et al., 2004; Klimo et al., 2013; Wai et al., 2014).

Work conditions

Working long hours is a common complaint among surgeons and anaesthetists in the OR, with many working an average of 60-plus hours a week (Dowell et al., 2001; Jenkins & Wong, 2001; Kang et al., 2015; Kluger et al., 2003; Koshy et al., 2011; Shanafelt et al., 2009;

Wang et al., 2015). Two surgeon studies and four anaesthetist studies identified long working hours as a key area of dissatisfaction (Bendorf et al., 2010; Dowell et al., 2001; Frank et al., 1999; Jenkins & Wong, 2001; Kluger et al., 2003; Troppmann et al., 2009; Wang et al., 2015). Wang et al.'s (2015) Taiwanese study (*n* = 474) found long working hours were significantly associated with a high number of anaesthetists (54.9%) not wanting to continue with anaesthesia. Bendorf et al. (2010) (*n* = 772) found that surgeons who worked 35–45 hours per week were the most likely to feel satisfied in their jobs. Difficulty achieving a work-life balance is a common consequence of the long work hours (Ahmed et al., 2012; Gaszynska et al., 2014; Troppmann et al., 2009). Workload also impacts on job satisfaction with one surgeon study reporting workload pressures as the highest score for dissatisfaction (Ashton et al., 2013). Dowell's (2001) study found dissatisfaction for surgeons was associated with stress caused by feeling overwhelmed by paperwork and financial concerns. Gaszynska et al.'s (2014) Polish study of 134 consultant anaesthesiologists found only 36% were happy with their workloads, they found a significant correlation between high workload and both reduced satisfaction and stress. Two studies identify the addition of the nurse anaesthetist role (a specialist nurse trained in anaesthesia) as substantially improving workload and overall satisfaction for anaesthetists (Kluger et al., 2003; Wang et al., 2015). Only one nurse study identified concern over workload and hours (Cram, 2002). Four studies however, identified fair compensation as a key contributing factor to overall satisfaction (Chen et al., 2009; Dunn, 2003; Eskola et al., 2016; Johnson, 2008). Although compensation is commonly identified as important to job satisfaction across the three disciplines, not all studies find a clear association (Afonso et al., 2013; Gurley et al., 2003; Lindfors et al., 2007). End et al. (2004) found that although it was seen as an essential element, it was not ranked as the most important by many surgeons.

Career development, research opportunities

Career development was identified as highly important in relation to job satisfaction in several surgeon and nurse studies (*n* = 5, *n* = 4 respectively), however, was less apparent in the anaesthetist literature. Nurse studies emphasised how a lack of career pathway and promotional opportunities can significantly reduce job satisfaction (Dunn, 2003; Eskola et al., 2016; Flin et al., 2006; Johnson, 2008). For surgeons, the importance of time for research and professional development was highlighted (Ashton et al., 2013; Kuerer et al., 2007; Raptis et al., 2012; Shanafelt et al., 2009). Kuerer et al. (2007) found that surgical oncologists that spent at least 25% of their time on research had improved satisfaction and a reduced risk of burnout.

Organisational/management

Feeling supported and recognised by management personnel was identified as a key contributor to job satisfaction across all three disciplines. Surgeon and anaesthetist studies emphasise how pressure from management to increase volume and turnover of patients negatively impacts job satisfaction (Ahmadiyeh et al., 2010; Ahmed et al., 2012; Duffy & Richard, 2006; Grant, 2004; Jenkins & Wong, 2001). Surgeons in Ahmed et al.'s (2012) qualitative study describe often feeling conflicted between hospital administration and clinical practice priorities and a lack of alignment between patient care and fiscal concerns. An Australian study of 422 anaesthetists found time and turnover pressures were the most commonly identified reason for stress (Kluger et al., 2003). Sveinsdottir et al. (2016) explored the effects of praise from management on OR nurses and found that lack of praise and feeling one's knowledge was not respected by a head nurse were key factors relating to dissatisfaction and nurse intention to leave the OR setting.

3.2.3 Discussion

Job satisfaction across the OR team is a complex combination of personal and professional factors. While one single factor could sometimes be responsible for a reduction in job satisfaction, it is likely that it is the combination and intensity of contributing factors that will determine the extent to which job dissatisfaction is experienced. This review finds approximately one-third of team members will commonly experience reduced job satisfaction in the OR setting, an alarmingly high value for current times when recruitment and retention are of the utmost importance (Ahmed et al., 2012).

Overall, the main predictors of job satisfaction in this review are in line with general and commonly identified job satisfaction factors (Dormann & Zapf, 2001). Three key significant determinants for all three disciplines across the OR team are; fulfilment from the clinical work (job content), work conditions (hours, workload, and/or compensation) and sufficient support and recognition from management. Evidence from this review does not clearly distinguish one discipline as more satisfied than others in the OR, however, it does suggest that some contributing factors are of more relevance to a particular role. In addition to the three factors identified, OR nurse literature emphasises the importance of the nurse-physician relationship (particularly, but not exclusively, with surgeons) finding recognition and positive communication not only improves job satisfaction but also improves confidence and

performance. Sufficient job prospects and training opportunities also appear important for maintaining job satisfaction for OR nurses. This is in keeping with Hayes, Bonner, and Pryor's (2010) review which found coping strategies, co-worker interaction, direct patient care, organisational policies, and education opportunities to be highly important for job satisfaction in the acute hospital setting for nurses. Literature relating to anaesthetists and surgeons finds that job satisfaction may also be reduced by long hours, a heavy workload, feeling pressured by management to meet targets, and a lack of autonomy. Findings suggest anaesthetists need opportunities to fully utilise their skills within their role, to feel intellectually stimulated, as well as, feeling acknowledged and respected by their surgical colleagues. This is in line with Rama-Maceiras et al.'s (2012) review of anaesthetist job satisfaction which identified recognition of value, professional relationships, worker autonomy, and leadership as key factors. Surgeon studies highlight how setting and speciality may influence satisfaction as well as the importance of research, professional development, and strong social support systems (particularly from other surgical colleagues). This is supported by Scheurer, McKean, Miller, and Wetterneck's (2009) systematic review that also found work demands (hours, workload, stress), autonomy and collegial relationships had a strong association with job satisfaction for physician hospitalists.

Herzberg’s two factor theory of motivation is a well-known job satisfaction model that provides a useful lens through which to view and organise the overall findings. This model suggests factors that satisfy and dissatisfy employees are in fact independent of each-other; factors that lead to job dissatisfaction are not synonymous with factors that lead to job satisfaction and vice versa (Herzberg, 1959). The model proposes that factors that lead to a sense of personal growth and value are more likely to motivate employees, leading to a sense of job satisfaction, whereas external factors such as work conditions and salary will lead to dissatisfaction if not perceived as adequate or fair, but are unlikely to result in job satisfaction. Figure 3.2 demonstrates how key features associated with overall OR team satisfaction can be adapted to this model.

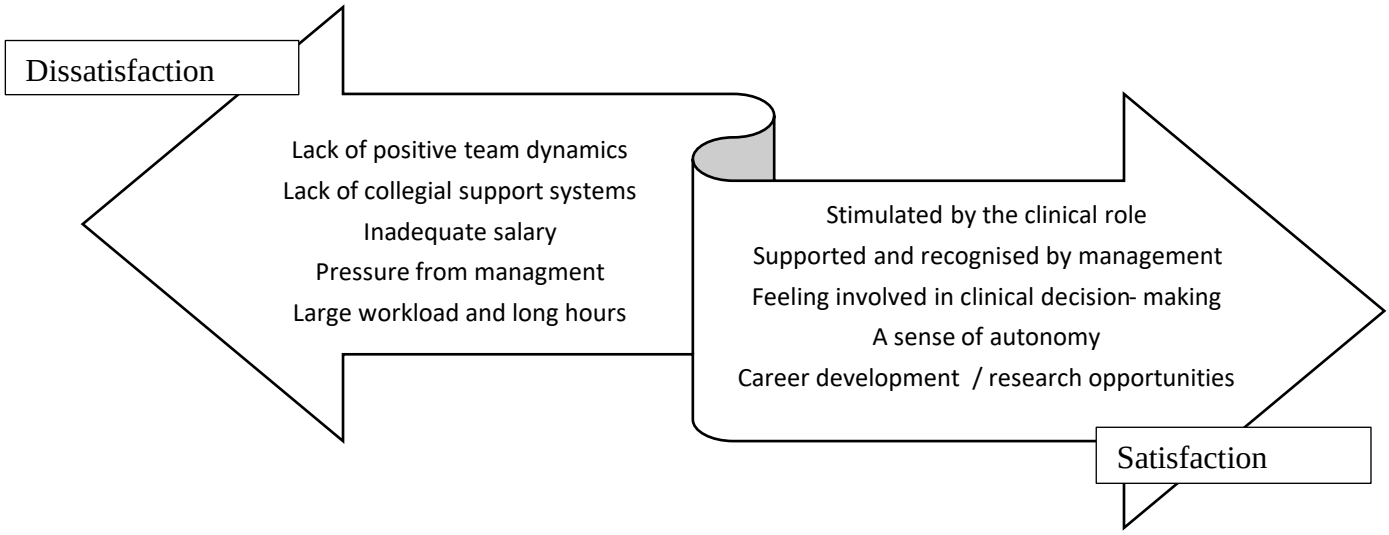


Figure 3.2: Adapted OR team version of Herzberg's two factor theory

While this general model provides managers with a broad framework for creating awareness of factors that will influence job satisfaction/dissatisfaction for the wider team, it does not capture how some job roles may need more emphasis on particular areas than others, nor does it capture the complexity of addressing job satisfaction across an interprofessional team. The findings from this review challenge a 'one size fits all' approach to job satisfaction. Interprofessional teams, particularly in the OR setting, are complex, influenced by deeply embedded hierarchical structures, power imbalances, and variances in professional philosophies, values, and expectations (Bleakley, 2013; D'Amour, Ferrada-Videla, San Martin Rodriguez, & Beaulieu, 2005; Gillespie et al., 2010; Sacks et al., 2015). OR team members work in intimate teams and are highly inter-dependent (Gillespie et al., 2010). It is therefore not surprising that the findings from this review highlight how aspects of job satisfaction are inter-related between team members. Factors that influence satisfaction outcomes such as acknowledgement and respect between members, the level of autonomy in a job role or the development of roles within the field, are impossible to address without impacting on other members of the team. Any interventions require careful consideration of the implications for

the other team members. If decisions are made in isolation, without considering the impact on other roles, attempts to improve satisfaction for one profession may unintentionally create a division between team members. This can amplify the already existing tendency for team members to gravitate to their own professions and foster a culture of competitiveness that undervalues other members (Bleakley, 2013; D'Amour et al., 2005). D'Amour et al. (2005) identify four key elements necessary for cohesion between team members, providing useful insight for OR managers and team members when addressing job satisfaction issues. They are: 1) *sharing* (of decision-making, responsibilities, health philosophies, and perspectives), 2) *partnership* (collegial-like relationships where there is trust and respect and a valuing of each-others perspectives and contributions), 3) *inter-dependency* (mutual dependence, where individual contributions are maximised and the overall results of the team are enhanced), and 4) *power* (a sharing of power based on knowledge and experience rather than titles and functions).

Managers are, however, in a difficult position. They are expected to produce well-functioning teams, with optimal patient outcomes, whilst meeting productivity targets and ensuring all stakeholders' expectations are met (Wicks & St. Clair, 2007). The role of management is a recurring theme throughout the literature across all three professions. Many studies in this review report feeling a lack of support and acknowledgement by management. Physicians (both surgeons and anaesthetists) commonly describe feeling pressured to meet increasing productivity targets whilst achieving quality clinical outcomes (Ahmadiyeh et al., 2010; Ahmed et al., 2012; Duffy & Richard, 2006; Grant, 2004; Jenkins & Wong, 2001). Wicks and St. Clair (2007) recommend managers embrace this fundamental tension between control versus flexibility and external versus internal issues, and explore ways in which one does not need to be sacrificed at the expense of another.

Implications for practice

This review has important implications for future practice and policy development that directly impacts on retention, burnout, stress, and performance outcomes in the OR setting. Satisfied well-functioning teams are linked to the team's efficiency, decreasing overall stress, and improving patient safety (D'Amour et al., 2005). Improving job satisfaction from an inter-professional perspective within the OR presents a unique challenge for management personnel, with each discipline working within its own culture and group philosophy (Sacks et al., 2015). There are numerous factors identified in this review that have the potential for modification at

an organisational level, such as increasing recognition and support from management, improving team dynamics/communication, developing autonomy, providing career development opportunities, and considering the implications of work conditions. Measuring and addressing job satisfaction from a team perspective rather than from the perspective of a single discipline allows management to see a 'whole team' picture. This will support the development of effective strategies and early interventions to ensure job satisfaction is maintained across the OR team.

Limitations

The key limitation of this review is the large range of job satisfaction measurement tools utilised in the various studies. This may have impacted on the reliability of comparisons made between studies. In addition, the cross-sectional survey design methodology utilised in the majority of studies limits any causal claims. It is also possible that some articles may have been missed during the search process.

Conclusion

While there is a moderate amount of literature pertaining to work satisfaction for specific disciplines in the OR, no studies or reviews to our knowledge at the time of writing this review specifically focus on exploring job satisfaction across the OR team. Enhancing job satisfaction requires a long-term commitment at an organisational level, actively seeking to address factors that may reduce satisfaction and promoting those that are likely to increase it, whilst considering how they inter-relate. Further research into factors contributing to work satisfaction across the OR team is needed to understand in more depth how they inter-relate. In addition, further investigation into a 'team satisfaction' management model, appropriate measurement tools, and the impact of job satisfaction on productivity and performance outcomes within the OR would be valuable to follow on from the findings from this review.

3.3 Additional information

3.3.1 Literature review update

The following section provides an update of the literature published since the above review. It presents relevant new studies and considers and discusses any new contributions to the literature relating to job satisfaction in the OR.

3.3.2 Method

The search strategy for the update was conducted with the same search terms used previously in the databases of Medline, PsychINFO, and CINAHL for studies published between December 2017 – July 2020. To be included in this review, a study must focus on job satisfaction and have explored at least one contributing factor of job satisfaction. Studies that focused specifically on the safety climate, trainees, or anaesthetic technicians or assistants were excluded as per the inclusion and exclusion criteria of the original review. The search yielded a total of 279 results (Medline *n*=157, CINAHL *n*= 112, PsychINFO *n*= 10), 157 studies remained after removal of sixteen duplicates. Upon screening of titles and abstracts, 16 full-text articles were assessed for eligibility; a final sample of 12 studies met the inclusion criteria for studies to be included in the literature update. These studies were assessed for quality (QA) and relevance as per the original literature review protocol. A summary of study characteristics and combined ratings are presented in Table 3.1.

Table 3.3: Study characteristics for updated literature

Author	**Setting**	**Sample**	**Study aim**	**Study type**	**Job satisfaction measure**	**Quality appraisal**
	Anaesthetists					
(Kisten & Kluyts, 2018)	Distributed to all 1,509 members of the **South African** Society of Anaesthesiologists	463 Anaesthesiologists	To evaluate personality traits associated with job satisfaction among South African anaesthetists using the Big Five Inventory	Cross-sectional	Two-question approach	Moderate
(Kibwana, Yigzaw, Molla, van Roosmalen, & Stekelenburg, 2018)	Part of a wider study of 1,354 health professionals working in 227 hospitals and health centres in **Ethiopia**	252 anaesthetists	To determine the level of and factors that predict job satisfaction among a national sample of anaesthetists	Cross-sectional	37 items – study-specific tool	High
(Li et al., 2018)	211 hospitals in **China**	2,873 anaesthesiologists	To investigate job satisfaction and burnout to determine the incidence and associated factors	Cross-sectional	Minnesota Satisfaction Questionnaire	High

(Mousavi, Asayesh, Sharififard, & Qorbani, 2019)	Sample is from the website of the Paramedical Faculty in **Iran**	177 anaesthesiologists	To examine the degree of intention to leave anaesthesiology and job satisfaction among anaesthesiologists and examine the relationship between these two variables	Cross-sectional	10 item job satisfaction scale	Moderate
(Shetti, Karigar, & Mustilwar, 2018)	Taken from a sample of 5,000 registered anaesthesiologists by email through an online survey system in **India**	1,219 anaesthesiologists	To study stress level, job satisfaction, and quality of life of practising Indian anaesthesiologists	Cross-sectional	Study-specific survey	Moderate - high
Surgeons						
(Gates, Workman, & Collier, 2019)	One surgical institution in the **USA.**	41 Surgeons, 21 Physician assistants and Nurse Practitioners	To evaluate job satisfaction and workplace stressors in surgical providers	Cross-sectional	Single item measure	Moderate
(Mahoney et al., 2020)	An email sent to Fellows of the American College of Surgeons who actively practice in the **USA** and have completed a general surgery residency or integrated cardiothoracic, vascular, or plastic surgery fellowship.	3,807 surgeons	To evaluate the state of the surgical workforce by exploring current practice patterns, job satisfaction, and reasons why surgeons consider leaving surgery.	Cross-sectional	Two-question approach	Moderate
(Holzer et al., 2019)	Sample is from 22 different hospitals in **Switzerland**	105 surgeons (81 completed five times)	To gain a more detailed picture of hospital surgeons' daily work - how much time they spend with different tasks, how they like them, and associations with satisfaction.	Daily diary	Single-item measure Using faces scale	Moderate -high
(P. W. Lu, Columbus, Fields, Melnitchouk,	Sample taken from a single **USA** academic surgery centre. Interviews	14 female and 9 male Surgeons	To examine drivers behind burnout and career	Qualitative	Semi-structured interviews	Moderate

& Cho, 2020)	were conducted by a faculty member at the institution until thematic saturation was reached.		dissatisfaction in female and junior surgical faculty, with specific attention paid to gender-based differences.			
(Jackson et al., 2018)	A survey was sent via email invitation to 6,957 surgeons in the **USA**	993 surgeons	To delineate the risk factors that contribute to reduced job satisfaction.	Cross-sectional	Job in general scale	Moderate -high
	Nurses					
(Kurimoto, Minagawa, & Tamura, 2020)	1,523 questionnaires were distributed to 82 hospitals in **Japan**	1,177 OR nurses Japan	The purpose of this study was to investigate job satisfaction, experience, emotions, and categorised characteristics of operating-room nurses	Cross-sectional	Seven items Study-specific	High
(Lee et al., 2020)	Secondary analysis of data collected in 2014 from sample gained via provincial nurses' union to a stratified random sample of registered perioperative nurses in **Canada**	113 perioperative nurses	To investigate factors associated with perioperative nurse job satisfaction and intention to leave	Cross-sectional	Two-question approach	Moderate -high

3.3.3 Findings

Twelve studies were included in the review update. Five were anaesthetist studies, two nurse studies, and five surgeon studies. No studies focused on job satisfaction across the whole OR team. Job satisfaction was measured using a range of tools. One study used the Job in General survey, one study used the Minnesota questionnaire, five studies used one- to two-item measures, four studies used study-specific tools. One study was qualitative and conducted semi-structured interviews, while another study used a daily diary method over five days. Anaesthetist studies were conducted in Iran, China, India, South Africa, and Ethiopia. The five surgeon studies were conducted in the USA (n=4) and one in Switzerland. One nurse study was conducted in Japan and the other in Canada.

The anaesthetist and surgeon studies report moderately low to high overall satisfaction scores ranging from 65% to 81% reporting job satisfaction (Gates et al., 2019; Holzer et al.,

2019; Kisten & Kluyts, 2018; Li et al., 2018; Mahoney et al., 2020; Shetti et al., 2018). Exceptions include: one study (Kibwana et al., 2018) which reported the percentage of satisfied anaesthetists as 42.5% (n=252); Mousavi et al.'s (2019) Iranian study which identified that 39.5% of anaesthetists (n=177) reported that they wanted to leave the profession in the next year and Mahoney et al.'s (2020) study which found 26% of US surgeons had the intention to leave the profession within the next two years (n=3,807). The two nurse studies did not provide overall satisfaction results.

Key findings related to the factors that influenced job satisfaction in the recent literature were centred around personal characteristics, team dynamics, work conditions, and autonomy/control of the job. The number of years working in a role continues to be a common factor relating to job satisfaction in the OR. Kibwana et al. (2018) (*n*= 252) found anaesthetists with more than 10 years' experience to be more satisfied with their jobs. Similarly, Gates et al. (2019) found that surgeons that had been practising for 11-15 years were the most satisfied. However, they suggest that job satisfaction levels reduced among those working more than 20 years. Kurimoto et al.'s (2020) perioperative nurse study suggests OR nurses can be categorised into five types of OR nurses 1) new graduates, 2) those with less than 5 years' experience in OR nursing, 3) those with 5 – 10 years' experience, 4) those with more years' experience working in specialities other than OR nursing, and 5) veteran nurses with 11- 20 years' OR experience. Their study (*n*= 1,177) found that new graduates reported the highest job satisfaction, followed by those with 5 years or less experience. Perioperative nurses with 5 – 10 years' experience reported the lowest job satisfaction. Kurimoto et al. (2020) suggest that motivation drops after 4 -5 years of working as OR nurses, in contrast to other nursing specialities for whom the drop in job satisfaction often occurs later.

Female and younger aged were found to be associated with a decrease in satisfaction for surgeons in Jackson et al.'s (2018) study of 993 US surgeons. Their study did not find any relationship between job satisfaction and surgical speciality or experience. Kisten and Kluyts (2018) anaesthetist study (*n*=463 anaesthetists) found that the personality trait of 'neuroticism' was most strongly negatively correlated to job satisfaction and the trait of being 'agreeable' was most strongly positively associated with job satisfaction based on the Big Five Inventory.

The clinical role continues to be commonly identified as a key influencing factor in surgeon studies. Holzer et al. (2019) found the surgery itself the most preferred task for

surgeons, closely associated with job satisfaction when experiences were positive (*n*=81). Job satisfaction was not found to be significantly correlated with the actual hours spent in surgery. Autonomy or feeling in control of one's work was also identified by two surgeon studies as a key contributor to job satisfaction (Holzer et al., 2019; Lu et al., 2020). Lu et al. (2020) conducted qualitative interviews with 23 US surgeons and found that when surgeons relate to and enjoy their experience with patients career satisfaction was increased.

Team dynamics were commonly identified as a key factor influencing job satisfaction in the nurse studies. Both studies reported job satisfaction of nurses to be impacted by the nurse – physician relationship (Kurimoto et al., 2020; Lee et al., 2020). Kurimoto et al. found that for OR nurses with five or fewer years' experience (not new graduates), communication and relationships with co-workers and doctors was particularly influential. Teamwork and collegiality were identified as a key factor for job satisfaction by one surgeon study (Lu et al., 2020).

Workload and/or hours per week were identified as closely associated with dis-satisfaction in two surgeon studies (Gates et al., 2019; Jackson et al., 2018). One study found that surgeons that work more than 40 hours per week are more likely to find issues relating to efficiency in the OR as a major stressor (Gates et al., 2019).

3.3.4 Discussion

The additional literature within the last three years is generally consistent with the original review. Kurimoto et al. (2020) and Lee et al.'s (2020) findings relating to the nurse-physician relationship are in line with the earlier literature. There are some minor areas of difference to note. Holzer et al. (2019) did not find a significant correlation between the actual hours spent in surgery and job satisfaction and suggest it is the quality of the time in surgery, not the quantity that is important. This is in contrast to two earlier studies that report an association between increased time spent in the OR and improved career satisfaction (End et al., 2004; Shanafelt et al., 2009). This may be due to the differing methodology. Holzer et al. (2019) used a daily diary study over five shifts to correlate to an overall survey, so were able to distinguish between positive and negative surgical experiences in a way that the cross-sectional surveys could not. Another finding of note is that of Jackson et al. (2018) who found being female to be associated with a decrease in satisfaction for surgeons. Results relating to

gender and job satisfaction in the original review were inconsistent, with five physician studies that suggest a significant association (Bendorf et al., 2010; Chiron et al., 2010; Kang et al., 2015; Raptis et al., 2012; Van Beuzekom et al., 2013) as opposed to ten studies that were unable to find a significant correlation. Jackson et al.'s (2018) study of 993 surgeons provides further evidence in support of a reduction of job satisfaction in US female surgeons compared to their male counterparts.

Job satisfaction measurement tools utilised in the studies were similar to the earlier studies, with two studies using well-known surveys while others created study-specific questionnaires. A number of nurse and anaesthetist studies used one- or two-item measures, an approach which had not been used in any previous studies for these groups. These changes are perhaps indicative that perspectives about the use of single-item measures in the health sector have changed, although it is important to point out many are using versions of the controversial eNPS that was discussed in the previous chapter. There was also a study which used a daily diary method. This is the first study of the now 60 studies reviewed that has used this methodology. The heterogeneity between the tools utilised (particular between job roles) remains a key limitation of the review.

3.4 Chapter summary

This chapter identifies and synthesises the existing literature relating to job satisfaction in the OR for anaesthetists, nurses, and surgeons across the world. It provides key insights into the factors influencing job satisfaction across the OR team and deepens the understanding of which job satisfaction measurement tools are utilised in the setting. A lack of studies viewing job satisfaction from an interprofessional team perspective emerges which suggests that more consideration of this is needed in future research. Further to this, very few studies utilised one- and two-item measures, even less so when excluding the eNPS. Using these measures on a frequent basis appears to be not commonly utilised and explored in the literature, particularly within healthcare, and the OR setting. To address this gap, this study investigates the value, validity, and overall feasibility of measuring job satisfaction using a daily single-item measure across the interprofessional team.

Chapter 4 : Methodology

4.1 Introduction

This study uses an action research methodology within a complexity science theoretical framework. Specific methodological approaches include collaborative action research and implementation science (predominantly the Consolidated Framework for Implementation Research). This chapter provides an in-depth overview of the methodological approach, unpacking complexity science, action research and implementation science and outlining how they work together to underpin the study design for this research.

4.2 Complexity science

Complexity science is becoming an increasingly popular theoretical framework for conducting research in the health sector (Braithwaite, Clay-Williams, Nugus, & Plumb, 2018; The Health Foundation, 2010) and provides the overarching theoretical framework for this study (see Figure 4.1).

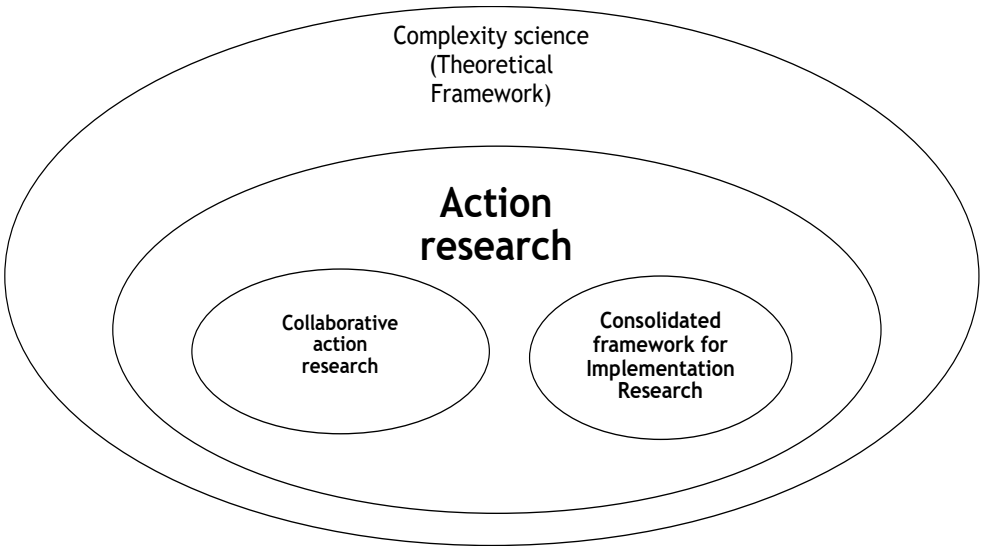


Figure 4.1 Overview of the methodology

Healthcare is regarded as having high levels of complexity, due to its multiple stakeholders, numerous job roles, and the dense populations it serves (Braithwaite et al., 2018; The Health Foundation, 2010). Most relevant to this study is the idea that healthcare organisations, the healthcare workforce and healthcare teams can be viewed as 'complex adaptive systems' (CAS). That is, they are a dynamic network of agents, acting in parallel, constantly reacting to what the other agents are doing, which in turn influences the behaviour of the network as a whole (Braithwaite et al., 2018; McDaniel, 2008; The Health Foundation, 2010). The concept of CAS has been around since the 19th century and has been applied to economics, psychology, biology, cybernetics, anthropology, and the natural sciences (The Health Foundation, 2010).

A CAS has a number of key characteristics (Braithwaite , Clay-Williams, et al., 2018; McDaniel, 2008; Pype et al., 2017; The Health Foundation, 2010) These are:

- The CAS is not linear - it is complex, unpredictable, and dynamic.
- The CAS is governed by psychological, or social rules rather than the demands of the system dynamics.
- The CAS will adapt to other people's behaviours through learning, interactions, and experimenting.
- The adaptation and learning within the CAS tend to result in self-organisation.
- Behaviour patterns and creativity emerge rather than being designed into the system.
- The CAS cannot be broken down into its individual parts (people) to understand it, as it is the combination or combinations within the CAS that we need to understand.

CASs are dominated by collective behaviours. In healthcare, this typically relates to the behaviours of networks of clinicians, managers, policymakers, and patients, alongside their procedures and equipment, all interacting for a common purpose. Each agent in the CAS will have multiple other overlapping professional and personal roles which they consciously or subconsciously bring to the CAS (Braithwaite, Clay-Williams, et al., 2018). The OR CAS will also be unknowingly influenced by the smallest of interactions from a smile across the corridor or a conversation around the coffee machine. These interactions can snowball and lead to much larger events down that track (Braithwaite, Clay-Williams, et al., 2018; McDaniel, 2008). The ordered flow chart of the hierarchical ladder in the OR does not take account of the numerous

other factors at play. As a CAS, the OR team will consciously or subconsciously run by its own set of unstated rules, form its own subgroups, create its own informal leaders, and will adapt to different circumstances as needed (Braithwaite, Churruca, Long, Ellis, & Herkes, 2018). This 'human' element underpinning the OR team is difficult for managers to account for. Despite all the formal procedures, there will always be a level of unpredictability and uncertainty (Tsai et al., 2017).

There are a number of OR studies based on complexity theory starting to emerge that explore elements of the OR team as a CAS. Baumgardner (2016) conducted a study exploring surgical start times; his findings highlight how minor perturbations of many different types can cause major changes down the track. For example, he suggested that a delay in the first case of the day can have major implications for the cases at the end of the day. Barth, Schraagen, and Schmettow (2015) also viewed OR teams as CASs and observed key changes in communication network structures. Further research into the dynamics of the OR team as a CAS is needed.

From a research perspective, viewing healthcare systems, and more specifically the OR team, as a CAS has a number of implications. In the past, researchers have viewed organisations as machines, assuming that if they took the machine apart and understood the components, then they would understand the whole. Further, if each part was made to work better, the whole system would also work better (The Health Foundation, 2010). Complexity science argues that this is actually not the case; instead, CASs are in fact best studied as a whole (Braithwaite, Clay-Williams, et al., 2018; The Health Foundation, 2010). The overall behaviour of the system is the result of many decisions made constantly by individual agents (The Health Foundation, 2010). A CAS is a unit in itself, which will evolve over time and adapt in response to changes to the composition of the participants, such as the addition of team members and the re-shuffling of social and professional relationships. The adaptabilities of the team, and its propensity for change, must be understood and treated as a whole if we are to make progressive changes to the outcomes of the OR team (Braithwaite, Clay-Williams, et al., 2018). It is important to remember that most systems are embedded within other systems. For example, the OR is embedded within a hospital system and the hospital also belongs to a wider health system and political landscape, each with its own system and level of complexity. How employees in a system relate to one another and what emerges from these interactions over time is deemed critical to the system's effectiveness and should be the focus for creating

positive outcomes and problem-solving within a CAS framework (Braithwaite, Clay-Williams, et al., 2018; The Health Foundation, 2010).

4.3 Action research

Action research is a term that is used to describe a global family of related approaches (Coghlan & Brydon-Miller, 2014). It is an increasingly popular alternative to traditional research inquiry methods across the healthcare sector (Costello, 2003; Huang, 2010). The over-arching features of action research lie in its participatory, hands-on approach to research. It aims to gain knowledge whilst simultaneously changing or developing practice (Moule & Goodman, 2014). Its pragmatic and participatory approach to problem-solving is used to increase understanding, to evaluate, and most importantly, to generate changes in a given setting (Costello, 2003; Williamson, Bellman, & Webster, 2012). The term action research was introduced by a social psychologist named Kurt Lewin in the mid-1940s. Lewin saw this approach as a promotion of democracy, emphasising social change through empowerment. He described it as 'research leading to social action' involving a continuous process of observation, reflection, and problem-solving (Ivankova & Wingo, 2018; Moule & Goodman, 2014). He felt strongly that action research should generate solutions to real-world problems rather than simply disseminating new ideas into academic journals (Williamson et al., 2012).

In practice, action researchers aim to develop and apply techniques that enable groups to change aspects of their social or organisational lives for themselves. Participants are actively engaged in the research activities and outcomes, with the ultimate goal being to generate meaningful change (Ivankova & Wingo, 2018; Moule & Goodman, 2014; Williamson et al., 2012).

Collaborative research is a particular approach to action research with a distinctive focus on researchers collaborating with people who have an expertise in and knowledge of a particular form of practice or of a particular practical setting (Coghlan & Brydon-Miller, 2014). In healthcare, collaborative action research is predominantly concerned with researchers working together with healthcare practitioners as partners in the design and application of the research (Huang, 2010; Williamson et al., 2012). This participatory approach is a distinguishing feature of collaborative action research, utilising the different strengths of all parties with a focus on the mutual benefit of people working together to achieve positive change

(Coghlan & Brydon-Miller, 2014). Working with practitioners guarantees that the practical aims of the study will be met, while the researchers ensure that the technical aims are met. In collaborative action research, it is imperative that practitioners are active participants in the research; this act alone has the power to begin a process of transformation within the environment (Coghlan & Brydon-Miller, 2014; Huang, 2010).

There are numerous variations of the action research model. However, it is most commonly described as a simple cyclical process of four research stages: planning, acting, observing, and reflecting (see Figure 4.2) (Costello, 2003; Ivankova & Wingo, 2018). The central idea of action research is the application of an action or an intervention into one or many research cycles to assist the development, implementation, and evaluation of plans for practice improvement (Costello, 2003; Ivankova & Wingo, 2018). The most common process begins with identifying the issue at hand and reflecting on possible solutions. Fact-finding then allows researchers to learn more about the problem so that they can develop and test a solution idea. After implementing this action, they then evaluate it, reflect on outcomes, decide what needs to be improved, and modify it for the next action step (see Figure 4.1) (Ivankova & Wingo, 2018). Action research, however, is not expected to be straightforward; it is assumed that the process will not be smooth and may not necessarily be identical to the model in order for meaningful outcomes are to be produced (Moule & Goodman, 2014).

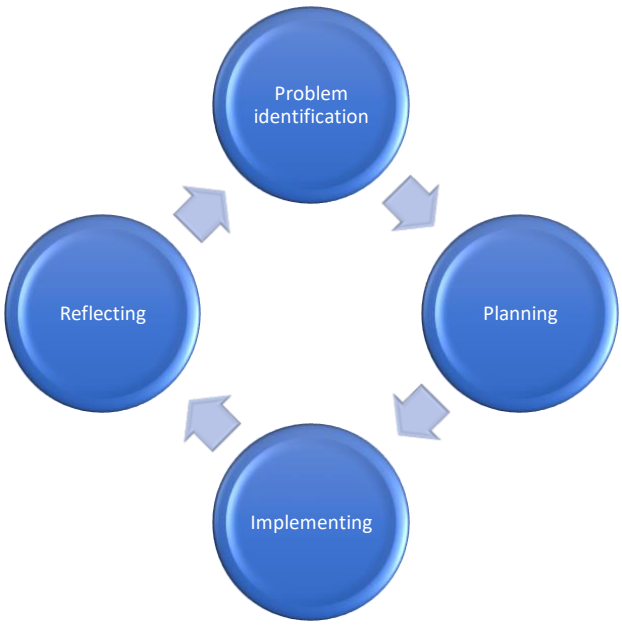


Figure 4.2 - Action research model

Action research can be viewed as a combination of empirical (knowledge derived from experience) and rational (knowledge derived from scientific reasoning) approaches that require multiple sources of evidence. Mixed methods research approaches provide the platform to achieve this (Ivankova & Wingo, 2018). Using a mixed-methods approach requires the researcher to carefully balance the contrasting underlying philosophical assumptions underpinning both qualitative and quantitative research, playing both the outsider objective observer role as well as exploring and interpreting the perspectives and experiences of the individuals within the organisation (Ivankova & Wingo, 2018; Williamson et al., 2012). Traditionally, research designs are separated into two broad categories of either an inductive, objective, positivist approach or a deductive, subjective, interpretivist approach (Moule & Goodman, 2014). The first approach is the basis of quantitative research, generally examining 'cause and effect' with the fundamental philosophy that reality can be discovered and interpreted as objective (Driessnack, Sousa, & Mendes, 2007). Its main concern is with quantifying relationships between variables; this is traditionally viewed as the core of a scientific approach to research (Driessnack et al., 2007). The second approach is the basis of qualitative research, stemming from the assumption that reality is subjective and the premise that there are a range of differing perceptions rather than just one (Creswell & Plano Clark, 2007). Qualitative research is often used to describe and understand the experiences of people. However, this binary perspective separating and judging the worth of these two approaches to research is becoming increasingly outdated and is arguably overly simplistic. Researchers are now commonly drawing on the strengths of both paradigms to increase understanding, accuracy and the validity of their research findings (Creswell & Plano Clark, 2007).

One of the main criticisms of action research as a study design relates to its internal and external validity. There are a number of considerations that can address these validity concerns. The following points as outlined by Huang (2010) and Williamson et al. (2012) have been key factors considered during this study to ensure the strength of the findings:

- A mixed-method approach is utilised to confirm or disconfirm evidence. This allows the researcher to utilise both method and theoretical triangulation for interpreting different perspectives as well as providing process validity (Williamson et al., 2012).

- Outcome validity is achieved by providing clear evidence of practical change, partnership, and participation (Williamson et al., 2012).
- Full transparency is a priority via thorough documentation throughout the study process of all meetings and changes made throughout the action research cycles (Williamson et al., 2012).
- The study is underpinned by clear theoretical and philosophical frameworks (Williamson et al., 2012).
- Deep insight and discussion are undertaken to ensure actionability (the extent to which the research provides useful new ideas), reflexivity (the extent to which the authors locate themselves as change agents) and its generalisability to other areas of healthcare (Huang, 2010).

4.4 Implementation science

Implementation science was born from the challenges associated with the application of research findings into practice (Nilsen, 2015). A number of theories and frameworks developed in the last decade have increased the understanding of factors that make implementation more likely to succeed. Studies that require the implementation of new ideas into practice need to ensure adequate consideration has been given to the complex issues that will likely need to be acknowledged, addressed, and overcome (Nilsen, 2015).

The Consolidated Framework for Implementation Research (CFIR) provides researchers with a lens through which to explore elements related to implementation, ensuring all perspectives have been considered (Damschroder et al., 2009). The CFIR was developed in 2009 by implementation researchers affiliated with the Veterans Affairs Diabetes Quality Enhancement Research Initiative (CFIR, 2020). The five key domains identified in the CFIR underpin implementation considerations for this study: the intervention, the inner setting, the outer setting, the individuals involved, and the process by which implementation is to be accomplished. *The intervention* or innovation domain for this study considers the adaptability and quality of the tool required to meet the specific needs of the individuals within the OR. It is concerned with the evidence-base underpinning the intervention. *The individuals involved* (in this instance, staff members from the OR) domain involves the consideration of how individual bias, preconceived knowledge, and ideas about an intervention, personal values,

cultural expectations, and interests impact on the intervention's ability to be implemented. It relates to the 'buy-in' of individual employees. *The inner setting* domain relates to how departments and employees interact with each other, and the implications of that. It considers job roles, power imbalances, hierarchies, organisational structures, the culture of the department and the overall willingness of the department to be involved in trialling a new intervention. *The outer setting* domain encourages us to think of the wider political frame and lastly, *the process in which implementation is accomplished* domain considers if there is a real change process in place that incorporates planning, engaging, executing, reflecting, and evaluating to ensure sustainability (Damschroder et al., 2009).

The Theoretical Domains Framework (TDF) aligns well with the CFIR and will be considered in this study to guide research considerations about potential facilitators of and barriers to successful implementation. The two frameworks are commonly used together in implementation research to support the analysis of both the practical implications and the overarching perspectives impacting on the implementation success (Birken et al., 2017). This framework was designed from cross-disciplinary implementations and acknowledges the complexity of behaviour change (Cane, O'Connor, & Michie, 2012). Its foundations lie in behaviour change theory and it was constructed by synthesising 128 constructs related to behavioural change found in 33 behaviour change theories (Nilsen, 2015). The TDF outlines fourteen domains: knowledge; skills; social/professional role and identity; beliefs about capabilities; optimism; beliefs about consequences; reinforcement; intentions; goals; memory, attention, and decision processes; environmental context and resources; social influences; emotion; and behavioural regulation. These domains provide a framework from which the overall feasibility of the tool implementation can be considered.

4.5 Chapter summary

In summary, this study draws from a number of theoretical constructs and study methodologies. Viewing OR teams as a CAS provides a realistic platform for this research, one that acknowledges the complexity of OR teams and the 'human' element of the workplace. The action research and implementation science models provide a clear and relevant framework for the overall study design.

Chapter 5: Overview of study design

5.1 Introduction

This chapter provides an overview of the study design. Utilising a mixed method action research design, the study procedure was based on a collaborative iterative model. Regular meetings with hospital personnel led to the development, trialling, testing, and evaluation of a new tool specific to the OR setting. Details regarding aspects of the study design are further outlined in the articles presented throughout the thesis.

5.2 Study aims and objectives

The overall aim of this study was to collaborate with OR personnel to explore how job satisfaction might be measured and monitored in close to real-time in the OR setting.

The study uses an action research approach to collaborate with theatre personnel from one NZ hospital to develop, trial, and evaluate a measurement tool. It explores the tool's value for management and staff, the validity of the data it generates and the viability for implementation within the OR setting.

The objectives are outlined below:

- To work together with key management personnel to identify the need, design, practicality, and significance of conducting the research within the OR setting.
- To collaboratively develop and pre-test a potential real-time job satisfaction tool for the OR setting.
- To trial an initial concept of a job satisfaction measurement tool across all OR staff for three weeks and then gather feedback via a survey.
- To test the convergent validity of daily job satisfaction with overall job satisfaction (the correspondence or convergence between constructs that are theoretically similar) (Devon et al., 2007).
- To test the predictive validity of the tool (the degree a score predicts performance on a future criterion) (Devon et al., 2007).
- To assess the overall value and feasibility of implementing the tool with the OR environment.

- To provide final recommendations regarding further trials and long-term implementation of the tool based on the research findings.

5.3 Sample and setting

The study was conducted over a 15-month period from March 2018 to June 2019. It was set in the OR department of one NZ hospital (providing both acute and elective surgeries) with a clinical workforce of 345 staff members at the time of the trial. The initial development phase was done in collaboration with members of the senior management team and also included input from management personnel from all job roles that worked within the theatres (this is explained further in Chapter 6). Job roles included anaesthetists, anaesthetic technicians, healthcare assistants, nurses, orderlies, and surgeons. The tool trial and evaluation was conducted across the whole department and all job roles were encouraged to participate.

5.4 Recruitment

Recruitment of staff to participate in the trial and survey was done via presentations to staff meetings and a bulk email inviting all staff that worked in the ORs to participate (see Appendix 5.1) A participant information sheet was attached to the email (see Appendix 5.2) which provided further information regarding the researchers, the university, and addressed ethical issues. A link was provided for those who wanted to use their own device. Posters were put up in every theatre, changing room, and tearoom. The poster included a QR code that could be scanned for cell phone access (see Appendix 5.3). A number of senior personnel from each job role were also asked to encourage use during meetings and when working in the ORs.

5.5 Procedure

The procedure consisted of a development phase, an implementation phase, and an evaluation phase. The action research cycle of ‘problem identification, planning, implementing, and reflecting’ was utilised throughout the study in a collaborative process with management and staff (Montgomery, Doulougeri, & Panagopoulou, 2015).

Phase 1 (*The development phase*)

Over the 15 month period more than 35 meetings with senior and middle managers from the OR department a single-item job satisfaction measurement tool (Morale-o-Meter) was developed with guidance from the current literature, tool development theory, an organisational psychologist, and a Māori cultural advisor from the hospital (appropriate for the NZ context). The one-minute tool was based around the question: 'Overall, how are you feeling about your job today?' (see Chapter 6 for a complete outline of the measure). Once an initial digital version of the tool was developed, a short pre-test was conducted within two operating theatres for one day. Participants were invited to test the tool (via iPad) while the researcher was present to observe their entries and gather written or verbal feedback relating to their experience of using the tool. This phase also included the development of the feedback and validation survey by researchers, with the guidance of an organisational psychologist, and an initial plan for sharing and managing the trial results was developed.

Phase 2 *(The trial phase)*

A three-week trial of the Morale-o-Meter tool was conducted from the 27th of May 2019 to the 14th of June 2019. All employees working in the OR were invited to participate. The survey asked participants to create a username which they would input on every use. The guide provided was 'the day of the month of your birthday' combined with 'the first 3 letters of your mother's name (e.g. 03Jen)' (Yurek, Vasey, & Sullivan Havens, 2008). This was to ensure anonymity and to prevent people from forgetting their usernames. The survey also asked for the time in the shift (beginning, middle, end), the job site (the hospital had two OR sites), and their job role and speciality. The Morale-o-Meter survey took approximately one minute to complete. The tool also provided options for staff to choose 'I'd rather not say' for all questions.

Seventeen iPads were placed in desk stands across fourteen operating theatres, two tearooms, and an anaesthetic technician room. The iPad stand displayed instructions that asked staff to use the tool once each shift. The researcher visited the department every morning during the three-week trial prior to the start of surgeries each day. Wearing the appropriate PPE, this provided an opportunity to check the iPads were all working in the theatres and address any issues or concerns. Chocolates and/or cookies were supplied each day by the researcher in the tearoom next to the iPad with a sign thanking participants for their participation. The researcher's details were provided during the trial period for any concerns or issues.

Phase 3 ***(The evaluation phase)***

One week after the completion of the trial, a link to an anonymous online survey developed by the researcher and organisational psychologist (with input from senior OR personnel) was emailed to all staff via the department administrator (see Appendix 5). The feedback and validation survey asked respondents for their Morale-o-Meter username and demographics (gender, age, and ethnicity) in order to link the answers to their Morale-o-Meter responses. Questions in the survey related to their experience using the tool and to test the validity of the tool in regards to overall job satisfaction, affective commitment, and emotional exhaustion (Chapter 6 provides a detailed outline of the survey). On completion of the trial and survey, the researcher shared the findings with the OR leadership team and at a staff professional development day. A full report was also provided to the senior management team who had been involved with the development and execution of the study. A number of conclusions and recommendations were provided to the hospital in order to support the continued development and trialling of the tool independently. This was done to allow the hospital to establish a realistic long-term implementation plan that does not rely on external researcher input so that they can continue to refine the tool for their purposes.

5.6 Data collection and analysis

Data was gathered from the Morale-o-Meter tool three-week trial and the results from the feedback and validation survey. As per action research, meeting minutes, and journal writing were also maintained and reviewed as part of data collection (Williamson et al., 2012). Qualitative and quantitative data were combined to determine the overall conclusions (Ivankova & Wingo, 2018). Data analyses were done through grouping and analysing of themes, descriptive statistics and pairwise correlations, and Chi square utilising SPSS and R statistical software, while multi-level modelling was conducted with M*plus* 7.0 (Muthén & Muthén, 2015).

The software used for the daily tool was the 'Employee Experience Monitoring Suite' from MaritxCX, a web-based survey design software currently licenced to the hospital of investigation. The software allowed for a mobile device version of the tool and provided a scanner code or link for staff to use a device of their choice. The researcher worked in

collaboration with the relevant IT developers/administrators within the hospital to develop the survey. Raw data from the tool were provided to the researcher via an Excel spreadsheet and was only accessible by two hospital administrators and the researcher.

5.7 Ethical considerations

There are a number of ethical considerations associated with this study. The issues of informed consent and confidentiality are of particular importance in conducting ethically sound research involving people (Moule & Goodman, 2013). Due to the workplace context of the study and the employment related data being gathered, participants needed to feel reassured that at no time could their involvement with the study jeopardise their employment status. This was done by ensuring that participant data inputted into the tool itself was anonymous with no potentially identifiable features present. This was outlined on the first page of the tool itself. Any results reported did not provide any identifiable features relating to staff members. Participants were free to withdraw or request their data be withdrawn at any time during the study. Furthermore, the anonymous user names provided were not shared with management as a further precaution to ensure participants were not identified. The participant information sheet clearly stated who would see their personal information, i.e., only the researcher and university supervisors, and this sheet was attached to the bulk email sent to all staff (see Appendix 5.2).

Healthcare within the New Zealand context is guided by the Treaty of Waitangi (Te Tiriti o Waitangi), a founding document in New Zealand outlining the partnership between Māori and the Crown. Te Tiriti o Waitangi underpins the New Zealand health system (including its OR workforce) and New Zealand healthcare policy aims to ensure the protection of rights, self-determination and to support partnership (Ellison-Loschmann & Pearce, 2006). A key ethical consideration relevant to the New Zealand context relates to ensuring research is culturally safe and appropriate for Māori participating in the study. The Māori ethics framework highlights four key principles for researchers (Health Research Council of New Zealand, 2010). The first principle relates to whakapapa (relationships), where researchers must consider the quality of their relationship with Māori in decision-making processes, including the level of consultation, engagement and leadership that is required. The second principle relates to Tika (the research design), to ensure the protection of the rights of Māori in

the research design, analysis and dissemination of results. The third principle relates to Manaakitanga (cultural and social responsibility). This principle ensures key concepts around respect, dignity, caring and cultural sensitivity and safety are upheld. The last principle relates to Mana (equity and distributive justice). This includes considerations around power and authority at an individual and collective level. Here researchers must consider the rights of Māori to be appropriately informed of any risks to the individual and collective mana (Health Research Council of New Zealand, 2010). In relation to this study, consultation with a senior Māori advisor from the DHB involved in the study was essential in the development of the study design and tool development process. This was important to ensure aspects of the research design did not unintentionally discourage participation of Māori staff and that there were no aspects of the tool that might be seen as inappropriate for or not meeting the needs of Māori OR staff. Further to this process, an appropriate dissemination strategy was also identified relating to any findings specific to Māori.

Another key ethical consideration relates to the integrity of the researcher. The researcher is not a nurse at the hospital where the study took place. However, the role of the researcher working in collaboration with senior management in the study design had a potential impact on the perceptions of staff. The researcher is potentially in a role where a perceived power imbalance could be exploited. This, in theory, could be used to coerce people to participate in the study and/or influence the responses given (Moule & Goodman, 2013). Therefore, a neutral administrator sent out the recruitment material and staff were reassured that the researcher was an external party and there was no obligation to take part in the study. This was again clearly outlined on the participant information sheet. Furthermore, senior members of Auckland University staff were supervising the researcher and participants were given a telephone number to contact the University of Auckland with any complaints or concerns.

This study was approved by the University of Auckland Human Participants Ethics Committee on 12.10.18 for three years. Reference Number 022098. Locality approval was gained from the Waitemata District Health Board 13th March 2019, Registration #: RM14202 (see Appendices 5.5 and 5.6).

5.8 Chapter Summary

In summary, the three key phases of the study design provided a clear and transparent process for the development of an initial version of a daily measurement tool. The action research model provided the flexibility that allowed for constant improvement and adaptation to the needs of the environment in which it was conducted. This flexibility, with careful ethical consideration, provided a sound framework for this study design.

Chapter 6: The tool development Process

6.1 Introduction

This chapter outlines the background, theory, and design of the daily measurement tool used for the trial. It starts with an article (currently under review) that provides a breakdown of the action research stages utilised throughout the tool development process. This is then supplemented with additional information relating to: 1) the daily diary methodology underpinning the tool design (Section 6.3.2); 2) the pre-test process and modifications that were made or proposed (Section 6.3.3); and 3) future tool recommendations (Section 6.3.4).

6.2 Article: Using action research to develop a real-time measure of job satisfaction in the operating room setting

James-Scotter, M., Jiang, L., Walker, C., & Jacobs, S. (2021). Using action research to develop a real-time measure of job satisfaction in the operating room setting. International Journal of Action Research, 17 (2), 138–153. https://doi.org/10.3224/ijar.v17i2.03

The hospital setting is a complex organisational system, influenced by multiple stakeholders, numerous job roles and the large populations that it serves (Braithwaite, Clay-Williams, et al., 2018; Montgomery et al., 2015). The operating room (OR) team is commonly made up of a combination of surgeons, anaesthetists, nurses and technicians (Gillespie et al., 2010). Team members work closely, in intense conditions, often for long periods of time. Under tight schedules, each role is heavily dependent on the other roles, to achieve the overall outcome (Gillespie et al., 2010). The foundations of the organisational system are embedded within strong hierarchical structures, robust policies and strict procedural guidelines designed to reduce the risk for errors and meet performance targets (Arakelian, Gunningberg, & Larsson, 2008; Tsai et al., 2017). While the organisational structure of the OR may appear linear on paper, closer analyses reveal that the actual environment is somewhat non-linear and often unpredictable; its multiple stakeholders, complex communication pathways, and dynamic team and social relationships are key contributors to this unpredictability (Braithwaite, Clay-Williams, et al., 2018; Tsai et al., 2017). Consequently, any research methodology underpinning an intervention in the OR needs to be clearly assessed for its utility in this complex system.

The flexible and participatory nature of action research provides a sound platform for the complexity of the hospital setting, as it allows researchers to work with and become a part of the dynamic system (Montgomery et al., 2015; Phelps & Hase, 2002). Action research is an increasingly popular alternative to traditional research inquiry methods across the healthcare sector (Costello, 2003; Kjellström & Mitchell, 2019). Specifically, action research can be defined as "an orientation to knowledge creation that arises in a context of practice and requires researchers to work with practitioners" (Huang, 2010, p. 93). Consequently, it embraces a pragmatic and collaborative approach to problem solving, aiming to increase understanding and generate and evaluate change in a 'real world' setting (Costello, 2003; Williamson et al., 2012). The core principles of action research are centred around a respect for diversity, drawing on the strengths of communities, and reflecting on cultural identities, with a focus on power-sharing and co-learning (Minkler, 2000). Promoting these values, however, is not always easy, and can be particularly challenging in institutions (such as the OR department in a hospital) that are highly complex and heavily hierarchical (Brydon-Miller, Greenwood, & Maguire, 2003).

Action research is primarily focused on generating knowledge and empowering stakeholders (Huang, 2010). This involves researchers working together with healthcare practitioners as partners in the design and/or application of the research (Huang, 2010; Williamson et al., 2012). This act alone can begin a process of transformation within the workplace environment (Huang, 2010). The practical focus of action research, and the need to design studies that are effective in a particular environment, often calls for a "what works" approach (Ivankova & Wingo, 2018). This involves utilising action research cycles most commonly consisting of one or many repetitions of problem identification, planning, implementing and reflecting to reach the desired outcomes (Montgomery et al., 2015).

Employers of staff working in OR are becoming increasingly aware of the associations of job satisfaction with burnout, organisational commitment, staff turnover, absenteeism, and intention to leave (Coomber & Barriball, 2007; Lee et al., 2020; H. Lu, While, & Barriball, 2005; Meyer et al., 2002; Rama-Maceiras et al., 2012; Shanafelt et al., 2009; Tsigilis et al., 2004; Yin & Yang, 2002). Innovative research that aims to enhance the way that job satisfaction is measured and managed in the OR setting is therefore of high importance.

Job satisfaction is one of the most well researched concepts in organisational psychology (Judge et al., 2017). While there are many definitions, it is most commonly defined as the extent to which an employee likes or dislikes their job (Spector, 1997). It is widely accepted that job satisfaction is influenced by both intrinsic (internal) and extrinsic (external) factors and includes both cognitive (someone's thoughts or beliefs about aspects of their job) and affective (how they feel about their job) components (Dalal & Credé, 2013; Judge et al., 2017; Kaplan et al., 2009). In this study, researchers collaborated with senior managers working within ORs to create a relevant, valid, and practical real-time tool for measuring job satisfaction in the OR setting. This paper describes and reflects on how action research was used to develop a daily job satisfaction tool within a New Zealand OR setting to meet a specific need identified by the hospital.

6.2.1 Method

A mixed method action research design was adopted, guided by traditional tool development theory (Kyriazos & Stalikas, 2018). The study was conducted over a 15-month period from March 2018 to June 2019 within the operating department of one New Zealand hospital. It comprised four overarching action research cycles, each embedded with numerous sub-cycles. These included: 1) Problem identification (defining the construct); 2) Planning (choosing and creating the measure); 3) Implementation (field testing – pre-test and trial); and 4) Reflection / evaluation (validation / improvements). The study included over 35 meetings between researchers and hospital personnel. An outline of the stages and methods utilised can be seen in Table 6.1. Data collection was via meeting minutes, journal entries, trialling the Morale-o-Meter tool, and a feedback and validation survey. Qualitative and quantitative data were combined to draw the overall conclusions (Ivankova & Wingo, 2018). Data analyses were done through thematic analysis, descriptive statistics and pairwise correlations utilising SPSS and R statistical software, while multi-level modelling was conducted with Mplus 7.0 (Muthén & Muthén, 2015).

Table 6.1: Summary of methods for action research and tool development stages

Stage	**Action research** (Montgomery et al., 2015)	**Tool development** (Kyriazos & Stalikas, 2018)	**Methods**	**Rationale** (Kyriazos & Stalikas, 2018; Montgomery et al., 2015)
1	Problem identification	• Define purpose • Define construct • Set theoretical foundations	• Consult the literature • Consult experts • Meetings with key stakeholders • Utilise continuous action research cycles until an agreement has been reached.	Collaborating to define and clarify the purpose of the tool and the construct to be measured is a crucial first step in the tool development process. It provides a sound theoretical foundation and builds trust.
2	Planning	• Choose measurement • Choose wording, format, and platform • Plan what testing and feedback are required • Plan management of results	• Collaboratively identify priorities • Gain input from a range of relevant workplace personnel, e.g., managers, cultural advisors, experts in the field. • Utilise continuous action research cycles until agreement is reached between researcher and practitioners	Combining the views and priorities from a range of workplace and academic sources will ensure the tool is both appropriate for the context and valid in relation to the construct that is being measured. This stage is highly important for the sustainability of any intervention.
3	Implementation	• Pre-test • Field test	• Run a pre-test within two operating theatres • Utilise action research cycles until a final version is agreed upon • Conduct a three-week trial with a larger cohort of staff	Field testing is an essential component of tool development in order to test the comprehensibility, relevance, acceptability, and feasibility of implementation with a sample of the population that the tool is designed for
4	Reflection	• Analyse validity • Evaluate usability • Identify improvements needed	• Gain feedback from staff via survey following the trial • Analyse validity from validity survey following the trial • Gain feedback from managers • Discuss and reflect on outcomes to further improve the tool.	Reflection and evaluation ensure the appropriate time and consideration are given to improvements and modifications that are necessary prior to the start of the next iterative cycle

6.2.2 The results of the action research stages

Problem identification / defining the construct

Defining and clarifying the construct to be measured is a crucial first step in the tool development process, and involves first identifying the problem and clarifying the purpose of a measurement tool. It ultimately connects ideas to theory (Kyriazos & Stalikas, 2018). A series of initial meetings between the senior management who work within the OR department and researchers identified that the department did not have a formal mechanism for frequent monitoring of staff 'morale' in real-time. The managers reported that staff had 'survey fatigue' and were resistant to filling in long surveys. They were aware that evaluating the success of any interventions seeking to improve staff wellbeing would be impossible without an ability to establish a baseline and monitor for improvement or decline in close to real-time. Ideally, they wanted to be able to report to their managers about staff 'morale' along with other key performance indicators.

From an academic perspective, researchers needed to clearly conceptualize the meaning of 'morale' in theoretical terms in order to consider the validity of its measurement. For example, was improving 'morale' for them actually about enhancing staff engagement or increasing organisational commitment? The term 'morale' is generally not a well-defined or precisely measured concept in healthcare (Sabitova, Hickling, & Priebe, 2020). In this setting, the concept of 'morale' was a common layperson term used informally to discuss how 'employees' were feeling about their jobs. After in-depth discussions about the purpose of the tool, exploration of the relevant literature and consultation with an organisational psychologist (of 10 years' experience), it was agreed that 'job satisfaction' was in fact the appropriate theoretical and operational construct to be measured. Managers wanted to know how staff were feeling about their job from a range of perspectives, such as experience of work conditions, the impact of communication between staff or their fulfilment from the clinical work itself. A global measure of job satisfaction (i.e. one that asks employees how they are feeling about their jobs in general) was deemed appropriate to capture this broad perspective of job satisfaction. Global measures allow employees to compare and contrast qualities from their present and past cognitive and affective experiences in their jobs, as opposed to facet-based measures which may not capture the affective variability and mood elements as effectively as a global question might (Highhouse & Becker, 1993; Judge et al., 2017). Job satisfaction's strong relationship with many other job attitudes and outcomes makes it a valuable construct. For example, job

satisfaction is a known antecedent for work engagement and closely related to intention to leave one's job, particularly for nurses (Abraham, 2012; Coomber & Barriball, 2007; Yin & Yang, 2002).

In order to provide a sound foundation for the steps to follow, a clear and concise definition and model of the construct was then chosen (Kyriazos & Stalikas, 2018).

Planning / choosing and creating the measure

The planning stage began with research into existing studies and tools (Kyriazos & Stalikas, 2018). A literature review was conducted of studies relating to job satisfaction in the OR; this included a summary of existing measures used in each study as a starting point. The findings identified 27 different pre-existing surveys and 15 study-specific surveys used in the OR setting (James-Scotter, Walker, & Jacobs, 2019). There was no tool identified through this process that was deemed appropriate for the purpose of a daily measure due to length, validity, or context. A range of further approaches to measuring job satisfaction from an academic, clinical and business sector perspective was discussed in further meetings between researchers and senior management. At each meeting, the researchers presented possible ideas or modifications to existing measures, which were then discussed further. From this process, a number of agreed priorities that were considered important, for either the clinical relevance and/or the academic rigour of the tool emerged (see table 6.2).

Table 6.2. Priorities agreed on by researchers and practitioners

- Employees were anonymous when responding to the survey
- The tool was easy and fast to use
- The tool was easily accessible
- Matching survey responses from the same participant
- Data gathered by the tool were reliable and valid
- The tool provided information on factors influencing staff satisfaction responses
- The tool provided information on individual specialities and job roles
- The tool was appropriate and acceptable for Māori employees
- The tool was appropriate and acceptable for a diverse range of cultures and a range of literacy levels (including computer literacy)

In order to meet the identified priorities, it was agreed to develop a digital tool based on a pre-validated single item measure of global job satisfaction. This strategy is recommended by Kyriazos and Stalikas (2018) who encourage researchers to adapt existing instruments, the psychometric testing of which has been previously examined, to fit the purpose of the specific research setting. Further meetings were held, focusing on the wording, response scale, format, and platform. It was agreed to use iPads for administering the survey. In order to gain 'buy in' from staff, the traditional Likert response scale (e.g., strongly agree to strongly disagree) was adapted to include more casual language (e.g., great, I love my job today to awful, get me out of here!), whilst maintaining an anchored 1–5-point Likert scale (Kyriazos & Stalikas, 2018). To provide meaningful information for managers, it was agreed to ask employees to identify the factors influencing their job satisfaction response that day. The options for this were derived from the existing literature (James-Scotter et al., 2019). The survey asked participants to create a username which they would input before every use (they were provided with a guide to ensure anonymity and to prevent people from forgetting their usernames (Yurek et al., 2008). The Morale-o-Meter took approximately one minute to complete. A number of action research cycles were required, in order to agree on a final product ready for wider consultation.

Once an initial concept had been agreed upon, the researchers took the idea to a range of other senior and middle managers within the wider OR team to get their feedback and input. This included at least one manager from each job role (anaesthetists, anaesthetic technicians, nurses/healthcare assistants, orderlies, and surgeons). A Māori advisor from the hospital (appropriate for the New Zealand setting) was also consulted. Feedback from this process was gathered and discussed at further meetings.

Not surprisingly, each manager had his/her own unique perspective and needs, relating to how his/her staff would/should utilise the tool. For example, orderly managers were concerned that computer literacy could be a barrier for some of their team and therefore it is important to providing them training to use the tool. They also needed access to the tool in locations other than within the theatres, such as the tea room. Anaesthetist managers felt that using the tool for 2–3 shifts per week would be more than enough. Anaesthetists needed to be able to use the tool at any time during the day to suit their workloads and a phone option was important for them as they did not use the theatre bench as frequently as other team members. Some nurse managers were concerned that charge nurses had been grouped together under 'nurses' on the tool and that their specific job role needs would go unseen. Nurse and

anaesthetic technician managers felt they needed more detailed and frequent data, ideally receiving immediate alerts if there was a significant decline. Nurse managers wanted staff to be able to complete the tool multiple times a shift if needed due to the variability of a work day. Overall, there was a common concern among managers about the potential for poor tool results to impact or reflect negatively on them. They were concerned about the level of support they would receive and the transparency of the results. It became clear that transparency around the data that was gathered, and how they were going to be used were very important. The findings from this process resulted in a number of changes, such as an agreement and plan for the sharing of findings following the initial trial and the addition of a 'senior nurse' job role option to the tool. Consultation with the Māori advisor and the relevant literature also resulted in changes to the tool that would allow for the influence of 'cultural wellbeing' at work to be incorporated into the tool (Haar & Brougham, 2013) (the Morale-o-Meter tool is outlined in Figure 6.1)

Morale-o-Meter

Username (*the day of the month of your birthday' combined with 'the first 3 letters of your mother's name (e.g. 03Jen)'*

Time of shift (*beginning, middle, end*)

Job site *(not identified to preserve the anonymity)*

Overall, how are you feeling about your job today? *(1) Great, I love my job today!', (2) 'Pretty good really', (3) 'Neutral ho hum', (4)'Not great actually'*, and *(5)'Awful, get me out of here!'*

What does this mostly relate to? *1) the nature of the clinical work, 2) communication and relationships with colleagues, 3) organisational factors (e.g., staffing, workload, resources), 4) patient interactions, 5) ethnic cultural wellbeing, 6) other (with an open text option), and 7) I'd rather not say.* (Multiple choices were allowed).

Job role *(Anaesthetist, Anaesthetist registrar/fellow, Anaesthetic technician, Anaesthetic technician trainee, Healthcare assistant, Nurse, Orderly, Senior nurse, Surgeon, Surgical registrar/fellow, other, I'd rather not say)*

Speciality *(General surgery, Gynaecology, Obstetrics, ORL, Orthopaedics, Urology, Other, I'd rather not say)*

Figure 6.1: The Morale-o-Meter tool (final version used for the trial)

A key contribution of researchers during this stage was to provide help relating to the technical and ethical aspects of the tool development process, such as validity and anonymity. It was agreed to do a small amount of initial testing of the predictive validity of the tool relating

to burnout and organisational commitment, and to test construct validity to ensure that the adapted version of the single item measure used at a daily level was still measuring the intended construct (i.e., job satisfaction). This would involve administering a survey at the end of the trial. The survey was developed by researchers in consultation with an organisational psychologist, and was intentionally limited to ten questions, given that this cohort were resistant to surveys. The validity questions were combined with the feedback survey administered to staff after the implementation phase. In the validity and feedback survey, we measured overall job satisfaction, affective commitment, and emotional exhaustion. Specifically, overall job satisfaction was measured using a well-known single-item global job satisfaction question originating from Scarpello and Campbell (1983); affective commitment (a key component of organisational commitment) was measured using a single item selected from the subscale of the organisational commitment scale (Allen & Meyer, 1990), and emotional exhaustion (a key component of burnout) was measured using three items derived from the Maslach Burnout Inventory (Spurgoen, 1998). Internal consistency reliability of emotional exhaustion was 0.80 (see Figure 6.2 for an outline of the Feedback and Validity survey).

Morale-o-Meter username *(the day of the month of your birthday combined with the first three letters of your mother's name e.g. 03Jen)*

Gender, Age, Ethnicity *(drop-down options provided)*

Feedback questions
What do you think about having a tool like this in place permanently?
(1) Extremely good idea, (2) Good idea (3) Not sure (4) Bad idea (5) Extremely bad idea.

What device did you prefer to use during the trial? *(1) iPad in theatre, (2) iPad in tearoom, (3) iPad in anaesthetic tearoom, (4) Cell phone*

What were the barriers to using the tool every shift?
(1) I would forget, (2) I was too tired, (3) iPads not accessible or working properly, (4) Didn't feel comfortable answering the question, (5) There were no barriers for me, (6) Other

Feedback, comments or suggestions – *open text box*

Validity questions
All things considered, how satisfied are you in your job?
(1) Extremely satisfied (2) Satisfied (3) Neither satisfied or dissatisfied (4) Dissatisfied (5) Extremely dissatisfied

"I would be happy to spend the rest of my career with this organisation"
(1) Strongly agree - (5) Strongly disagree

"I feel used up at the end of the workday",

(1) Strongly agree - (5) Strongly disagree

"I feel emotionally drained from my work"
(1) Strongly agree - (5) Strongly disagree

"I feel burned out from my work."
(1) Strongly agree - (5) Strongly disagree

Figure 6.2: Outline of the Feedback and Validity survey

Implementation / field tests

Field testing is an essential component of tool development. It can be repeated as many times as required to test the comprehensibility, relevance, acceptability, and feasibility of implementation with a sample of the population that the tool is designed for (Kyriazos & Stalikas, 2018). Following the planning stage, the Morale-o-Meter underwent a pre-test phase conducted within two theatres over one day. Participants were invited to test the tool. The first author was present to observe their entries and gather written or verbal feedback relating to their experience using the tool. Sixteen entries were received. The results were then shared at meetings for discussion and reflection. This led to further modifications (see Box 1 for the final version of the Morale-o-Meter following this phase). A three-week trial of the Morale-o-Meter tool was then conducted from the 27th of May 2019 to the 14th of June 2019 with the whole OR department.

For the three-week trial, 17 iPads were placed in desk stands across 14 operating theatres, two tearooms and an anaesthetic technician room. A cell phone option was also available. Each iPad stand displayed instructions asking staff to use the tool once each shift. Recruitment was done via a bulk email invitation to all staff and through posters; the first author also presented at a range of staff meetings to provide more details about the project and to answer any questions. All employees working in the OR were invited to participate. Senior personnel from different job roles were asked to encourage staff to use the tool.

A total of 269 staff members utilised the tool at least once over the trial period (78% response rate) and 569 submissions were received. Participants consisted of 123 nurses (20 senior nurses) (45.7%), 41 anaesthetic technicians (15.2%), 31 anaesthetists (incl. registrars/ fellows (11.6%), 36 surgeons (incl. registrars/fellows) (26%), seven orderlies (2.6%), four healthcare assistants (1.5%), two anaesthetic technician trainees (0.7%), seven respondents who identified

as ‘other’ (2.6%), and 18 respondents who chose the option that ‘I’d rather not say.’ Daily utilisation was estimated at 21% response rate (exact figures of total number of staff within the department on any given day is almost impossible to ascertain). Individual tool utilisation per participant ranged from one to 14 entries (1= 62%, 2–3 = 23%, 4+ = 15%). The first author went to the hospital each day of the trial to ensure that the iPads were working and answer any questions staff may have had. This allowed for further relationship building and discussion with staff.

The daily job satisfaction response scale was converted to a numerical 5-point scale for analysis (i.e., 1 = “great, I love my job today” to 5 = “awful, get me out of here”.) On average 71% (ranging from 52% – 79%) of participants reported a1or 2 each day. No significant differences in job satisfaction were found among staff with different job roles or department specialties when comparing job-satisfaction mean scores. However, participants who chose ‘I’d rather not say’ for job role and speciality were more likely to have a lower mean score than other participants. On analysis of factors that influenced job satisfaction responses, positive responses (i.e., 1 or 2) were most commonly influenced by ‘relationships and communication with colleagues’ (34% and 39%, respectively) and ‘the nature of the clinical work’ (29% and 28%, respectively). Negative responses (i.e., 4 or 5) were most frequently influenced by ‘organisational factors (e.g., workload, staffing, equipment)’ (33% and 33%, respectively) and also ‘relationships and communication with colleagues’ (29% and 33%, respectively).

Reflection / evaluation (validation / improvements)

The feedback and validation survey was administered one week following the completion of the trail. It resulted in 38 responses (a 14% response rate). Sixty-one percent of respondents reported that they thought it was either a ‘good’ or ‘extremely good idea’ to implement a tool such as this permanently. The most commonly reported barriers to using the tool were ‘forgetting to use the tool’ (36%) and ‘being too busy’ (31%). Four themes were identified from the qualitative comments on the survey: 1) feeling positive about the tool. For example, respondents indicated that “It was good. very easy and quick to fill in”, “The morale-o-meter got the conversation started within the theatre”, “Doing this every day, made me appreciate my job more”; 2) questioning its accuracy. For example, participants stated that “I saw people fill it in when they were cheesed off about something but not when they were happy” “I’m not sure how accurate people were answering the survey, which would be interested to find out in the

result"; 3) concern about how it will lead to change. For example, some employees stated that "Not sure if it's actually going to improve morale. or make anything happen. but if it gives it a chance to improve, I will do it" "Providing the solution is the battle; 4) would prefer the tool for short periods. For example, staff indicated that "I'd be more inclined to make an effort for a short period of time," "It would be forgotten about and usage would die off if it was a permanent thing." These themes were consistent with the researchers' journal notes regarding the conversations with staff during the trial period.

Matching the daily survey and the validation survey via the Morale-o-Meter username led to a final sample of 31 participants, who were included in the validity analyses. The mean number of entries per participant in the validation survey was 4.3 (median 3, range 1 – 14). Significant relationships of daily-level job satisfaction with overall job satisfaction (coefficient=0.78, SE =0.16, $p<0.01$), emotional exhaustion (coefficient= -0.51, SE=0.2, $p<0.01$) and affective commitment (coefficient=0.77, SE=0.11, $p<0.01$) were found, supporting the construct and predictive validity of the daily measure of job satisfaction.

The results of both the trial and feedback / validation survey were reported back to staff and managers as planned and an in-depth written report highlighting the strengths, weakness and areas for improvement for future trials was generated. The hospital then took over the tool for further trialling

6.2.3 Discussion

This study aimed to meet a specific need within a New Zealand OR department by using a collaborative action research approach to develop a daily job satisfaction tool. The results describe the benefits, challenges and complexity of using an action research approach, and offer a unique perspective into how action research can support traditional tool development principles in the OR setting. In addition, the inter-professional aspect of our study is an important point of difference, often overlooked in action research conducted in the hospital setting (Montgomery et al., 2015).

The combination of the four overarching action research stages (problem identification, planning, intervention and reflection) provides the complete picture of the Morale-o-Meter study. The ultimate goal was to create a tool which was operationally meaningful and practical, without compromising quality or validity. As the project progressed, each stage opened the

door for more consultation and collaboration as hospital personnel became increasingly involved. The Problem Identification stage provided sound theoretical foundations for the study and developed the trust and respect between researchers and practitioners required for the stages to follow. The Planning stage was by far the most complex and challenging, often highlighting the tension between meeting the academic rigor versus the operational outcomes of the project, a common issue for action research (Huang, 2010). An additional contribution for researchers during this stage was facilitating communication between middle and senior management regarding the purpose of the tool. The Intervention and Reflection stages essentially provided the platform for consulting with the wider staff 'on the floor' as well as testing usability and validity. Providing an initial trialling period of the tool also allowed employees to become familiar with the concept of the tool, and enabled informed feedback via the survey on completion.

The outcomes of the study found that the Morale-o-Meter tool has potential to provide meaningful information for managers in real-time. It not only captures how staff are feeling about their jobs, but identifies valuable information regarding influential factors on organisational practices, thus allowing for the development of timely and targeted interventions. In addition, the validity analysis provides initial support for the construct validity of daily job satisfaction with overall satisfaction. Consistent with similar studies in other settings using ecological momentary assessment methods, the significant and positive relationship between daily job satisfaction and overall job satisfaction provides some reassurance that the tool is measuring the intended construct (Ilies & Judge, 2004). Consistent with the existing literature (Samadi Miarkolaei & Samadi Miarkolaei, 2014; Tsigilis et al., 2004), we also found significant relationships of daily satisfaction with affective commitment and emotional exhaustion, which suggest the tool could also be of use in predicting the risk of burnout and the level of organisational commitment. While we acknowledge that burnout and organisational commitment are influenced by numerous personal and professional factors, job satisfaction has been repeatedly proven to be one of the most significant influencing factors of these constructs and therefore is of significant value (Meyer et al., 2002; Tsigilis et al., 2004).

The study also provided insight into areas of the tool development that require further attention. While the majority of those who completed the survey were positive and the overall response rate and interest in the project was high, 62% of staff used the tool only once during the trial. Key themes from the survey suggest that many forgot or were too busy, and some staff

members were sceptical about whether the tool would result in positive change. This is valuable feedback for managers suggesting that attention to building trust with staff, establishing robust response plans, and ensuring transparency, need to be a priority. In addition, it suggests that as the hospital conducts further trials, consideration is needed as to how the tool can become an embedded part of daily routines along-side other existing requirements. Frameworks such as the Consolidated Framework for Implementation Research will support such a process as strategies to support long term implementation are developed looking forward (Damschroder et al., 2009).

One of the important characteristics of action research is the collaboration between researchers and stakeholders (Costello, 2003). This was a key component of our study – working together, predominantly with managers (who also work within the OR), to achieve an outcome that benefited the wider workforce. Meeting the technical, practical, and emancipatory aims of action research in the hospital setting, however, is not straight forward, nor (being action research) should we expect it to be (Huang, 2010; Montgomery et al., 2015). Working across the different job roles and levels of seniority creates an interesting challenge for researchers, and requires effective communication strategies, which involve listening to and sharing information respectfully and positively until agreement/compromise is found (Kjellström & Mitchell, 2019). In our study, facing conflicting feedback from employees from different job roles and at different levels of the hierarchical structure was challenging at times. Each role brought its own unique perspective, highlighting the wider political frame in which we were working. This process raised the question of who holds the power to make the decisions, regarding whether some feedback is taken into consideration but other feedback is disregarded. For example, would feedback relating to orderlies be considered with the same value as feedback relating to the surgeons? In keeping with the emancipatory aims of action research, we did our best to advocate for those with less of a voice, presenting and discussing all feedback gathered equally (Brydon-Miller et al., 2003; Huang, 2010).

The research process will also have created change within the workplace environment. Reflexivity by researchers is essential in action research and is often forgotten in the evaluation of action research studies in the hospital setting (Montgomery, 2014). It includes acknowledgement of how each interaction or discussion by the researchers will have likely influenced practitioners, changing perspectives and influencing further discussions and actions (Kjellström & Mitchell, 2019). This was captured in qualitative comments in our study such

as: “The morale-o-meter got the conversation started within the theatre” and “doing this every day, made me appreciate my job more”. Further, it is likely that the process of the researchers working alongside senior management would have played both a positive and negative role in how the study was received by staff members. Ultimately, our presence would have impacted the environment long before the trial began, and these dynamics are an inevitable reality in action research.

The experience of this project from the researchers’ perspective was stimulating, rewarding, and challenging; as we worked along-side hospital personnel with the common goal of creating meaningful change in a real-world setting (Byron-Miller et al., 2003). Four key central themes from the study capture the learning from a researcher’s perspective: 1) the importance of building sustainable relationships with key stakeholders; 2) maintaining positive, respectful, and regular communication; 3) building trust between researchers and staff at all levels; and 4) having patience. These themes are consistent with insights commonly identified in action research (Huang, 2010; Kjellström & Mitchell, 2019; Montgomery et al., 2015).

6.2.4 Limitations

Due to the limitations of conducting research in this hospital setting, focus groups and interviews were not possible. While the small sample size from one single hospital limits the generalisability of this study, the outcomes provide a good starting point for longer trials across multiple hospitals. The low response rate at the daily level, as well as the feedback and validation survey, may result in a biased sample. Lastly, any study that uses self-reporting comes with the risk of common method biases (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003).

6.2.5 Conclusion

This study offers insight and guidance into the practical application of action research within an interprofessional healthcare setting. While using collaborative action research in the OR setting is not without its challenges, it is essential that research and instrument development are meaningful, practical, valid and relevant to the real-world setting. This study achieved the overall aim, which was to collaborate in the initial development and trialling stage of a tool for measuring job satisfaction in the OR setting. With further trialling, the Morale-o-Meter has the

potential to be a powerful and valid tool in the OR setting, allowing one to view and value job satisfaction in real-time along-side other key performance indicators. This study provides a sound starting point for the tool to continue to be developed, with potential for implementation in wider healthcare settings in the future.

6.3 Additional information

6.3.1 The consultation and inclusion process

In line with action research principles, this study was focused on gathering input and consulting with as many people as possible from within the department (Coghlan & Brydon-Miller, 2014). This included personnel across all levels of seniority and all affected job roles.

Early on in the process the researcher was connected with one senior change nurse, who regularly provided feedback, guidance and input into the tool's development. Consultation was also done with the wider change nurse team, the nurse director, the nurse manager (from the other site) and the nurse educator. The researcher attended a charge nurse meeting, where ideas and a current working draft was shared, feedback was gathered and robust discussion was encouraged. Nurses were also the largest group that participated in the pre-test, trial and evaluation phase, and ultimately had significant input into the development of the tool. The researcher (also being a nurse) was able to connect with staff as a fellow health professional, further supporting honest and valuable conversations which were documented as journal entries.

Meeting with managers and personnel from across *all* job roles to share tool drafts and ideas was also very important. Part of the researcher's role was to advocate for those that might not have otherwise been heard. Meeting with managers, speaking at staff meeting (and encouraging questions), the pre-test, trial and evaluation phases, all played an important role in reaching everybody, from orderly to surgeon. Figure 6.3 captures the consultation and inclusion process as it unfolded throughout the study.

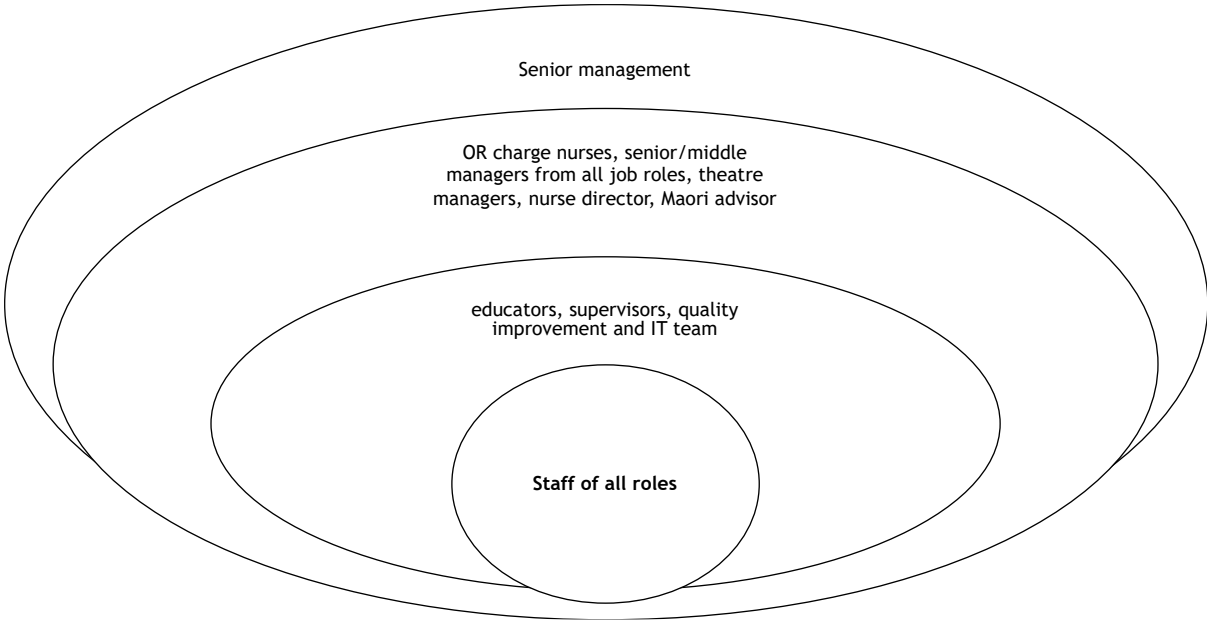


Figure 6.3 Diagram of the consultation and inclusion process

6.3.2 The daily diary methodology

Daily diary methodology underpinned the design of the tool. This method allows researchers to capture individuals' behaviours and experiences within their natural context close to real-time using repeated measurements, daily or at multiple intervals throughout the day (Lischetzke, 2014). Daily diary methods in research involve a process of intensive repeated self-reports from participants with the aim to capture events, moods, or interactions near the time they occur (Iida, Shrout, Laurenceau, & Bolger, 2012). This is seen in the study with participants being asked to use the tool once each shift at a time of their choice. Each use was intended to capture their current feelings and thoughts about their job that day.

The daily diary is a common method used in organisational and occupational health psychology. It has become increasingly popular since the 1990s, partly due to the increase in digital platforms enhancing the way data can be captured and analysed (Lischetzke, 2014). Daily diary methodology comes under the umbrella of experience-sampling methodology but differs in that the responses of daily diary surveys tend to be lagged instead of being conducted in exact real-time (Ohly, Sonnentag, Niessen, & Zapf, 2010). The data gathered in daily diary studies can address different types of questions to cross-sectional studies and reduce the risk of retrospective bias.

The data gathered from daily diary studies requires statistical analysis options which allow for the situational context to be taken into account. It can be analysed at a daily level or be aggregated to the person level and can look at within-person variance as well as between-person variance (Ohly et al., 2010). Multi-level analysis is therefore often appropriate due to the lack of independence between the daily observations (Lischetzke, 2014).

Single item scales are also encouraged, and it is recommended that each entry should not take more than five to seven minutes per day (Reis & Gable, 2000). It is important to note that some concepts could be qualitatively different when assessed on a daily basis compared to a longer period of time, therefore validating scales or using pre-validated scales, such as the one used in our tool, are recommended (Ohly et al., 2010).

6.3.3 The pre-test findings

Once an initial concept was developed, a pre-test was conducted across two operating theatres. This section provides further details regarding the pre-test. It aimed to assess the tool's usability, wording and platform, and gather overall feedback from a sample of staff. The participants were a convenience sample from two operating theatres. They were invited to participate by the Chief of Surgery and a senior charge nurse. The researcher was situated in the ORs and had conversations following the use of the tool with staff members when they were available. Participants were asked to 'have a go' using the tool and could provide any feedback in person or write feedback in a text box provided in the tool itself. Participants were advised to write whatever they wanted about the tool and were assured that the pre-test results themselves would not be analysed.

Results

Sixteen entries were recorded on the pre-test. Participants included seven nurses, two surgical registrars, two anaesthetists, three anaesthetist technicians, and two that identified as 'other'.

Observations made by the researcher included:

- Within the theatres, staff have periods of ‘down-time’ at different times. This provides windows of time when staff would be able to complete the daily survey. It was deemed important to have access to the tool in each theatre.
- It was important to have iPad stands with clear signage. iPads alone were not clearly visible and required someone to lead the process of ‘sending it around the room’.
- Some participants tried to skip the username option.
- Staff were interested in the tool and positive in their conversations with the researcher. They were happy to have feedback on its use. A number of participants commented favourably on how fast and easy it was.

Feedback from staff included:

- The guidelines for the username were not clear enough and were confusing for some.
- The iPads timed out and needed a passcode to get into them after a short period of time; this was identified as a potential barrier to their use.
- The tool did not fit on the iPad screen properly, so staff had to scroll down, which was frustrating for some.
- A number of participants requested an ‘I’d rather not say’ option if they couldn’t skip questions.
- The word ‘job’ in the main question needed to be enhanced somehow so that it was clear the question specifically related to their employment, not other personal issues.
- Some people felt their feelings were not captured in the ‘what does this relate to’ options, such as ‘feeling tired’ or ‘out of their depth’. Staff often wanted to choose more than one option for this and were frustrated that they couldn’t.
- A number of participants felt it was important to be able to distinguish between the two sites at the hospital as they are run quite separately.
- There was a request for an ‘anaesthetic technician trainee’ option and an ‘anaesthetist registrar/fellow’ option.
- Staff felt that iPads in the tearoom and operating theatres were the logical locations. Most felt putting them in the changing rooms was not a good idea, as they did not spend time there.
- Anaesthetists and anaesthetic technicians preferred a cell phone option.
- There were a lot of mixed views around the ideal time in the shift that the tool should be used.

Post pre-test tool modifications

Following consideration of the observations and feedback, a large number of changes were made. It was decided to hire iPad stands for the trial and have iPads accessible in all theatres (see Figure 6.4). Users were no longer able to skip the username and the instructions were modified to be more easily understood. We were unable to remove the passcode for the iPads that were owned by the hospital due to security protocols but we were advised that if the tool were to become a permanent fixture they could be removed by the IT department. Modifications were made to the layout to improve fit within the window and an 'I'd rather not say' option was added for all questions. The word 'job' in the main question was bolded and underlined. Two sites were added and a time of day question included (to determine what time of the shift staff members were more likely to use the tool – not as a permanent addition). Additional job roles were added as requested. The cell phone option was confirmed as an additional format. The feedback during this stage combined with the feedback that had already been received from middle managers, prompted a lot of discussion regarding how many options there should be for 'what does this mostly relate to?'. After a number of very specific requests for this question, it was agreed to reduce the number of options to five and make them broader. It was agreed that this was not a replacement for personal conversations and therefore a highly specific level of details was not necessary.

Figure: 6.4 Image of the Morale-o-Meter in desk stand

6.3.4 Future tool recommendations

Following the three-week trial, a number of further recommendations were provided to the hospital regarding specific aspects of the tool and logistics for future use.

These include:

Changes to the tool itself:

- A clearer definition for the 'senior nurse' category.
- Strategies to enhance and improve the use of the username guidelines to minimise errors and decrease the risk of double-ups.
- Participants were able to choose multiple answers to the question 'what does this mostly relate to'. It would be useful to get staff to prioritise their choices or choose a top answer with optional supplementary additions.
- Consider breaking down some of the factors further such as 'organisational factors' and 'communication and relationships with colleagues' to allow for a clearer distinction of which aspects the staff member is referring to.
- It is important to be aware that the 'I'd rather not say' option impacts on the analysis of job roles and speciality, it is however deemed an important option for those that are concerned about being identified and is therefore recommended until which time staff members no longer feel the need to use it.

- Setting up iPads through the hospital IT team specifically for the tool so that they won't 'time-out'; the possibility to develop an 'app' and explore increasing cell phone use for it.
- The iPad stands and chargers needed to be secure. On two occasions, the chargers went missing, and the iPads with the small black cases had been moved to unknown locations. The large white stands were much more secure. Space is, however, an issue in a number of the theatres and smaller stands were required there.

Throughout the development period, a number of ideas were discussed between researchers and management personnel and it was agreed that these ideas were not included in the initial version for trialling, although they may be useful for further consideration at a future time. These ideas are listed below:

- Consider staff members being able to see their own overall results also displaying an overall department dashboard. This was not implemented due to IT limitations, unclear how staff

would respond to it and additional thought needed into what wrap-around support would need to be provided.

- Include a 'Question of the Week' into the tool – staff or managers could make suggestions for this. This idea was not implemented due to mixed feedback from managers, some felt it could be 'just another thing to do".
- Provide a way for management to give feedback and respond to aspects of the tool results on the tool itself. This was not implemented due to IT limitations and mixed views from management about how useful it would be.
- Include a discussion forum on the tool. This was not implemented due to IT limitations and concern from management that it could become a complaints forum.
- Include an open comments section. This was not implemented due to concern that the hospital would not be able to provide the resources and personnel for working through and managing a lot of qualitative data. There was also concern it would become a complaints forum.
- Increasing the number of options for 'what does this mostly relate to'. The number of options was reduced over concern that it was getting too detailed with too many options as feedback was taken on board. This may need to be revisited.
- Development of an internal system to help improve the accuracy of response rate calculations. This was beyond the capabilities of the IT systems.

6.4 Chapter summary

The complex foundations underpinning the development of the Morale-o-Meter tool include the collaborative iterative action research approach, combined with sound academic and instrument development theory. This phase highlights the importance of the relationship between researcher and practitioner in ensuring the creation of a relevant, valid, and meaningful tool for the OR setting. The Morale-o-Meter tool went through multiple stages of refinement, over numerous meetings and feedback cycles. This process was a central component of the overall study outcomes.

Chapter 7: The feasibility of a real time measure in the operating room

7.1 Introduction

This chapter provides detailed results of the Morale-o-Meter study related to the value and feasibility of implementing the Morale-o-Meter tool within the OR setting. A published article is presented that considers the results primarily from an OR nurse manager's perspective. Further analysis and discussion of the findings from a wider perspective are provided relating to the tool's utilisation as well as the job satisfaction results gathered during the three-week trial.

7.2 Article: A daily measure of job satisfaction in the operating room: investigating its value and viability

James-Scotter, M., Jiang, L., Walker, C., & Jacobs, S. (2020). A daily measure of job satisfaction in the operating room: Investigating its value and viability. Journal of Perioperative Nursing, 33(3), E5-E15. https://doi.org/10.26550/2209-1092.1082.

The association between job satisfaction and burnout, organisational commitment, safety attitudes, the provision of suboptimal care, and reduced patient satisfaction has been repeatedly demonstrated for healthcare employees (Ahmad & Rainyee, 2014; Kutney-Lee et al., 2009; Linzer et al., 2017; Lu, Zhao, & While, 2019; MacHe et al., 2012; Makary et al., 2006; Shanafelt et al., 2009; Williams et al., 2007). Clear correlations between job satisfaction with staff turnover, absenteeism, and intention to leave are also well recognised (Albion, Fogarty, Machin, & Patrick, 2008; Lu et al., 2019). Such findings are very relevant at a time when retention of both nurses and physicians are of increased concern (Godin, Kittel, Coppieters, & Siegrist, 2005). Consequently, for OR managers, awareness of how staff are feeling about their jobs is a key priority.

Common performance measures in the OR relate to surgical volumes, theatre utilisation, durations, turnover, and financial incoming and out-goings (Oh et al., 2011). Over recent years, an increased focus on decreasing burnout has resulted in a greater emphasis on improving staff satisfaction outcomes in the OR (Lee et al., 2020; Shanafelt et al., 2009). The

subjective nature of job satisfaction, however, makes it difficult to quantifiably and validly measure. The traditional large multi-facet survey methods in the healthcare setting often incur the issues of low response rates and a high risk of sampling bias. In addition, surveys tend to be conducted infrequently, resulting in outdated information being used by management (Denscombe, 2014; Khan et al., 2004).

While more frequent measurement is increasing in popularity within the business sector (Stevenson, 2018; Welbourne, 2016), few studies to date appear to have explored real-time measures in the hospital setting, with only two hospital studies that we are aware of trialling similar tools with hospital employees. Hinsley et al.'s (2016) USA study was conducted in a cardiac catheterisation lab and cardiovascular OR of one hospital (with a workforce of 51 employees). This study developed and trialled a daily survey which aimed to provide a user-friendly platform to communicate perceptions of the health of the work environment. The survey was offered in both paper and digital form and employees could choose if they wanted to remain anonymous. Similarly, Frampton et al. (2017) conducted a study in a Bristol UK University hospital across 23 different hospital speciality areas. They developed and trialled a daily anonymous survey accessed via iPads at multiple kiosks around the hospital. This tool aimed to measure the 'mood' of staff and also provided a broad platform for positive and negative issues to be discussed. These studies will be discussed later in the paper.

Measuring job satisfaction

While job satisfaction can be defined and interpreted in various ways, it is most commonly defined as the extent to which an individual likes or dislikes their job (Spector, 1997). Many researchers agree that it is made up of a combination of dispositional, cognitive (beliefs), and affective (emotional) components (Judge et al., 2017). To date, there is no gold standard as to how job satisfaction should be measured. While there are a number of well-established multi-facet questionnaires, the use of single-item measures to evaluate global job satisfaction has also been supported by numerous well-recognised studies (Dolbier et al., 2005; Highhouse & Becker, 1993; Wanous et al., 1997).

Objectives

The objectives of our study are: 1) to develop and trial a daily job satisfaction measurement tool specifically for the OR setting; 2) to explore issues relating to the implementation of the tool, with a focus on utilisation, practicality, and acceptability; and 3) to

test its convergent validity between daily job satisfaction and overall job satisfaction, and predictive validity of daily job satisfaction with affective commitment (a key component of organisational commitment) and emotional exhaustion (a key component of burnout). This paper includes the main findings of the study with a particular focus on OR nurses.

7.2.1 Method

This study was initiated by senior management in an NZ OR setting. A multi-method design was adopted, comprised of three phases including a development phase, a trial phase, and an evaluation phase, and was conducted within one NZ hospital's OR department.

The development phase (the Morale-o-Meter)

A single-item job satisfaction measurement tool was developed in collaboration with senior management personnel from the OR department at the hospital, with guidance from the current literature, an organisational psychologist, and a Māori cultural advisor from the hospital (appropriate for the NZ context). Once an initial digital version of the tool was developed a short pre-test was conducted within two operating theatres for one day. Participants were invited to test the tool (via iPad) while the first author was present to observe their entries and gather written or verbal feedback relating to their experience of using the tool. Sixteen entries were received leading to numerous modifications of the tool. These changes related to ease of use, comprehensibility, wording, and technical and reporting requirements.

The Morale-o-Meter survey was based upon a previously validated single-item global measure of job satisfaction used by Dolbier et al. (2011) and Warr, Cook, and Wall (1979). It asked *'Overall, how are you feeling about your job today?'.* The traditional Likert response scale was modified into more casual language, to support 'buy-in' from staff, whilst maintaining an anchored 5-point Likert scale (Kyriazos & Stalikas, 2018). In order to provide meaningful information for managers to understand the reasons behind the responses, the survey then asked employees '*What does this mostly relate to?'*. The options for this were derived from the existing literature (Haar & Brougham, 2013; James-Scotter et al., 2019). The survey asked for job role and speciality and for participants to create a username which they would input on every use. A guide was provided to prevent people from forgetting their usernames and to ensure anonymity (Yurek et al., 2008). The Morale-o-Meter took

approximately one minute to complete. See Figure 6.1 for an outline of the Morale-o-Meter tool used in the trial.

The trial phase

A three-week trial of the Morale-o-Meter tool was conducted from the 27th of May 2019 to the 14th of June 2019. All employees working in the OR were invited to participate. Seventeen iPads were placed in desk stands across fourteen operating theatres, two tearooms, and an anaesthetic technician room. A cell phone option was also made available. The iPad stand displayed instructions asking staff to use the tool once each shift. Recruitment was done via a number of methods: a bulk email invitation was sent to all staff; posters were put up requesting staff participation; and the first author presented at a range of staff meetings to provide more details about the project.

The evaluation phase

One week after the completion of the trial, a link to an anonymous online survey developed by the researchers was emailed to all staff. The feedback and validation survey asked respondents for their Morale-o-Meter username and demographics (gender, age, and ethnicity). It used single-items where possible to encourage completion. It included the multichoice questions; '*what do you think about having a tool like this in place permanently*?', *'what device did you prefer to use during the trial?' 'What were the barriers to using the tool every shift?'* It also included an open text section for feedback, comments, or suggestions. The validation question for *overall job satisfaction* was a well-known single-item global satisfaction question originating from Scarpello and Campbell (1983): *"All things considered, how satisfied are you in your job?"* using a 1 (very satisfied) to 5 (very dissatisfied) response scale. *Affective commitment* was measured using a single item selected from the subscale of the organisational commitment scale (Allen & Meyer, 1990): *"I would be happy to spend the rest of my career with this organisation*". *Emotional exhaustion* was measured using three items derived from the Maslach Burnout Inventory (Spurgoen, 1998): "*I feel used up at the end of the workday", "I feel emotionally drained from my work"*, and *"I feel burned out from my work."* The response scales for affective commitment and emotional exhaustion were rated from 1 (strongly agree) to 5 (strongly disagree). Internal consistency reliability of emotional exhaustion was 0.80.

Data analysis

Data analyses, including descriptive statistics and pairwise correlations, were completed using SPSS and R statistical software, while multi-level modelling was conducted with M*plus* 7.0 (Muthén & Muthén, 2015). Multi-level modelling was considered appropriate for this data analysis due to the non-independence in the daily-level data where the daily job satisfaction (Level-1) responses were nested within individuals (Level-2) (Ohly et al., 2010).

7.2.2 Results

Tool Utilisation

A total of 269 staff members utilised the tool over the trial period (78% response rate) and 569 submissions were received. Employees from a wide range of job roles and specialities participated in the trial, with the largest group being nurses (45.7%; see Tables 7.1 and 7.2). Daily utilisation had an approximate 21% response rate ranging from 4 – 55 entries per day (including weekends and one public holiday). Individual tool utilisation per participant ranged from 1 to 14 entries (62% used the tool once, 23% used the tool two or three times and 15% used the tool four or more times) (see Appendices 7.1 and 7.2 for further breakdown of entries). Of the total 569 entries, 39% were completed in the middle of the shift, 32% at the end, and 29% at the beginning of their shift. No significant relationship was found between the time of the shift the tool was completed and the level of job satisfaction. For example, participants were not more likely to report a more positive or negative response at the beginning than at the end of their shift.

Tool Results

The job satisfaction response scale was converted to a numerical 5-point scale for analysis, i.e., 1 = “Great, I love my job today” to 5 = “Awful, get me out of here”. On average 71% (ranging from 52% - 79%) of total participants reported a 1 or 2 each day (see Figure 7.1 for daily breakdown). The mean daily satisfaction score was 2.3 (ranging from 2 - 2.8, average daily median of 2). Specific job roles or department specialities did not make a difference in job satisfaction when comparing job satisfaction mean scores. However, we found that participants who chose the option of ‘I’d rather not say’ for their job role and speciality were more likely to have a lower mean score of job satisfaction compared to the rest of the participants (See Figure 7.2). A total of 127 nurses/healthcare assistants participated in the trial,

with a daily average of 69% who reported a job satisfaction score of 1 or 2 on an average workday. There was no significant difference in overall job satisfaction found between the overall mean scores of those who identified as a senior nurse or nurse (2.2 and 2.3 respectively).

Table 7.1. Tool participant job roles

Job role	**No. participants**	**Percentage**
Nurses	123 *(20 senior nurses)*	45.7%
Anaesthetic technicians	41	15.2%
Anaesthetists	19	7.1%
Surgeons	18	6.7%
Surgical registrars/fellows	18	6.7%
I'd rather not say	18	6.7%
Anaesthetist registrar/fellow	12	4.5%
Orderlies	7	2.6%
Other	7	2.6%
Anaesthetic tech trainee	2	0.7%
Healthcare assistants (HCAs)	4	1.5%
Total	**269**	**100%**

Table 7.2. Division of tool submission specialties

Speciality	**Number of responses**	**Percentage**
General surgery	251	44%
Orthopaedics	147	26%
Gynaecology	48	8%
Otorhinolaryngology	27	5%
Urology	23	4%
Obstetrics	19	3%
Not applicable	38	7%
I'd rather not say	16	3%
Total responses	**569**	**100%**

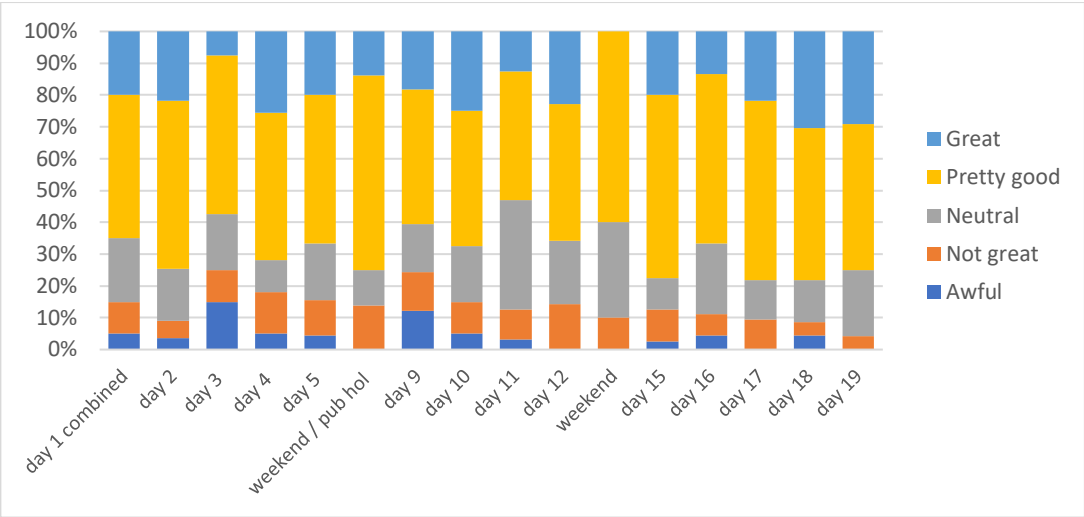


Figure 7.1: Daily Morale-o-Meter trial Results

**note: 'day 1 combined' is the combination of 27th May results and includes two additional early submissions from the day prior. Entries have been combined on weekends (incl. the public holiday) due to reduced staffing.*

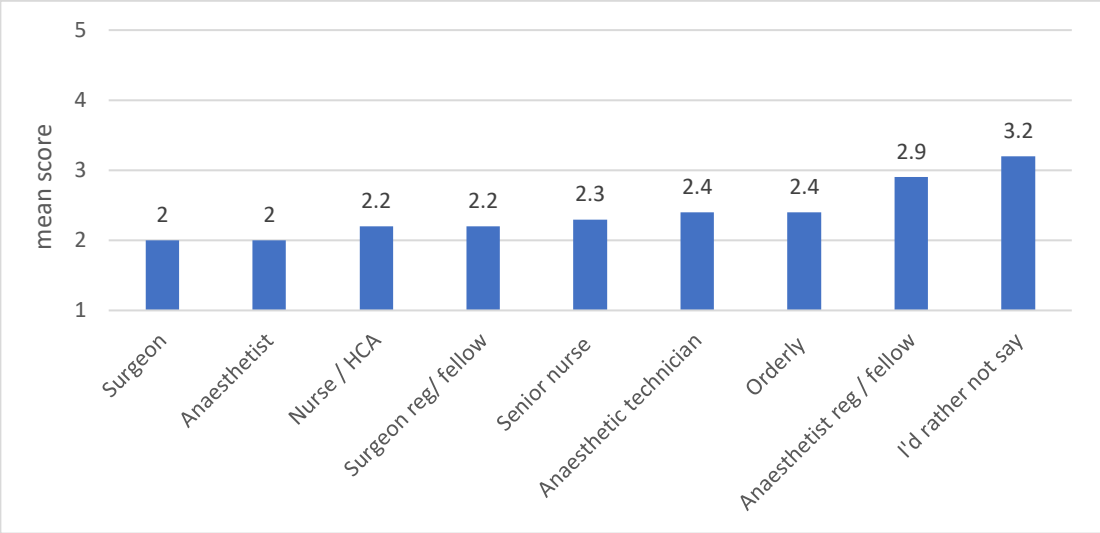


Figure 7.2 Job satisfaction averages by job role over trial period

**Note: mean score scale = 1-great, 2-pretty good, 3-neutral, 4-not great, 5-awful*

Analyses of factors that influenced job satisfaction responses found that positive responses (i.e., 1 or 2) were most commonly influenced by 'relationships and communication with colleagues' (34% and 39% respectively), closely followed by 'the nature of the clinical work' (29% and 28% respectively). Negative responses (i.e., 4 or 5) were most frequently influenced by 'organisational factors (e.g., workload, staffing, equipment)' (33% and 33% respectively), very closely followed by 'relationships and communication with colleagues' (33% and 29% respectively). Results for OR nurses followed a similar trend, with relationships

and communication with colleagues chosen most frequently as the reasons for both a negative or positive day at work (see Table 7.3).

Table 7.3: Factors influencing job satisfaction responses for OR nurses

Response option *(n= no. of nurse responses)*	**clinical work**	**relationships/communication with colleagues**	**organisational factors**	**patient interactions**	**ethnic cultural**	**I'd rather not say**	**other**
Great (n=67)	27% *f=46*	33% *f=58*	17% *f=30*	14% *f=25*	4% *f=7*	2% *f=3*	3% *f=5*
Pretty good (n=166)	28% *f=94*	38% *f=127*	20% *f=66*	8% *f=27*	2% *f=7*	1% *f=2*	3% *f=11*
Neutral (n=62)	23% *f=21*	19% *f=18*	35% *f=32*	2% *f=2*	2% *f=2*	8% *f=7*	11% *f=10*
Not great (n=33)	10% *f=4*	37% *f=15*	30% *f=12*	*f=0*	*f=0*	8% *f=3*	15% *f=6*
Awful (n=9)	8% *f=1*	50% *f=6*	34% *f=4*	*f=0*	*f=0*	*f=0*	8% *f=1*

**Note. n = number of responses from OR nurses over the three-week period. f= frequency of selection over the three-week period (participants could make multiple selections). For example, "n=67" under "great" indicates that 'great' was chosen 67 times by participants; "f=46" under "nature of the clinical work" indicates that this option was chosen 46 times during the trial when participants chose "great".*

Staff feedback

The feedback survey was completed by 38 trial participants (a 14% response rate). Job roles comprised 47% nurses, 13% anaesthetic technicians, 11% anaesthetists, 8% orderlies, and 3% surgeons, with 18% not identified. Sixty-one per cent of respondents reported that they thought it was either a 'good' or 'very good' idea to permanently implement a tool such as this, 34% were 'not sure' and 5% thought that it was a 'bad idea'; no respondents reported that it was a 'very bad' idea. The operating theatre was most commonly identified as the preferred location for the iPads (54%), followed by the tearoom (31%), anaesthetic technician room (11%), and cell phone (4%). The most commonly reported barriers to using the tool were 'forgetting to use the tool' (36%) and 'being too busy' (31%), followed by 'being too tired' (13%) and the iPads not working properly (11%). Two per cent said they didn't feel comfortable answering the question and 18% reported that they found no barriers to using the tool.

Four themes were identified from the qualitative comments on the survey: 1) Feeling positive about the tool (*e.g., "It was good. very easy and quick to fill in"*); 2) Questioning its accuracy (*e.g., "I saw people fill it in when they were cheesed off about something but not when they were happy");* 3) Concerned about how the results from the tool would lead to actual change *(e.g., "Not sure if it's actually going to improve morale or make anything happen but if it gives it a chance to improve, I will do it");* and 4) would prefer the tool for short periods (*e.g., "I'd be more inclined to make an effort for a short period of time").*

For a complete list of quotes see Appendix 7.3.

Tool validity

Matching the daily survey and the validation survey via participant-created ID name led to a final sample of 31 participants being included in the validity analyses. The mean number of entries per participant in the validation survey was 4.3 (median 3, range 1-14). A significant relationship was found between daily-level job satisfaction and overall job satisfaction (*coefficient*=0.78, *SE*=0.16, $p<0.01$) as well as a significant relationship between daily-level job satisfaction with emotional exhaustion (*coefficient*= -0.51, *SE*=0.2, $p<0.01$) and affective commitment (*coefficient*=0.77, *SE*=0.11, $p<0.01$), demonstrating the convergent and predictive validity of the single-item job satisfaction measure in this study.

7.2.3 Discussion

This study explored a number of factors relating to the value, validity, and viability of implementing a daily job satisfaction measurement tool within the OR setting. The overall results from the trial were positive: staff from a wide range of job roles participated in the trial, with nurses making up the largest group. The majority of staff that completed the feedback survey indicated that they thought the tool was a good idea. Aspects of the tool (e.g., short length and flexibility in when and where it could be used) appeared to support staff engagement. Many survey respondents identified having the iPads in the theatres as their preferred location. Given that different staff members have varying periods of downtime within the OR, having the iPads in the theatres allowed them to complete the tool during work hours.

The findings also provide initial support for the convergent validity of daily job satisfaction with overall satisfaction, and the predictive validity of daily job satisfaction with

both affective commitment and emotional exhaustion (key components of organisational commitment and burnout). The significant relationship between daily job satisfaction and overall job satisfaction provides some reassurance that the tool is indeed measuring what it was intended to measure despite being modified for our purpose, suggesting that the average of the daily results can be interpreted as an overall satisfaction score. One of the few studies that has explored this relationship previously was conducted by Ilies and Judge (2004) within an administrative setting. They used ecological momentary assessment methods three times per day for two weeks (n=33) and similarly found a significant result demonstrating convergent validity between daily job satisfaction and overall satisfaction outcomes. Our significant predictive validity findings are consistent with a recent Canadian study conducted by Lee, MacPhee, and Dahinten (2020). They also found a negative relationship between emotional exhaustion and job satisfaction for perioperative nurses (*n*=133). Our results suggest that the tool can assist in predicting an increase or decline in the risk of burnout and the level of organisational commitment of employees. The validity of our tool results was further increased by the existence of an anonymous username. This feature provides the ability to distinguish between entries, permitting accurate calculations of the response rate, reducing sampling bias, and allowing for time series analysis.

Overall, the job satisfaction results from our cohort found that the majority of OR employees generally felt positive about their job during the trial period. Managers could easily identify the number of 'happy' or 'unhappy' staff on any given day, consider the percentage of the workforce participants represented, and identify what factors may influence responses; from either the perspective of a particular job role or for the whole team. This allows for the development of timely and targeted interventions. For example, in our study, relationships and communication with colleagues were a major factor influencing both a positive and negative day at work for nurses, in keeping with Lee et al. (2020) who identified the nurse – physician relationship as a significant predictor of perioperative nurse job satisfaction. In our study, the importance of relationships and communication with colleagues was also clear for the wider workforce, suggesting this would be a logical starting point for any intervention that aims to improve team staff satisfaction outcomes for this cohort.

Our study also identified some key areas that need to be addressed prior to further trialling or implementing of the tool. Firstly, while the overall response rate was high, the daily response rate was only 21% and a large number of staff members used the tool only once or

twice over the trial period. Many reported that they forgot to use the tool or felt too busy to engage with it. This suggests that a reminder system is required, ideally embedded within the daily routine alongside other daily expectations such as surgical briefings and checklists. Survey feedback from staff suggested that while many were interested in initiatives that would improve overall 'morale', they questioned how the data would be used and if it would indeed lead to an improvement in job satisfaction outcomes. Transparent and regular feedback and action from managers are likely to be essential for the tool's success, with trust likely to develop as staff see evidence of positive change through its use. This was seen in both the Frampton et al. (2017) and Hinsley et al. (2016) studies, which were conducted over much longer time frames. Both studies reported an increase in staff engagement as management actively and positively responded to feedback and comments. Lastly, caution is needed comparing job roles and specialities, as understandably those that were most negative about how they were feeling in their jobs were also less likely to identify their job role or speciality. Feeling comfortable sharing this information is likely to improve as trust is developed over time.

A number of comparisons can be made between our study and those of Frampton et al. (2017) and Hinsley et al. (2016). As with our study, both studies developed the tool in collaboration with hospital personnel. Both studies used a simple visual smiley face/traffic light system and aimed to gain additional information regarding the reasons underpinning staff responses. While the tools from these two studies share a number of similarities with the Morale-o-Meter, neither study appeared to use pre-validated questions, there were no mechanisms to trace individual entries, and there was minimal consideration of the validity of the results. While this may be sufficient if data were solely used informally at a local level, managers wanting to analyse the data as an additional KPI to influence decision-making and policy need to know the validity of the data.

Limitations

This study was conducted in one hospital with one sample over a relatively short time period, limiting any generalisation of the findings to other populations. In addition, the low response rate at a daily level as well as for the feedback and validation survey may have resulted in some sampling bias. A further possible limitation relates to the power of the analysis of the data via multi-level modelling. Although no research to date has investigated the appropriate sample size for this analysis, it is generally accepted that the number of Level-2 units is of particular importance (Preacher, Zyphur, & Zhang, 2010). However, when the number of

groups (i.e., Level-2 units) is fewer than 50 (31 matches in our case), the standard errors for the fixed parameters are slightly biased downward (Hox, 2010). Lastly, any study that requires self-reporting comes with the risk of common method bias (Denscombe, 2014).

Implications for perioperative nursing

Daily measurement of job satisfaction has the potential to be a highly effective tool for nurse managers at all levels in the OR, enabling up-to-date, valid information which can be tracked and monitored over time. The close nature of the OR team means that job satisfaction is often inter-related between team members and decisions impacting one profession will likely impact on another (James-Scotter et al., 2019). Consequently, assessing and meeting the needs of nurses in this setting should not be done in isolation. The Morale-o-Meter tool allows job satisfaction to be viewed and managed from an interprofessional perspective, building and strengthening healthy inter-professional relations. It also provides the opportunity to give a measure for a 'team' which could be a particular professional group, an individual theatre team, a surgical speciality, or the entire theatre team. As the tool is further developed, there is potential to monitor for variance and trends over time and to explore its sensitivity to other theatre metrics (e.g. changes in theatre utilisation, theatre policy, or staff changes).

Conclusion

Overall, the results of the Morale-o-Meter study provide meaningful evidence supporting the validity and viability of using a daily single-item job satisfaction measure in the OR setting. This tool has the potential to change the way job satisfaction is measured and managed in the OR setting, improving job satisfaction outcomes, and enhancing outcome measures for staff wellbeing initiatives. Further research is recommended to be conducted across multiple sites for longer periods of time.

7.3 Additional information

7.3.1 Tool utilisation

An analysis of the relationship between the level of job satisfaction and the frequency of tool utilisation was conducted to address concerns from management that those most satisfied in their job would engage with the tool more often than those less satisfied in their jobs and therefore skew the results. A Pearson correlation analysis found no significant

relationship between the frequency of using the tool and job satisfaction. However, possible limitations of this analysis relate to the sample not representing the entire department factors and the Hawthorne Effect (where if an individual knows they are in a study it may change the way they behave). Staff may behave differently when they know are no longer part of a study (Huang, 2010; Jeanes, 2019).

7.3.2 Time of tool utilisation

As mentioned in Chapter 6, during the development of the tool, there was discussion around when staff members should be asked to use the tool. While initially at the 'end' of a shift was assumed a logical time, feedback gathered during the pre-test, and conversations with some job role managers expressed concern that team members might be too tired to complete the survey at the end of their day. Flexibility was therefore deemed an important component for gaining participation and engagement. There was however general concern from senior managers that if staff were permitted to use the tool at the beginning of a shift, it would not provide an accurate assessment based on their assumption that people may feel more positive at the beginning of their shift compared to the end of their shift. In response, it was decided to add the 'time of shift' to the tool for the trial period in order to ascertain when staff were most likely to use the tool and if job satisfaction outcomes would be influenced by the time of shift when responses were submitted. We, therefore, instructed staff to use the tool at any time during their shift during the trial period and added the additional questions around the 'time of shift' in order to conduct an analysis (see Appendix 6.2).

The results found a relatively even split in the time of shift that participants chose to use the tool. Of the total 569 responses (beginning of the shift n=164, 29%, middle n=224, 39%, end n=181, 32%), with a slight trend towards increased use at the middle of the shift. Investigating the effect of individual job roles showed slight variations to the overall trend, with orderly entries most frequently done at the beginning of the shift (65%) and anaesthetic technicians more commonly using the tool at the beginning and the middle of the shift (see Figure 7.3). No significant difference was found between job satisfaction mean scores and 'time of shift' ($P>0.05$). Of those participants who used the tool more than once during the trial (n=104), 79% varied in the time they chose to use the tool, with only 22 participants using the tool at the same time of their shift each day. Overall, these findings provide evidence to support

providing flexibility in the time staff members can use the tool, with this being likely to support buy-in and overall participation.

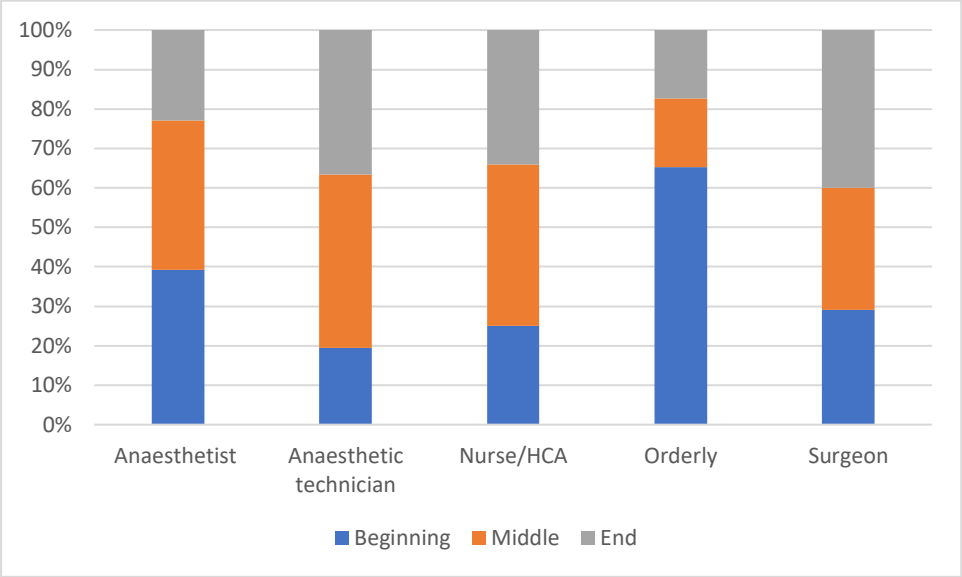


Figure: 7.3: Time of tool utilisation by job role.

7.3.3 Validity testing

The following provides some additional information relating to the validation of the survey findings. While the construct and predictive value of single-item job-satisfaction measures have been well validated, it is important to demonstrate that the setting, change of wording, and the daily nature of the tool is not likely to impact on the validity of the tool (Kyriazos & Stalikas, 2018). This is particularly important if the tool is to be trusted at a senior/executive management level and is to be used to support decision-making.

As previously explained, the survey (comprised of questions relating to overall job satisfaction, emotional exhaustion, and organisational commitment) was completed by 38 participants post-trial (14% response rate of those who participated in the trial). Matching the daily survey and the validation survey via participant-created ID name led to a final sample of 31 participants being included in the following validity analyses. Reasons for not being included related to either not providing their username or not answering the validity questions. Demographics of these 31 participants are as follows: 77% females, 58% NZ European, 6% Maori, 6% Filipino, 22% other, 6% not reported. The median age range was 40-44 years. This sample of 31 was a relatively good representation of the trial sample overall, with the most

noticeable difference being surgeons which made up only 3% of the validity sample, compared to 13.4% of the total trial population (see Table 7.4).

Table 7.4 Sample comparison of job role representation

Validity sample	%	**Total trial population**	%
Nurses / HCA	58%	Nurses / HCA	47.2%
Anaesthetists (incl. registrar /fellow)	13%	Anaesthetists (incl. registrars/fellows)	11.6%
Anaesthetic technicians (incl. trainee)	16%	Anaesthetic technicians (incl. trainee)	15.9%
Surgeons (incl. registrar /fellow)	3%	Surgeons (incl. registrars/fellows)	13.4%
Orderlies	10%	Orderlies	2.6%
Other	0%	Other	2.6%
Not reported	0%	Not reported	6.7%
Total	100%		100%

The validity sample (*n*=31) entered 135 submissions throughout the three-week Morale-o-Meter trial with the mean number of entries per participant being 4.3 (median 3, range 1-14) The job satisfaction mean score for the validity sample over the trial period was 2.3 (SD1.0), the same as the total trial population (2.3, SD1.0). Table 7.5 provides further descriptive statistics and zero-order correlations among the variables studied.

Table 7.5: Descriptive statistics and intercorrelations

Variable	***N***	***M***	***SD***	***1***	***2***	***3***	***4***
1.Daily job satisfaction	135 tool entries	2.3	1.0	-			
2.Overall job satisfaction	31 participants	2.0	0.45	0.41**	-		
3.Emotional exhaustion	31 participants	2.7	0.75	-0.31**	-0.36**	-	
4.Affective commitment	31 participants	2.4	0.79	0.38**	0.38**	-0.21*	-

*Note. * p<0.05 **p<0.01*

The multilevel analysis then conducted allowed for the situational context to be taken into account. Data were analysed at a daily level looking at within-person variance as well as between-person variance (Ohly et al., 2010). Multi-level analysis was considered appropriate due to the lack of independence between the daily observations (Lischetzke, 2014).

This analysis yielded highly significant results with overall job satisfaction, 1) strongly positively related to daily job satisfaction (*coefficient=0.78, SE*=.16, *p* <0.01) establishing convergent validity; 2) positively related to affective commitment (*coefficient=0.77, SE=.11, p* <0.01), and 3) negatively related to emotional exhaustion (*coefficient=-0.51, SE*=.20, *p* <0.01) measured one week later (Figure 7.4).

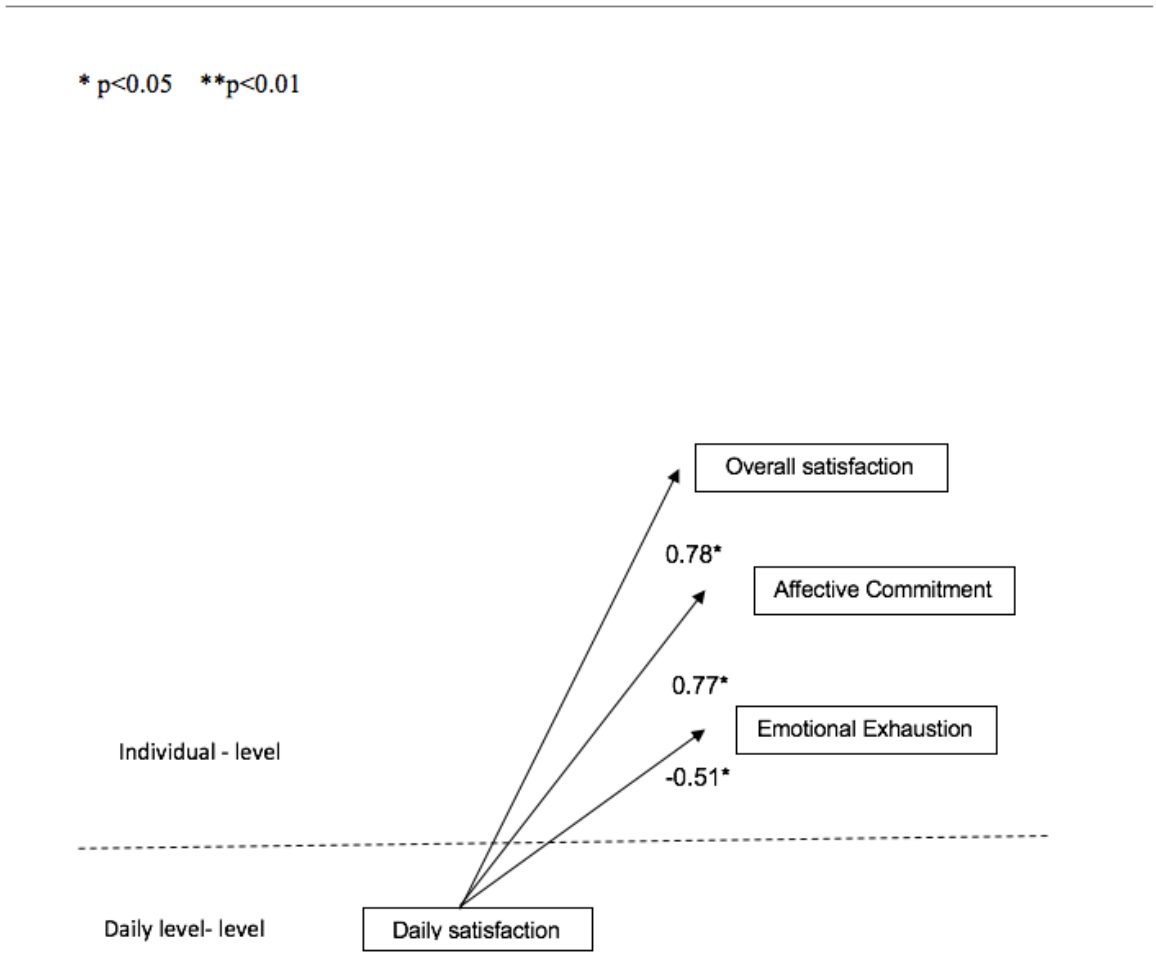


Figure 7.4: Results from the hierarchical linear modelling on the study variables

The findings from this study provide initial support for the construct validity of the Morale-o-Meter tool and its ability to predict symptoms of burnout and organisational commitment. As touched on in the above article, this is consistent with the study conducted by Ilies and Judge (2004) who also found a significant positive relationship between daily job satisfaction and overall job satisfaction. There were however a number of differences in this study compared to Ilies and Judge's (2004) study, due to the differing study objectives.

Specifically, participants in this study completed the tool once per shift, whereas participants in Ilies and Judge's (2004) study completed their daily job satisfaction measure three times each day. Second, the Morale-o-Meter includes a single item of daily job satisfaction, whereas Ilies and Judge (2004) used a 5-item measure of daily job satisfaction. Another difference was that participants in this study were permitted to use the tool at any time of their shift, while Ilies and Judge (2004) set a specific schedule for completing their daily job satisfaction measure. Despite these differences, the relationship between daily job satisfaction and overall job satisfaction remained strong. Ilies and Judge's study also identified that one's mood influenced daily satisfaction (explaining some fluctuation) but it is important to note that even when accounting for mood, the relationship between overall satisfaction and daily satisfaction remained significant (r=0.36, p<0.05). Previous reports of construct validity between single items and multi-facet scales of job satisfaction of similar single-items have reported similar correlation coefficients ranging between 0.60 and 0.82 (Dolbier et al., 2011; Scarpello & Campbell, 1983; Wanous et al., 1997).

The findings also demonstrate a strong positive relationship between daily job satisfaction and affective commitment. Affective commitment relates to the affective attachment that one has to the values of an organisation and is a key component of overall organisational commitment (Meyer et al., 2002). It is generally accepted that the more satisfied employees are with their jobs, the more likely they are to develop attachment and commitment to their organisation (Meyer et al., 2002; Samadi Miarkolaei & Samadi Miarkolaei, 2014). The present study supports the predictive validity of a daily satisfaction measure of job satisfaction in the OR setting, suggesting that when satisfaction levels rise, managers can expect a greater level of organisational commitment, emotional investment, and loyalty.

Lastly, a strong negative relationship between daily job satisfaction and emotional exhaustion measured at a later time was established. The predictive relationship of job satisfaction with emotional exhaustion is consistent with previous studies where the negative relationship between job satisfaction and burnout (and emotional exhaustion) has been well-established (Tsigilis et al., 2004). Emotional exhaustion is a key component of burnout, a response to chronic stressors on the job and is the most frequently examined dimension of burnout (Spurgoen, 1998; West, Dyrbye, Sloan, & Shanafelt, 2009). With increasing concerns relating to the risk of burnout for nurses and physicians (Rama-Maceiras et al., 2012; Shanafelt et al., 2009; Vahey et al., 2004), burnout has recently been an area of keen interest within the

healthcare sector. These findings provide managers with reassurance that the strength of the relationship between job satisfaction and burnout remains strong for the Morale-o-Meter.

7.3.4 Tool results

This section provides a breakdown of the tool results for each job role across the three-week trial. The job satisfaction outcomes are also explored in more depth, including factors that influenced staff job satisfaction at a daily level within and between job roles. This data is valuable information that provides a snapshot of the experiences and influences of job satisfaction across the entire OR team within the NZ OR context, which is rarely reported.

As previously stated, on average 71% (ranging from 52% - 79%) of the total participants reported a positive job satisfaction score each day (i.e., 1 or 2). This remained relatively constant when viewed at a weekly level (see Figure 7.5). The findings from the validity analysis provided evidence that the mean daily satisfaction score for an individual can reliably be interpreted as an overall job satisfaction score. The analysed individual overall job satisfaction by grouping the individual mean scores were then divided into three categories: 1) good or very good job satisfaction (an average between 1 and 2.5); 2) average job satisfaction (an average between 2.6 and 3.5); and 3) those that had low or poor job satisfaction (an average between 3.6 and 5). This analysis found on average a total of 66% of participants to have ‘good or very good’ job satisfaction, 20% of participants had ‘average’ job satisfaction, and 14% had ‘low or poor’ job satisfaction (during the three-week period). While there were no significant differences found between job satisfaction and specific job roles or department specialities when comparing mean scores, the combined scores for senior surgeons and senior anaesthetists were found to have a significantly higher overall mean score than the combined scores for anaesthetists and surgical registrars and fellows (mean score 0.99 and 1.46 respectively, p=0.04), this will be discussed later in the chapter.

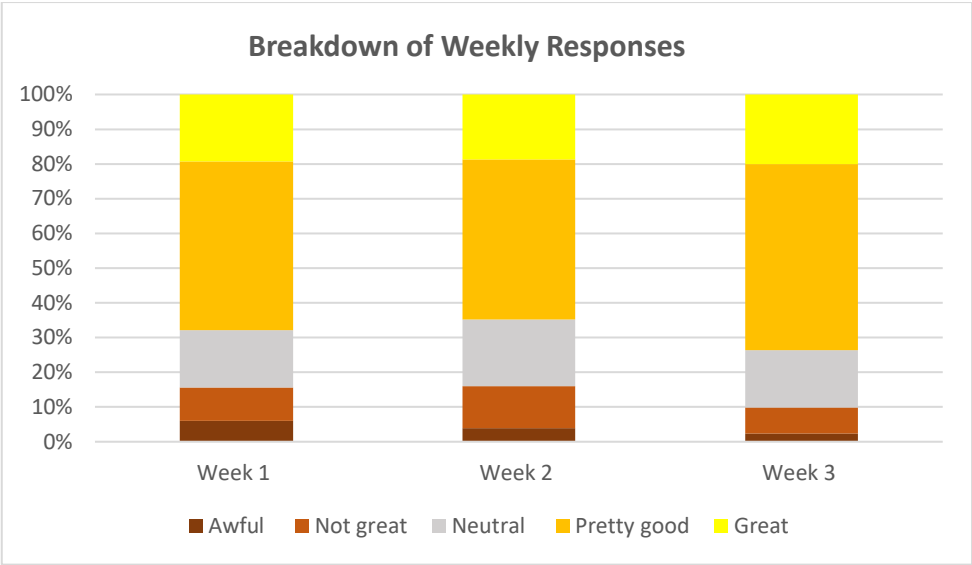


Figure 7.5: Breakdown of weekly job satisfaction responses

7.3.5 Results by job role

Below is a breakdown of tool utilisation, overall job satisfaction results (calculated by individual mean scores) and factors that influenced job satisfaction scores by professional job role. A table is provided for each job role with a breakdown of factors influencing responses. 'Positive' is used to describe the combined 'pretty good really' and 'great, I love my job today' responses and 'negative' captures the 'not great actually' and 'awful get me out of here' combined responses. It is also important to note that participants could choose more than one reason when using the tool.

7.3.5.1 Anaesthetists (incl. anaesthetist registrars/fellows)

A total of 19 anaesthetists and 12 anaesthetist registrars or fellows (total 31) participated in the trial, an overall response rate of 42%. This group made up 11% of total participants and 7% (n=41) of the total responses. Daily use of the tool varied from 0 to 6 entries per day. Individuals used the tool between 1 and 7 times, with 87% using the tool just once. Overall 68% of anaesthetists (incl. registrars/fellows) had 'good or very good' overall job satisfaction during the trial period. The most common factor that influenced job satisfaction for anaesthetists on a positive day at work was 'relationships/communication' (26 entries), followed closely by the 'clinical work' itself (20 entries). On the other hand, neutral and negative days were most frequently attributed to 'organisational factors' (see Table 7.6).

Table 7.6: Breakdown of factors influencing job satisfaction responses for anaesthetists by frequency of use

Anaesthetist responses	Clinical work % (*f*)	Relationships/ communication % (*f*)	Organisational factors % (*f*)	Patient interactions % (*f*)	Ethnic wellbeing % (*f*)	Rather not say % (*f*)	Other % (*f*)	Total % (*f of entries*)
Positive	30% (20)	39% (26)	12% (8)	14% (9)	0	0	5% (3)	*100 (66)*
Neutral	25% (2)	25% (2)	50% (4)	0	0	0	0	100 (8)
Negative	29% (2)	0	71% (5)	0	0	0	0	100 (7)

***** *f= frequency of selection over the three-week period*

7.3.5.2 Anaesthetic technicians (including trainees)

A total of 41 anaesthetic technicians and two anaesthetic trainees participated in the trial (a response rate of 81%). This group made up 16% of the total participants and 15% of the total responses (*n*=84). Daily use varied between 0 and 10 entries per day and individual use also ranged from 1 to 10 entries. Sixty-one per cent of this group used the tool just once, 35% used it two to three times, and 4% used it four or more times. Sixty-five per cent of anaesthetic technicians (incl. trainees) had 'good or very good' job satisfaction during the trial period. Factors that influenced job satisfaction on a positive day most commonly related to 'relationships and communication' (45 entries), followed by the 'clinical work' (33 entries). A neutral and negative day at work were commonly related to 'relationships and communication', the 'clinical work', and 'organisational factors' (see Table 7.7).

Table 7.7: Breakdown of factors influencing job satisfaction responses for anaesthetic technicians by frequency of use

Job attitude (total entries)	Clinical work % (*f*)	Relationships / communication % (*f*)	Organisational factors % (*f*)	Patient interactions % (*f*)	Ethnic wellbeing % (*f*)	Rather not say % (*f*)	Other % (*f*)	Total % (*f*)
Positive	29% (33)	39% (45)	13% (15)	15% (18)	0	2% (2)	2% (2)	100% (115)
Neutral	25% (3)	33% (4)	0	0	0	17% (2)	25% (3)	100% (12)
Negative	21% (4)	32% (6)	26% (5)	0	0	0	21% (4)	100% (19)

**f= frequency of selection over the three-week period*

7.3.5.3 Nurses (including healthcare assistants)

A total of 123 nurses and four healthcare assistants participated in the trial (response rate of 83%). As healthcare assistants are a very small group they have been combined with nurses in this section. This group made up 47% of total participants and 59% (*n*= 336) of the total responses. Daily use ranged from 2 to 40 entries and individual use ranged from 1 to 14 entries. Just under half of the nurse participants (48%) used the tool just once, 26% used it two or three times with a further 26% using it four or more times. Overall job satisfaction found 69% of nurses (incl. HCAs) reporting good or very good job satisfaction during the trial period. Factors that influenced job satisfaction responses for nurses on a positive day were most commonly 'relationships and communication' with colleagues, followed by the 'clinical work'. A small number chose 'ethnic wellbeing' (14 entries). A neutral or negative day at work was most commonly attributed to 'organisational factors' (58 entries). A neutral day was also commonly influenced by aspects of the 'clinical work' (see Table 7.8).

Table 7.8: Breakdown of factors influencing job satisfaction responses for nurses by frequency of use

Job attitude	Clinical work % (*f*)	Relationships / communications % (*f*)	Organisational factors % (*f*)	Patient interactions % (*f*)	Ethnic wellbeing % (*f*)	Rather not say % (*f*)	Other % (*f*)	Total % (*f*)
Positive	28% (140)	36% (185)	19% (96)	10% (52)	3% (14)	1% (5)	3% (16)	100% (508)
Neutral	23% (21)	19% (18)	35% (32)	2% (2)	2% (2)	8% (7)	11% (10)	100% 92
Negative	8% (5)	34% (21)	42% (26)	0	0	5% (3)	11% (7)	100% 62

**f= frequency of selection over the three-week period*

7.3.5.4 Orderlies

A total of seven orderlies participated in the Morale-o-Meter trial, making up 3% of the total participants and 4% (*n*=24) of total responses. Daily use ranged from 0 to 4 entries. The number of entries coming from each individual ranged from 1 to 11, with four participants using the tool just once, and the remaining three participants using it three or more times. Overall, over half of the orderlies (57%) reported good job satisfaction on average. No orderlies had 'very good job satisfaction' or 'low or poor satisfaction'. 'Relationships and communication' with colleagues was the most influential choice for a positive day as well as a neutral/negative day (see Table 7.9).

Table 7.9: Breakdown of factors influencing job satisfaction responses for orderlies by frequency of selection

Job attitude	Clinical work % (*f*)	Relationships / communications % (*f*)	Organisational factors % (*f*)	Patient interactions % (*f*)	Ethnic wellbeing % (*f*)	Rather not say % (*f*)	Other (% (*f*)	Total % (*f*)
Positive	13% (3)	52% (12)	17% (4)	9% (2)	4% (1)	4% (1)	0	100% (23)
Neutral/negative	0	60% (6)	40% (4)	0	0	0	0	100% (10)

**f= frequency of selection over the three-week period*

7.3.5.5 Surgeons (including surgical registrars/fellows)

A total of 18 surgeons and 18 surgical registrars or fellows participated in the trial, making up 14% of the total number of participants and 9% (*n*= 53) of total responses. Daily use varied between 0 and 8 entries. Individual use varied from 1 to 5 entries, with 78% of participants using the tool just once. Overall job satisfaction found 78% of surgeons (incl. registrars/fellows) averaging 'good' or 'very good' job satisfaction during the trial period. Factors that influenced responses for surgeons on a positive day predominantly related to both 'relationship and communication' with colleagues (31 entries) and the 'clinical work' (30 entries). Neutral/negative days were mostly influenced by 'organisational factors' and aspects of the 'clinical work' (see Table 7.10).

Table 7.10: Breakdown of factors influencing job satisfaction responses for surgeons by frequency of selection

Job attitude	Clinical work % (*f*)	Relationships / communications % (*f*)	Organisational factors % (*f*)	Patient interactions % (*f*)	Ethnic wellbeing % (*f*)	Rather not say % (*f*)	Other % (*f*)	Total % (*f*)
Positive	36% (30)	37% (31)	13% (11)	11% (9)	1% (1)	0	2% (2)	100% (84)
Neutral	25% (2)	25% (2)	50% (4)	0	0	0	0	100% (8)
Negative	15% (2)	0	31% (4)	0	0	8% (1)	46% (6)	100% (13)

**f= frequency of selection over the three-week period*

7.3.6 Factors influencing overall job satisfaction responses

This section expands on the analysis of the factors influencing job satisfaction responses. As previously explained, the analysis of factors that influenced job satisfaction responses across the whole OR team found that positive responses (i.e., 1 or 2) appeared to be influenced most commonly by 'relationships and communication with colleagues', closely followed by 'the nature of the clinical work', see Figure 7.6. Neutral responses were most commonly influenced by 'organisational factors' followed by 'relationships and communication with colleagues' and then 'the clinical work' as per Figure 7.7. Negative responses were predominantly influenced by 'organisational factors (e.g., workload, staffing, equipment)', closely followed by 'relationships and communication with colleagues' (see Figure 7.8). Participants often used the 'other' option to allow for free text to further explain their selection. A summary of 'other' comments gathered from the tool can be found in Table 7.11 and will be discussed later in the chapter.

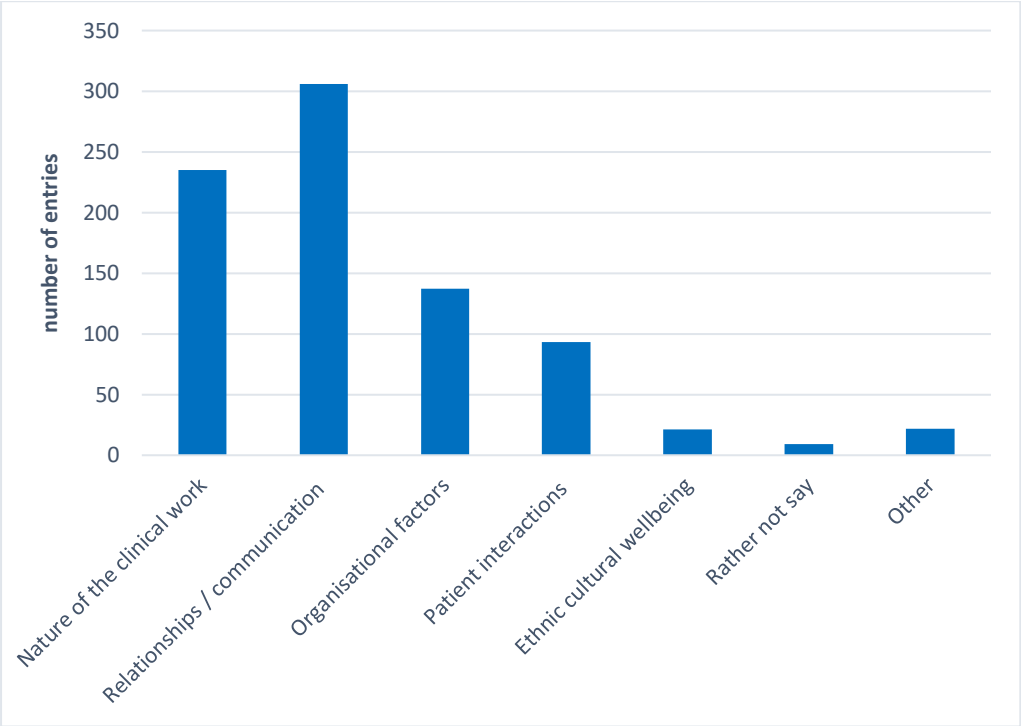


Figure 7.6: Factors influencing a positive day at work across the OR team

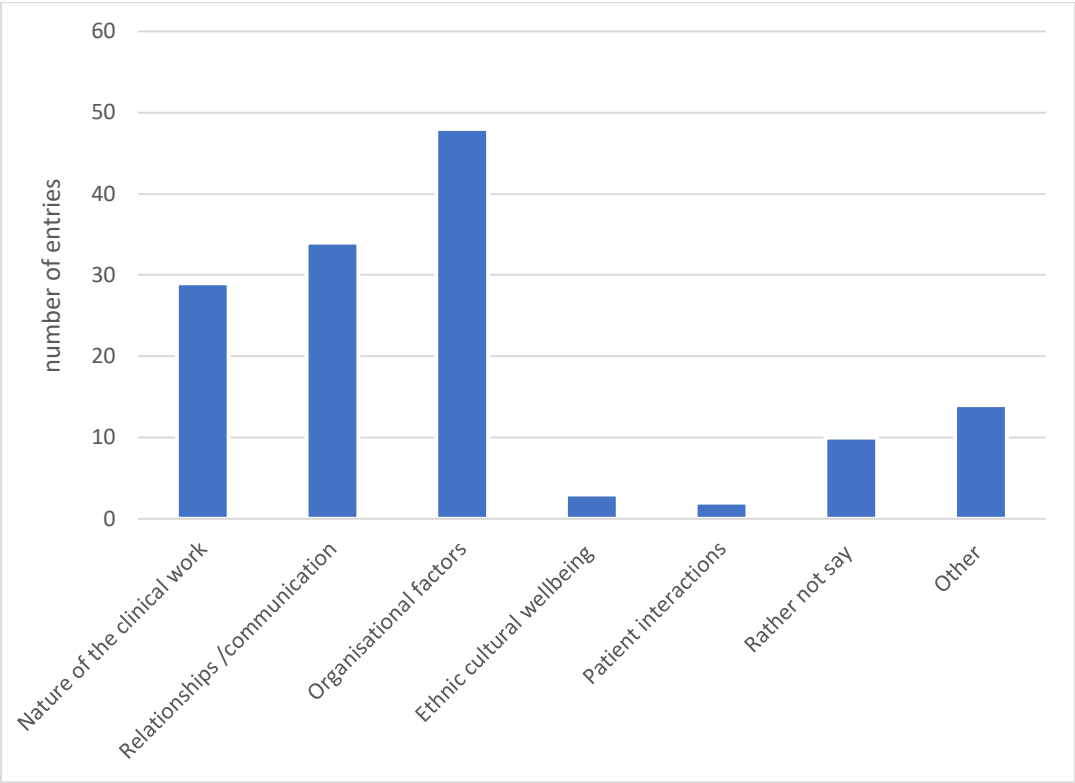


Figure 7.7: Factors influencing a neutral day at work across the OR team

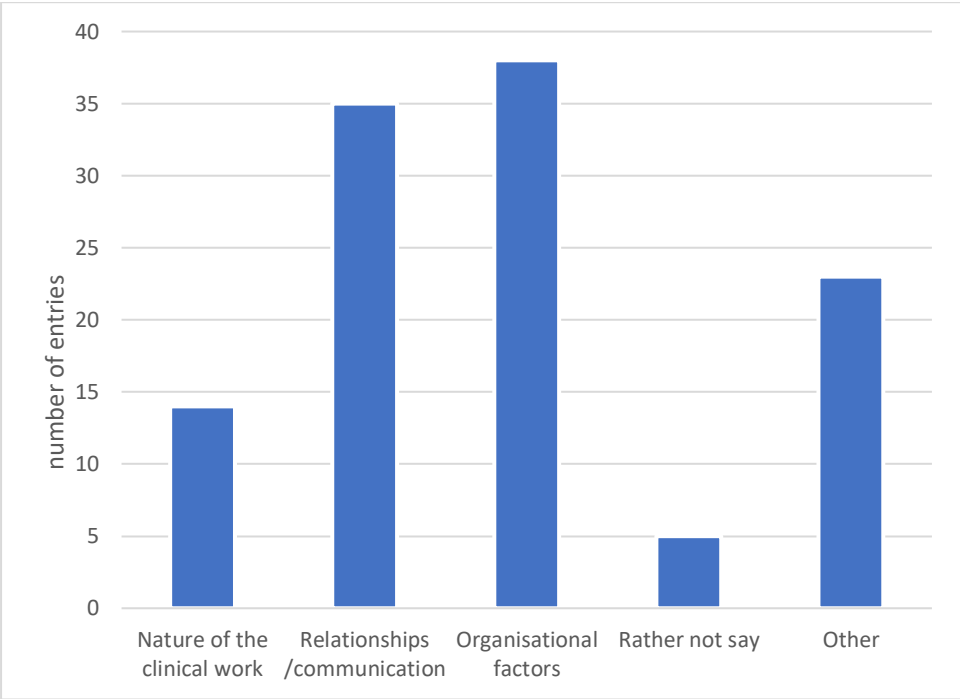
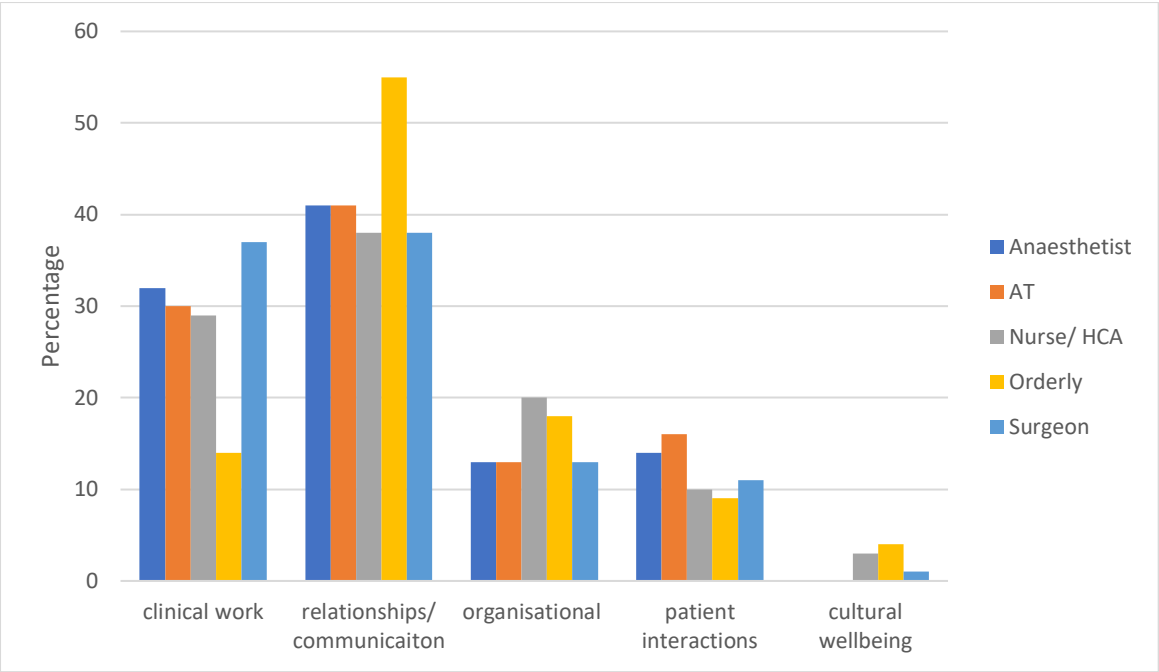


Figure 7.8: Factors influencing a negative day at work across the OR team

Table 7.11: summary of 'other' comments collated from the tool trial

Response (n=57)	Key themes of 'Other' comments
Great, I love my job today (n=5)	*A productive/positive shift* *Not feeling under pressure*
Pretty good really (n=17)	*Feeling supported by staff/positive relationships within the team* *Finishing early or on time* *List manageable/experienced team*
Neutral, ho-hum (n=14)	*Breaks between shifts* *Salary* *Physically tired*
Not great actually (n=16)	*Dynamics of the team* *Attitudes/communication between team members* *Feeling overwhelmed by workload 2* *Short staffed 2* *Theatre access and turnaround/list overruns* *Not being consulted about lists 2* *Unhappy with speciality they are working in* *Issues with equipment disrupting surgery*
Awful, get me out of here (n=5 responses)	*Feeling disrespected or spoken to poorly* *Not feeling part of the team* *Needing a break*

Factors influencing job satisfaction were relatively consistent between job roles, with some minor variations (see Figures 7.9 and 7.10). 'Ethnic cultural wellbeing' was chosen by a small number of nurses, orderlies, and surgeons relating to a positive day at work, but was not chosen by any job roles for a negative workday. 'Organisational factors' most commonly influenced a negative day for nurses, anaesthetists, and surgeons, whereas for orderlies and anaesthetic technicians 'relationships and communication with colleagues' was most influential for a neutral or negative day at work.



**note: participants were able to respond using multiple answers*

Figure 7.9: Comparison of factors influencing a positive job satisfaction response by job role

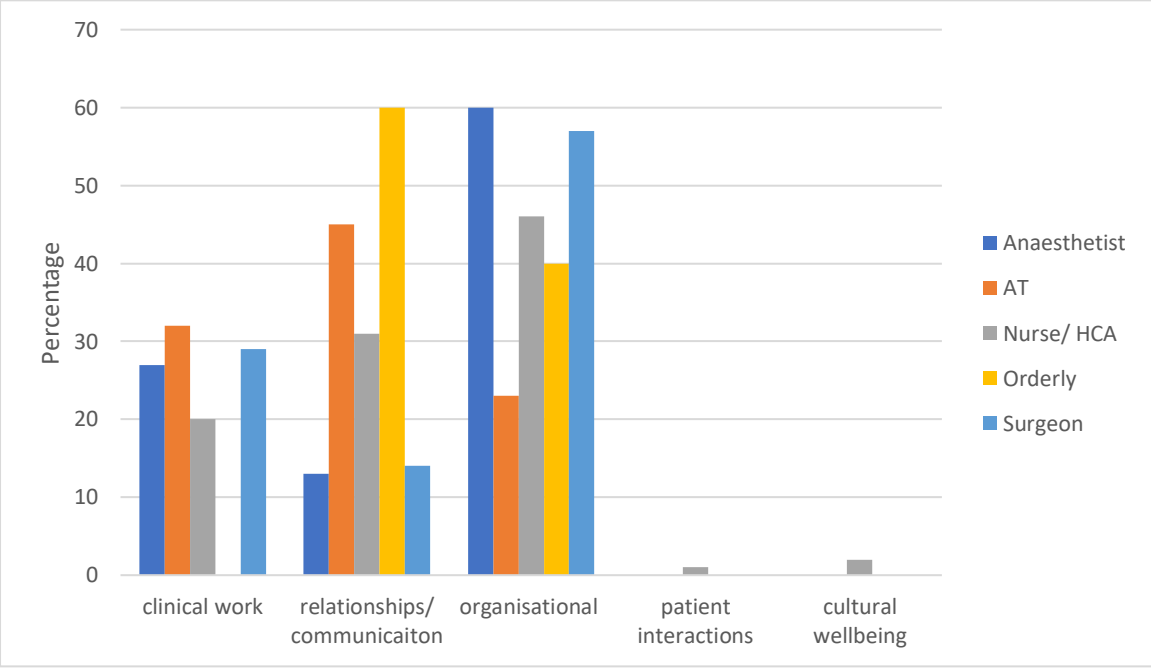


Figure 7.10: Comparison of factors influencing a neutral or negative job satisfaction response by job role

7.3.7 Further discussion

Overall, the job satisfaction results from our three-week Morale-o-Meter trial found 66% of the participants were 'satisfied' or 'very satisfied' with their job. This is similar to many of the studies identified in the literature review with many finding staff 'moderately satisfied' in their job (James-Scotter et al., 2019). Job role or speciality did not appear to make a difference in terms of the job satisfaction levels, with the notable exception of those that did not want to report their job role or speciality. Nurses made up the largest group at 45.7% of those that participated in the trial (a fair representation of the proportion of the OR workforce), Their high response rate of 83% suggests a high level of interest in the tool. Also, worthy of note was the participation of senior nurses. Considering the significant role nurses play in the management of the OR, this was pleasing to see. In the literature the satisfaction of OR nurses is consistent, with some suggesting OR nurses may be the least satisfied of all OR job roles (Flin et al., 2006). While no difference was found between nurses and senior nurses or between nurses and other job roles in this study, without knowing the job role of those that chose not share this information, it is impossible to know for sure.

Additional analyses of the Morale-o-Meter data found that there was however a significant difference between senior medical officers (anaesthetists and surgeons) and the less senior registrars/fellows that participated in the trial. This is consistent with other studies, such as Chiron's (2010) study and Duffy and Richard's (2006) study, both of which found status to be a key contributing factor to job satisfaction for both anaesthetists and surgeons. Holzer et al. (2019), who conducted a similar daily diary approach over five shifts (n=81), also found lower job satisfaction among resident surgeons compared to senior surgeons.

The Morale-o-Meter tool captured data at a daily level regarding factors that influenced both a positive and negative (or neutral) job satisfaction response for OR employees. On the days when the workforce was happiest relationships and communication with colleagues were very dominant factors. As satisfaction levels decreased, the frequency of those choosing organisational factors increased markedly.

In general, our findings are consistent with the existing literature. The influence of 'relationships and communication with colleagues' on overall job satisfaction is commonly

cited in the OR literature and consistent with the themes relating to 'relationships and communication with colleagues' seen in the tool comments. Positive relationships between the team and feeling supported were related to positive job satisfaction responses, whereas reports of feeling undervalued or disrespected were among the factors influencing a negative response. This is in line with some OR literature that suggests that within the OR's stressful environment and strong hierarchical structure, it is not uncommon to receive reports of interpersonal conflict (Chipps, Stelmaschuk, Albert, Bernhard, & Holloman, 2013; Dunn, 2003). The nurse-physician relationship is repeatedly identified as particularly important for nurse job satisfaction (Donald, 1999; Eakin, 2017; Eskola et al., 2016; Heinzelman, 2014; Johnson, 2008; Stott & Johnstone, 2013; Sveinsdóttir et al., 2016). Similarly, anaesthetists feeling valued and highly regarded by surgeons have also been associated with higher job satisfaction; even simple communication, such as being thanked at the end of a case, was found to make a difference (Jenkins & Wong, 2001). Anaesthetist technicians were found to be similar. An NZ study (*n*=154) reported job satisfaction for anaesthetic technicians frequently related to teamwork. Job dissatisfaction was commonly related to lack of respect from nurses and limited career pathways (Kluger & Bryant, 2008). In this study, surgeons and anaesthetists were particularly influenced by relationships and colleagues on a positive day, but less so when they were feeling negative. This may be due to a tendency for surgeons to generally comment more on the configuration and continuity of the team than the communication across the team (Flin et al., 2006).

'Organisational factors (staffing, equipment and workload)' were a strong influencer for a negative job satisfaction response, particularly for surgeons, anaesthetises, and nurses. Comments suggest this often relates to workload, being short staffed, feeling under pressure, and the management of surgical lists. This is in line with the OR literature that commonly identifies long working hours and feeling overburdened as negatively impacting job satisfaction among surgeons and anaesthetists in the OR. For nurses, fair compensation was more commonly identified as an organisational factor influencing job satisfaction in the literature (Chen et al., 2009; Cram, 2002; Dunn, 2003; Eskola et al., 2016; Johnson, 2008). The broad wording of the tool options (i.e., organisational factors) means that we cannot be sure exactly which aspect participants are referring to; this may need to be modified if managers wish to be able to make this distinction.

Aspects of the clinical role were also commonly identified as influencing positive job satisfaction responses for most job roles. This is also in keeping with the literature, which highlights how a clinical role which is stimulating, challenging, and meaningful is a strong predictor of job satisfaction for OR team members. Many surgeon, anaesthetist, anaesthetic technician, and nurse studies identify quality of work, relationships with patients, and remaining intellectually stimulated utilising the full extent of their skills as important (Afonso et al., 2013; Gaszynska et al., 2014; Jenkins & Wong, 2001; Kinzl et al., 2005; Kluger & Bryant, 2008; Kluger et al., 2003).

During the development of the tool, 'ethnic cultural wellbeing' for Māori was identified by the Māori advisor as an important option to have in place for Māori employees that use the tool. As mentioned in chapter 6, work by Haar and Brougham (2013) proposes that for Māori employees, career and job satisfaction are significantly influenced by the level of cultural wellbeing in the workplace (i.e. feeling one's cultural beliefs and values are accepted at work). They suggest that if indigenous employees feel their cultural beliefs and values are accepted in their workplace, overall satisfaction will improve (Haar & Brougham, 2013). While it is possible that Māori may lack access to cultural support and feel isolated from other Māori staff in the OR workplace (Stewart & Gardner, 2015), the low number of participants in the validation survey meant that we were unable to identify the ethnicity of most participants, with only two of those that completed the survey identifying as Māori. Neither of these two participants chose the 'ethnic cultural wellbeing' option when using the tool. Future research into factors influencing job satisfaction in the OR would be beneficial, in particular relating to the needs of Māori employees.

There are a number of limitations to the analyses of these data that are important to note. Firstly, being conducted as part of the first trial of the tool's feasibility may have resulted in some inconsistency in the findings. It is possible the staff may have interacted differently with the tool knowing they were 'trialling' it. Additionally, some broad terms such as 'ethnic cultural wellbeing' and 'relationships and communication with colleagues' can be interpreted quite differently by different individuals, which may make a valid comparison between job roles difficult. The low numbers in some job roles along with some low response rate (particularly orderlies) mean the results for them should be treated with caution. Lastly, survey users tend to view 'neutral' differently, with some more positive than others, which needs to be taken into account when interpreting the neutral results (Gambacorta & Iannario, 2013).

7.4 Chapter summary

The Morale-o-Meter tool has been found in this research to have the potential to be of strong value within the OR setting for staff at all levels across all job roles. This chapter provides an in-depth report of the findings that support its feasibility for implementation, including aspects that may need further consideration. It also outlines key information relating to individual job roles, providing insights into the complexity of applying an interprofessional lens on the tool. Overall, the findings from this chapter (based on the three-week trial) provide strong evidence to support the tool's validity, usability, and potential to produce meaningful data for managers, providing initial support for its value and viability.

Chapter 8: Future implementation

8.1 Introduction

Implementation of new interventions is often not successful within the hospital setting with still fewer implementation being sustained long-term (Geerligs, Rankin, Shepherd, & Butow, 2018). Implementation of a new intervention within any healthcare environment requires careful consideration of influencing factors and change management principles to increase its chances of success (Cane et al., 2012). Key to this study and the success of the Morale-o-meter was researching the feasibility of implementing the Morale-o-Meter within the unique environment of an OR setting. The findings provide valuable information about the potential barriers and facilitators to the implementation of the Morale-o-Meter tool looking forward. This chapter provides further discussion and recommendations relating to the implementation of the tool and considers the implications of including job satisfaction as an additional KPI in the OR setting.

8.2 Implementation overview

This following analysis and discussion of factors impacting implementation are guided by the five domains of the CFIR (introduced in Chapter 4), intervention, individuals, inner setting, outer setting (see Figure 8.1). Change management principles of the Theoretical Domains Framework have also influenced this discussion.

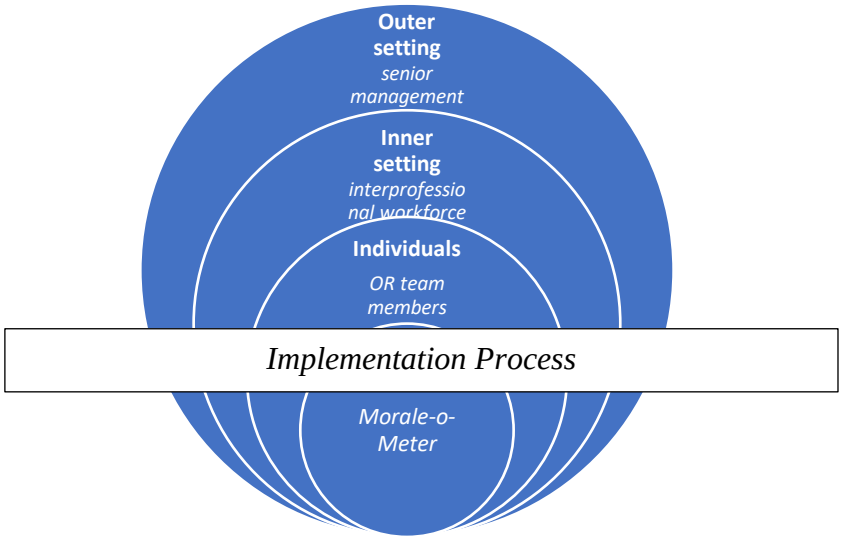


Figure 8.1 Morale-o-Meter tool analysis using the CFIR – adapted from Damschroder et al. (2009)

8.3 Domain one: the Morale-o-Meter

Understanding the quality and the capabilities of a new intervention is central to its effective and appropriate implementation within the OR setting (Damschroder et al., 2009). The design quality and validity of the Morale-o-Meter tool has a robust foundation based on organisational psychology principles and instrument development theory. The tool went through a rigorous period of feedback and improvement over the 15 months of the study, including numerous consultations with key senior personnel, a pre-test period, and then the three-week trial. As a result of the process, the study found a number of specific changes to the tool's wording and format that have been recommended to increase usability and accessibility prior to further trialling and implementation (outlined in Chapter 6). The validity of the tool was considered on a number of levels. Firstly, it used a pre-validated single-item measure. Secondly, it asked staff to create a unique username to capture individual responses, enabling management to anonymously follow individual entries over time while also ensuring the response rate could be trusted. Thirdly, it established that how often staff members used the tool was not likely to be associated with increased or decreased job satisfaction. Fourthly, it ascertained that whether staff used the tool at the start, end, or during a shift did not impact the level of job satisfaction reported. Lastly, it verified the convergent validity of daily satisfaction scores with overall job satisfaction and established the tool's predictive validity for assessing burnout and organisational commitment. Further validity testing may still be useful in the future, in particular discriminative validity (the instrument's capability to differentiate between constructs that are theoretically different (Devon et al., 2007), and further testing of its predictive ability relating to objective performance indicators within the OR. This would strengthen its value for senior management.

There are also potential limitations to the tool that are important to be aware of. Despite every effort to ensure the validity and reliability of the survey design, the Morale-o-Meter tool will be limited by the fact that it measures a self-reported, subjective construct; it will therefore be at risk of survey biases. The most common of these include 'satisficing behaviour' and 'social desirability' (Denscombe, 2014; Gambacorta & Iannario, 2013). Satisficing behaviour may occur when respondents do the minimum required to complete the survey, ticking the boxes without much thought as to the level of truth of their answers. For example, a respondent may always tick the middle box. It is not uncommon for this to occur in a group experiencing

survey fatigue such as this (Denscombe, 2014; Gambacorta & Iannario, 2013). The Morale-o-Meter's casual language aimed to help the tool feel less like a 'survey'. This, combined with improvements to the visual presentation, ease of use, and clearly demonstrating its value for the participants, are factors likely to help to reduce satisficing behaviour (Denscombe, 2014). It is possible that changing the wording of the traditional response anchors may have changed how the scale is interpreted. However, Norman (2010) argues that potentially skewed ordinal data do not make a difference in statistical analyses.

Another common area of survey bias is social desirability. This is where staff may be unwilling to say anything negative about others, which can lead to untruthful answers (Gambacorta & Iannario, 2013). Regular, open, and honest communication concerning the perceived risks and perceived losses and gains from answering the tool question honestly is likely to help address this issue (Krumpal, 2013). The existing anonymous option on the Morale-o-Meter tool is also a supportive feature, which allowed participants to not identify their job role or speciality. This appeared to be most commonly used by participants who were feeling 'unhappy' about their job on a given day. Presumably, this feature provided them with the sense of 'safety' required to share this sensitive information (Krumpal, 2013). Over time, developing a climate of trust between senior management and staff will likely help to create an environment where staff will feel 'safe' enough to be open and honest when using the tool (Groysberg & Slind, 2012; Nembhard & Edmondson, 2006; Nilsen, Birken, Damschroder, Reardon, & Lowery, 2020). This will be discussed further later in the chapter.

How the data gathered from the tool is analysed and interpreted also needs some additional consideration prior to the implementation. The software used during the trial provided by the hospital (Employee Experience Monitoring Suite from MaritxCX) was quite limited in its capabilities. Statistical analysis was conducted by the researcher. If there is no researcher input, there is a risk there will be no or little statistical analysis. In this case, misinterpretation of the results is possible, limiting the value and validity of the results provided. With this in mind, the department will require personnel that have the appropriate skills to develop the necessary systems for the distribution and analysis of findings.

An additional point relates to the ability to establish accurate daily response rates to reduce non-response bias (Krumpal, 2013). During our three-week trial, identifying the exact number of staff working on a given day was challenging due to the variability in shifts and

personnel on-site. As a result, only estimates of daily response rates could be calculated. Therefore, the development of an internal system to help improve the accuracy of daily response rate calculations is recommended.

8.4 Domain two: the individuals involved

Individual staff members working within the ORs each bring their own personal and cultural attributes, life experience and sense of personal capability to work each day (Damschroder et al., 2009). It is important to acknowledge that there is individual bias that may not always be obvious and to consider how implementation strategies can embrace difference and diversity. This will ensure that the Morale-o-Meter is appropriate and acceptable for all employees. This ultimately involves not taking a 'one-size fits all' approach to the way in which the tool is implemented, the way feedback is gathered and the way in which the results of the tool are responded to (Geerligs et al., 2018). Ongoing communication around individual barriers will help find ways to encourage and reinforce the Morale-o-Meter's use (Cane et al., 2012). Feedback gathered during the study identified a number of features that supported engagement that were implemented during the trial period. These included putting the iPads in the theatres for ease of access, allowing use at any time of their shift and ensuring the tool itself included all job roles, as well as options for those not wanting to answer all questions. There was also a range of opportunities for offering feedback on the tool. By being aware of individual differences and needs, managers are more likely to meet the needs of the wider team, encourage tool use, and support well-functioning teams (D'Amour et al., 2005). Cultural needs will need specific consideration. It is recommended that managers create ongoing consultation and feedback opportunities with Māori and other ethnicities within the OR environment.

As previously touched on, with more than half of the participating cohort only using the tool once, motivating individual staff members to use the tool on a more regular basis would clearly need to be a priority in further trialling. Positive reinforcement for using the tool is a well-recognised strategy for supporting individual engagement (Cane et al., 2012; Nilsen et al., 2020). During our three-week trial, reinforcement for staff using the tool was centred on the premise that staff wanted an opportunity to try the tool and see what it was about. We also provided chocolates next to the iPads in the tearoom. However, in the longer-term, management will need to carefully consider what would encourage employees to use the tool

frequently and honestly. Seeing positive change result from the tool's feedback will likely act as a form of positive reinforcement and encourage engagement, as seen by both Frampton et al. (2017) and Hinsley et al. (2016). Seeing others use the tool and it becoming a 'normal' and expected part of daily life will also be important for its long-term survival. Negative attitudes or a lack of transparency around the results may inadvertently negatively reinforce its lack of value and discourage use (Cane et al., 2012; Nilsen et al., 2020).

It is also possible that the frequent use of the tool may trigger emotion for some staff members around their experience of their job. Job satisfaction is known to be influenced significantly by 'affect' (emotion) and the previously validated global measure used for the Morale-o-Meter is designed to capture this element (Judge et al., 2017). It is recommended that direct managers should be ready to have conversations with staff around how they are feeling in relation to their job satisfaction experience and their personal experience of using the tool, as well as reinforcing alternative avenues where issues can be addressed. Managers may need some form of training in order to effectively and positively respond to concerns. It is also important to be mindful that if individual staff members are stressed or have other pressures it may impact on the level of priority the tool is given (Cane et al., 2012). Making the tool easy to use is therefore important. Of relevance, there was some feedback from staff requesting that the tool be used less often, or be used daily but only for short periods throughout the year. If this is going to support the individual engagement of employees, it will need some further consideration and trialling to ascertain how this would change the quality and value of the data gathered.

8.5 Domain three: the inner setting

How the OR department and its employees interact with each other has important implications for the success of the tool's implementation. Job roles, power imbalances, hierarchies, organisational structures, and the overall willingness of the department to be involved in trialling a new intervention, are key factors (Damschroder et al., 2009). This study involved six or more different job roles, each with its own management structure and professional body. As discussed in Chapter 6, the powerful hierarchical structure within the OR system creates a risk that some job roles may not be heard and thus they will be responded to less than others. This raises some important questions that will need to be addressed as the

tool progresses towards permanent implementation. How will the dissemination of results from senior management to middle managers of each job role occur? What accountability methods will be in place to ensure the transparency of the results and its management? How will managers from the different job roles come together to find ways in which solutions can benefit the wider team? The leadership and interprofessional models adopted will be key to guiding this process as discussed later in the chapter.

In some respects, the tool places all job roles on the same footing. For example, orderly job satisfaction is reported in the same way, with the same value, as surgeons (arguably the two most extremes of the hierarchical ladder). Also within job roles, the tool reports the voice of those with the least seniority (such as new graduates or registrars) alongside the voice of the consultants. Despite the unique needs of each profession, many aspects relating to job satisfaction in the OR are inter-related, as was seen in both our job satisfaction tool results and the literature review findings. As such, the tool has the potential to enhance interprofessional relations and strengthen teams.

The results from the tool over the three-week period demonstrated that communication and relationships between colleagues are clearly important. In line with both implementation research and complexity science, we can safely assume that how team members interact with each other around the use of the tool will impact on the tool's success (Braithwaite, Churruca, et al., 2018; Nilsen et al., 2020). Managers are therefore likely to benefit from working *with* the social dynamics, not against it, by maintaining an interprofessional lens and encouraging communication and discussion between staff members. This, combined with regular opportunities to provide feedback, is likely to support engagement with the tool at a team level.

Throughout the study, it was common for staff and managers to focus on the tool's ability to identify a decline in job satisfaction levels within the department. It will be important to remind employees that the tool will also pick up an increase in job satisfaction. With this mindset, it can be utilised to support a strengths-based approach, highlighting areas to be celebrated and identifying areas that can be built upon. The tool provides an opportunity to unify the team, not divide it, which will be vital for the tool's long-term success (D'Amour et al., 2005). It is recommended that those individuals who are enthusiastic and positive about the tool be nurtured as champions within the environment. The champion role is a well-known implementation strategy and often helps to foster trust and encourage others to take a more

optimistic perspective of the intervention's potential for the environment (Damschroder et al., 2009; Miech et al., 2018; Nilsen et al., 2020).

Continuing to gather feedback from staff will be key to ensuring meaningful improvements are made to the tool. The three-week trial provided all staff with a foundation knowledge base around the concept of the tool. As management go on to conduct further trials and plan for long-term implementation, this baseline understanding will enable staff members to be more actively involved and to provide informed and meaningful feedback as the iterative feedback cycles continue.

8.6 Domain four: the outer setting

To truly understand the potential barriers and facilitators for implementation of the Morale-o-Meter, the wider political frame must also be considered (Damschroder et al., 2009). OR senior management teams are under immense pressure to be as productive and efficient as possible. There are high expectations to meet productivity targets whilst being at the forefront of new innovations and initiatives (Oh et al., 2011; Tsai et al., 2017). These pressures are likely to impact how engaged and proactive senior management can be in the way they implement the tool. They are, of course, also limited by funding and resource constraints at the District Health Board level. It is therefore important that managers in the OR are adequately supported with their strategic planning, provided with sufficient funding, and receive adequate professional guidance and support. Gaining 'buy-in' at an executive leadership level is likely to be important in order to address this. Ensuring the long-term goals of the tool align with the wider organisational goals is key.

A clear understanding of the goals is therefore important (Cane et al., 2012; Damschroder et al., 2009). With the tool at its initial stages of development, goals will of course continue to be developed as knowledge of the results, and how valuable they are, is increased over time. From the outset of the study, OR management identified goals such as adding job satisfaction to the OR dashboard alongside other KPIs, developing job satisfaction targets and looking for satisfaction trends. In addition, they liked the idea of being able to use the tool to monitor the impact of new systems or significant staff changes on staff satisfaction levels and were interested in viewing job satisfaction at an individual operating theatre team level. Issues

regarding anonymity prevented the latter goal from being included as part of the initial trial and will need to be considered carefully and discussed with staff carefully prior to any trial of such measures. As trust builds, a 'theatre team satisfaction' report could be an option for the future.

While some of the goals from a senior management perspective have been met, goals for middle managers and staff using the tool need further consideration. Based on feedback gained throughout the study, middle managers seem likely to have quite different goals to those of senior management. Ongoing inclusion and conversations with middle management and staff are recommended to identify and try to align long-terms goals.

8.7 Domain five: the implementation process

Implementing any new intervention is a long-term commitment and is likely to take years (Geerligs et al., 2018). The final domain of the CIFR relates to the process by which implementation is accomplished. It is about developing a clear plan and strategy that includes the learnings from each domain (Damschroder et al., 2009). For the Morale-o-Meter, it is imperative that the iterative process of testing, trialling, gathering feedback, and refining continues within the hospital setting in order to achieve this. It will require a flexible staff-centred approach (Geerligs et al., 2018). An implementation team is therefore recommended to oversee the implementation of the new tool. This team would benefit from the inclusion of senior representatives from each job role, as well as representatives from human resources, executive leadership, and from the champions within the environment (Meyers, Durlak, & Wandersman, 2012; Miech et al., 2018). An additional 'response team' is also recommended; this should include key managers from each job role and will be responsible for discussing and addressing the tool results on a more regular basis. This will ensure that an interprofessional perspective is taken and will provide some accountability and transparency of the results the tool generates. This group can also provide some support for each other (as discussed in the next section).

To support the implementation process, a summary of key recommendations is provided below (see Table 8.1).

Table 8.1 – Summary of Implementation Recommendations

CFIR	Summary of Key Recommendations
Morale-o-Meter	• Make tool modification as recommended in Chapter 6 • Continue with the iterative cycles for regular reviews and improvements • Conduct further validity testing • Recruit an IT and analysis team
The individuals (OR staff members)	• Open communication regarding individual concerns • Continue to improve the tool to cater to diversity within the team • Establish a reminder system • Consider transparency of results as a form of positive reinforcement • Encourage honest participation by being responsive to negative feedback
The inner setting (The OR interprofessional workforce)	• Establish champions within each job role to encourage ongoing use • Develop transparent pathways for managing results to share with staff • Openly communicate with staff regarding long-term goals and overall intentions • Continue to gather feedback from staff to improve processes via survey and feedback sessions during meetings • Provide training for managers
The outer setting (The management team and wider DHB context)	• Establish an implementation team and regular meetings • Establish a tool response team and more frequent meetings • Identify and provide training around leadership models for responding to staff • Continue to develop goals and align with organisational goals • Have systems for continual review of feedback for on-going improvement.

Throughout all aspects of this study, the role of OR management has been emphasised as integral to the success of any future trials and implementation of the Morale-o-Meter tool. The role of being a manager in the OR at any level can be challenging (Tsai et al., 2017). Our experience of management during the study found different levels of management viewed the Morale-o-Meter through quite different lenses. For example, senior management saw it as a tool where they could access the percentage of satisfied staff at any given time. Being able to analyse, view, and report key figures was a priority. Middle management wanted to use the tool to understand what was influencing job satisfaction for their staff. This would allow them to hone in on exactly what the problems were and intervene as quickly as possible to address them. Ideally, they wanted to receive alerts if large numbers were dissatisfied on any given day. With this in mind, future development of strategies for the management of the tool and

the sharing of and responding to the results of the tool will need some consideration throughout the implementation process.

How successful the managers in the response team are in handling job satisfaction responses from an interprofessional perspective is likely to depend on how the managers themselves inter-professionally collaborate. Modelling the key elements of a healthy and cohesive team will be important. It is worth revisiting the key factors that D'Amour et al. (2005) outline, as described in Chapter 3, that aim to promote cohesion between an interprofessional group, in this case, the one with the responsibility of addressing the Morale-o-Meter concerns. Firstly, managers will need to adopt a mindset where they are open to *sharing* decision-making, responsibilities, health philosophies, and perspectives. Secondly, they will need to see themselves in *partnership with the other job roles,* respecting and valuing the perspectives and contributions of each other. For example, the orderly manager's perspective will need to be seen with the same level of importance as the anaesthetist clinical director. Thirdly, managers will need to accept there is some *inter-dependency* between them and modify their own personal agendas or specific job role outcomes for the sake of the outcomes of the wider team. Lastly, they will need to learn to share *power* based on knowledge and experience rather than their titles and functions.

A complexity science perspective would suggest OR Managers will need to work *with* the elements of complexity the CAS brings and to anticipate and embrace its characteristics (Braithwaite, Churruca, et al., 2018; The Health Foundation, 2010; Tsai et al., 2017). This involves OR managers adopting a complexity science mindset, viewing OR team members as CAS agents with different roles, hierarchies, priorities, and goals, constantly building upon each other (Tsai et al., 2017). By not taking a one-size-fits-all approach, managers can work together with the unpredictability of the OR and embrace the complexities of human nature, expecting or even encouraging the social dynamics and thus allowing creativity and innovation to emerge (Tsai et al., 2017). For managers responding to the Morale-o-Meter tool, honest and open communication will likely be key to building a relationship of trust for those using the tool. Ensuring this honest and open communication is consistent with addressing both the positive and negative aspects of the tool feedback, thus creating a sense of intimacy and psychological safety (Nembhard & Edmondson, 2006).

8.8 Job satisfaction as a key performance indicator

The Morale-o-Meter tool is not a once-a-year reflection, as is commonly used. It is a daily feedback mechanism on how staff are feeling in their jobs. A key difference in this daily approach is being able to recognise both positive and negative increases/declines as they are occurring, with some notion as to the reasons why. Job satisfaction in healthcare has traditionally been something measured by a separate hospital department where the dissemination of results to OR managers may or may not occur. A move towards a more interactive and actionable real-time measurement of job satisfaction is a significant shift for the health sector and requires department management to be actively involved. The OR setting is however known for being focused on objective targets and outcomes (Charlesworth & Pandit, 2020; Oh et al., 2011). In some ways, it is hard to imagine a 'soft' outcome like 'job satisfaction' sitting next to these other productivity indicators on the OR dashboard in the senior management office. Unlike other existing KPIs, a daily measure of job satisfaction does not have any established goals or targets. Choosing to view job satisfaction openly alongside existing KPIs is in fact a brave and bold step. It suggests a deep commitment to ensuring that staff are happy in their jobs and ensures a degree of accountability in achieving this. In addition, it is possible the ability to report on measurable gains may enable additional funding and support toward staff wellbeing outcomes that may not have been previously accessible. There is however a risk that viewing job satisfaction as a KPI alongside other metrics could allow it to become another simple crude metric. Job satisfaction figures could be viewed without considering the 'people' behind the numbers, when it is likely the reasons behind any dissatisfaction will be of more value than the numbers themselves. Current performance metrics can already be oversimplified and may not capture the complexity involved (Charlesworth & Pandit, 2020; Oh et al., 2011). Ultimately, over time the organisation will be able to establish their own 'normal' and it is possible that appropriate targets will naturally develop.

This change in approach does not however have to replace the traditional annual survey. The two approaches serve different purposes and could, in fact, nicely complement each other. For example, the annual survey could be used to source more in-depth details relating to organisational factors the tool commonly reports.

8.9 Additional discussion

Research conducted exploring the barriers and facilitators of implementing the Surgical Safety Checklists in the OR setting do share some similarities with this study. Thus, there are some useful comparisons that can be made with our study's assessment of factors influencing implementation. The Surgical Safety Checklist (developed by the World Health Organisation in 2008) is a tool designed to prevent adverse events, to increase patient perioperative safety, and to improve the overall quality of care in the OR (Tostes & Galvão, 2019). The checklist is used for each surgery and is subdivided into three phases, the period before the anaesthetic induction (sign in), the period before the surgical incision (time out), and the period immediately after surgery closure (sign out). Each phase contains three specific items and takes approximately two minutes (Tostes & Galvão, 2019). Despite its proven impact on patient outcomes, and endorsement by the WHO, the Surgical Safety Checklist has had varying uptake around the world (Bergs et al., 2015; Tostes & Galvão, 2019). Similar to the Morale-o-Meter, the checklist is short, used frequently, and involves the whole interprofessional team. Bergs et al. (2015) conducted a systematic review of the barriers and facilitators relating to the implementation of the Safety Surgical Checklists reported in 18 studies. They found a number of key themes in line with this study. To begin with, staff perceptions of the tool were found to be of particular importance to successful implementation, including an understanding of how useful or important it could be. Scepticism regarding its efficacy was also commonly identified as a barrier, similar to some of the feedback gathered from staff during this study. Secondly, also in keeping with this study, the review reports that psychological ownership of the tool was important; staff feeling the checklist was able to meet their unique needs was deemed an important facilitator. The action research approach adopted in this study prioritised taking on feedback to ensure the tool met the needs of the workplace and the individual job roles. Other points consistent with our findings related to the importance of clear communication regarding organisational intentions and addressing concerns expressed by staff. This was found to increase workforce support for the checklist and their willingness to participate. Lastly, Berg et al. (2015) also found that organisational culture played a mediating role and could be either a major barrier or a potential facilitator. Leadership involvement and support from executive managers, and particularly from surgeons, was found to be important. The Morale-o-Meter has both some disadvantages and advantages for implementation compared to the Surgical Safety Checklist. The Morale-o-Meter's success relies heavily on what happens after the data is gathered by managers, meaning there is a delay in the feedback and no immediate

reinforcement from its use, whereas the impact from using the checklist can be seen immediately (i.e., if an issue is identified, it can be addressed at that time). The Morale-o-Meter does however have a distinct advantage in that it does not require coordinated team time for its use and it does not require communication between job roles to be completed. It is used individually and independently from other team members.

8.10 Chapter summary

This chapter provides an analysis and discussion of the barriers and facilitators important to consider regarding the long-term implementation of the Morale-o-Meter. It highlights the level of complexity that needs to be considered and incorporated into the implementation plan, setting the tool up for the best chance of success in the OR setting looking forward.

Chapter 9: Final discussion

9.1 Introduction

The results from the Morale-o-Meter study provide rich data around the value, validity, and feasibility of implementing a real-time tool in the OR setting. Chapters 6, 7, and 8 provide significant discussion around the development of the tool, the findings from the trial, validity testing and implications regarding implementation looking forward. This final discussion will now consider the study as a whole to discuss its overall value and viability. In addition, overall strengths and weaknesses, implications for practice, and recommendations for future research are also considered.

9.2 Integration of the findings

Firstly let's consider the 'value' of the Morale-o-Meter tool. The findings that relate to the value of the daily measurement of job satisfaction can be loosely grouped into two areas: the quality of the data the tool produces and the relevance of the data for use by management. The three-week trial of the tool provided important insights into the quality of the data the tool was able to produce. The ability to view and analyse the data as daily reports, and watch for changes over time from an individual, job role, or department perspective were clearly demonstrated. The ability to apply an interprofessional lens was also important due to the intimacy and interdependence between OR job roles. The validity of the data was reinforced in a number of ways: - the use of a previously validated tool, combined with the results of the validity testing and the incorporation of a username, were all found to be important points enabling managers to trust the quality of the data the tool produces. Conversely, the subjective nature of job satisfaction, and the ability for users to input inaccurate responses, have also been noted as limitations of the tool. While there are no panaceas for these limitations, feedback from staff suggest that how management responds to the results is likely to be the key to building trust which will assist in addressing many of these potential issues (as discussed in Chapter 8).

Putting the quality of the tool aside, how relevant and useful the data is for both management and participants is also an issue. The collaborative nature of the study was chosen to ensure that the tool would be relevant and valuable for this particular setting. The input from

managers and staff during the development period was key to this process, with managers contributing to many aspects of the tool's wording, presentation, and application. Many conversations that were had about the purpose and function of the tool contributed to ensuring its relevance. Furthermore, the ability to identify which areas of the job influence staff job satisfaction was central to its value. 'Relationships and communication with colleagues' was identified as the factor that contributes to high levels of job satisfaction, whereas 'organisational factors' was more likely to be the factor contributing to low levels of job satisfaction. The meaning and relevance of these particular findings are, of course, specific to this OR and so should only be compared to other findings from this setting over time. Another OR setting wishing to trial the tool should establish their own baseline and identify their own influential factors of job satisfaction experiences. Ultimately, it is the practical implications derived from, and changes made because of, the job satisfaction data that determines how useful it is, not the data itself.

The 'viability' of the tool was assessed through multiple avenues which are discussed in depth in Chapter 8. The key findings around the tool's viability can be grouped into three key areas: 1) usability and accessibility, 2) access to resources and personnel, and 3) the degree of staff 'buy-in'. Factors found to enhance its viability are the simplicity and speed of the tool and its accessibility in the operating theatres. The degree of flexibility as to when on a shift it could be used was also found to be important. Key facilitators for implementation relate to the ability of the hospital to fund sufficient iPads and stands, to engage appropriate resources and personnel, and to embed the tool within daily routines. Key managers will also need to dedicate sufficient time to engaging staff, addressing concerns, and having frequent communication. The feedback from staff suggests that 'buy-in' will be heavily influenced by how management communicates their overall intentions and how the results will be shared and managed within and across job roles. Lastly, the ability to continue to gather feedback and refine the tool and its processes will also be important. Figure 9.1 below summarises the overall value and viability of the Morale-o-Meter tool.

Figure: 9.1 Summary of factors found to influence the value and viability of the Morale-o-Meter tool

Because of the novelty of the study, it is difficult to compare the key findings of this study to existing research. As touched on in Chapter 2, innovative approaches to measuring staff wellbeing are increasing in popularity (Stevenson, 2018; Welbourne, 2016). Despite this, very few studies appear to have explored the development or feasibility of frequent measuring of job satisfaction in the hospital setting, with none that we could find specific to the OR setting. While the studies by Frampton et al. (2017) and Hinsley et al. (2016) have some similarities (as discussed in Chapter 7), they did not place the same emphasis as this study has on exploring the value of the data gathered or the feasibility of implementation.

9.3 Implications of the findings

Overall, the findings from this study suggest daily measurement of job satisfaction using the Morale-o-Meter tool has the potential to be a highly valuable tool for OR managers. This study has important implications for future practices relating to how employee job satisfaction is viewed and valued within the OR setting and potentially wider healthcare and organisational contexts. Incorporating a tool to support the improvement of job satisfaction outcomes will, in turn contribute to improvements in overall staff wellbeing, retention, burnout, and performance outcomes as the awareness of job satisfaction increases. Measuring and addressing job satisfaction from an interprofessional team perspective rather than from the perspective of a single discipline will support the development of effective strategies and early interventions that impact the team as a whole. Further, a satisfied well-functioning workforce is likely to improve team efficiency, decrease overall stress, and improve patient safety (D'Amour et al., 2005).

This research has a number of implications for OR nurses and the wider OR team. Firstly, it provides an anonymous, validated and easy-to-use tool designed specifically for this setting, providing a platform for the voice of nurses and other OR team members to be heard. Secondly, the tool provides OR managers with a validated alternative to traditional measures. This enables nurse managers and other job role managers at all levels to use this data to closely monitor nurse satisfaction (including charge nurse satisfaction). This will enable timely and targeted conversations and interventions, potentially preventing escalation. Thirdly, approaching job satisfaction from an interprofessional perspective allows for the inter-related aspects of job satisfaction to be taken into consideration and addressed from an interprofessional perspective, which has the potential to enhance job satisfaction outcomes. Lastly, as the tool is developed and implemented, it will provide data that enables job satisfaction to be viewed alongside other KPIs in the department. This will inevitably increase the visibility of the voice of employees to senior management, thereby increasing accountability for and transparency of staff wellbeing in the OR setting.

There are also a number of implications from the study for wider organisational research. Firstly, it offers practical insights for researchers around using action research for tool development in complex team settings. Secondly, it contributes published, peer-reviewed research that explores the validity and viability of using a daily measure of job satisfaction in

a workplace setting (where very little published research exists). Further to this, it provides important insights into the complexities of implementing such tools that may be of interest for managers working within similar organisational contexts. Finally, it provides a sound starting point for further development and adaptation of a daily job satisfaction measure into other settings.

9.4 Strengths and limitations

A key feature of this study is the use of an action research framework in the development of a tool that is highly relevant and significant for the OR environment in which it was initiated and conducted. While there are many other tools on the market that could have been utilised and trialled (as highlighted in Chapter 2), taking the time to collaboratively tailor-make a valid tool with OR management personnel resulted in a very practical, user-friendly, and focused tool one that would be trusted and engaged with at a senior management level. This is key to increasing the likelihood of implementation success (Oliver, Innvar, Lorenc, Woodman, & Thomas, 2014).

While this study is influenced by the instrument development methodology, this research is neither a traditional instrument development nor a classic intervention study and should not be seen as such. The overall aim was to work together with hospital personnel to investigate how job satisfaction could be monitored and measured by senior management more closely; it did that well. This research worked towards identifying the most relevant tool that could continue to be developed and improved within this particular setting, for this particular cohort. With this in mind, the consideration this study gave to the tool's validity is one of its key features.

One of the frequent criticisms of action research as a study design relates to its validity (Williamson et al., 2012). This study design carefully considered issues of validity as outlined by Huang (2010) and Williamson et al. (2012), as described in Chapter 4. The study is underpinned by clear theoretical and philosophical frameworks. A mixed-method approach was utilised, clear evidence is provided of practical change, partnership, and participation. Full transparency was a priority throughout, with thorough documentation of all meetings and tool changes made throughout the action research process. At all times, there was good discussion

around outcomes, implications, actionable changes, and consideration of reflexivity (Huang, 2010; Williamson et al., 2012).

In some ways, the strengths of the action research design and how responsive the researcher was to the needs of this department are also limitations. Utilising an action research approach meant that compromises around research strategies had to be made, as discussed in the previous chapters. For example, we used just one sample for all stages of testing and had only one main trial. Additionally, management identified prior to the study that this particular cohort appeared to have 'survey fatigue' and were often difficult to engage in surveys and research. This resulted in limitations in the number of validity concepts we could test, and the number of questions permitted in the feedback survey. This is also likely to explain, at least in part, the low response rate for the validity survey, as well as the low daily response rate for the trial, and may have resulted in some sampling bias. While conducting research within just one hospital allowed for a deep level of collaboration in the tool design, it is of course another limitation, precluding any generalisation of the findings to other populations at this stage.

Other limitations of this study relate to the inability to adequately explore variance relating to age, gender, and ethnicity due to the low numbers completing the feedback and validation survey. To explore this in future trials is recommended. Finally, consideration must be given to the Hawthorne syndrome (as mentioned in Chapter 7). Although this is a generally accepted aspect of action research, it may have an impact on findings related to implementation in the setting looking forward (Huang, 2010; Jeanes, 2019).

9.5 Recommendations for future research and practice

This study sets the scene for future research in a number of areas. These are outlined below.

1) To further research the applicability and adaptability of the Morale-o-Meter concept into other ORs and other areas of healthcare.
2) To further research the development of a results management and response model to support the Morale-o-Meter that incorporates the needs of the various job roles and their managers.
3) To use the Morale-o-Meter to investigate potential relationships between employee

job satisfaction and commonly measured productivity indicators in the OR setting and to explore its sensitivity to other theatre metrics (e.g., changes in theatre utilisation or staff changes).

4) To consider developing a 'team satisfaction model' using long term data generated from the Morale-o-Meter tool.
5) To further research the factors contributing to job satisfaction across the OR team. This is needed to understand in more depth how they inter-relate within an NZ setting.
6) To explore job satisfaction differences relating to ethnicity, gender, and age in the NZ OR setting
7) To conduct further research into the tool's appropriateness for Māori OR staff, including how best to capture and respond to issues regarding cultural wellbeing at work. Including a Māori advisor in the planning and execution stages of such research is also recommended
8) To investigate the efficacy of a range of interventions that address job satisfaction issues in the OR from an interprofessional perspective.

9.6 Overall conclusion

This thesis presents the results of a study that investigated the value and viability of real-time measurement of job satisfaction in the OR setting. The overall aim of the study was to explore how job satisfaction of the OR workforce can be actively and effectively measured and monitored in real-time. Applying action research from an interprofessional perspective, the study collaborated with OR personnel from an NZ hospital to develop, trial, and evaluate a job satisfaction measurement tool. While there is a moderate amount of literature pertaining to job satisfaction in the OR, to our knowledge no studies have focused on exploring the value and viability of job satisfaction measured across the OR team in close to real-time.

With the surging interest in improving job satisfaction and decreasing burnout in the healthcare workforce, gathering close to real-time data relating to job satisfaction is becoming increasingly relevant. Expertise from both researchers and OR practitioners combined to create an innovative tool suitable for use across the interprofessional OR team and at all levels of the hierarchical ladder. The development, trialling, testing, and evaluation of the Morale-o-Meter

tool has provided a firm foundation for a valid and valuable tool that can continue to be built upon within the OR setting.

This study provides strong supportive evidence of the tool's value for managers and clearly outlines how it can be feasibly implemented within the environment. Over time, the Morale-o-Meter tool has the potential to change the way job satisfaction is valued within the OR setting. Overall, the findings of the Morale-o-Meter study provide good support for both the validity and feasibility of the tool's implementation, given further trialling and consideration of factors that will support successful implementation. It provides a good foundation for future research related to changing the way we measure, view, and value job satisfaction in the OR setting and across the wider healthcare sector. While further research is needed with larger cohorts over longer periods, our findings provide a sound starting point for future research and the development of daily single-item measures of job satisfaction across the wider healthcare sector.

Appendices

Appendix 3.1 Search strategy

Database	**Search specification**	**Articles returned *n***
Medline	(operating theatre or operating room or perioperative).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms] AND (Surgeon or nurs* or anaes* or anesth* or physician or team).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms] AND satisfaction.mp. AND (employee or staff or job or work or career).mp. [mp=title, abstract, original title, name of substance word, subject heading word, floating sub-heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier, synonyms]	435
Cinhal	job satisfaction or work satisfaction or career satisfaction AND operating theatre or surgery or operating room or perioperative AND nurse* or surgeon* or anaeth* or anethe* or physician or team Limited to the English language	425
PsychInfo	(job satisfaction or career satisfaction or work satisfaction).mp [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures] AND (nurs* or doctor* or physician* or surgeon* or anesthe* or anaesthe* or clinician*).mp [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures] AND (operating theat* or operating room* or perioperative* mp [mp=title, abstract, heading word, table of contents, key concepts, original title, tests & measures] Limited to the English language	9
ABI/INFORM Collection	(all(job satisfaction OR work satisfaction OR career satisfaction) AND all(nurs* OR doctor* OR surgeon* OR anesthe* OR anaesthe*) AND all(operating theatre* OR "operating room*" OR perioperative)) AND pd(19970101-20171101) Limited by full text	25
Other	Footnote chasing and articles referred from colleagues	33

Appendix 5.1 Email to staff

A quick reminder that the 'Theatre Morale-o-Meter' trial will start next week and run for three weeks
ALL theatre staff are invited to participate

Key points:

- It takes less than 60 seconds and is anonymous
- We ask that you do it once each shift, anytime that suits you
- There will be an iPad in most theatres and one in the NSH tearoom

Alternatively, you are welcome to use your phone. Just follow the link below or use the QR scanner code on the posters and bookmark it.

https://waitematadhb.aus.allegiancetech.com/cgi-bin/qwebcorporate.dll?5V4WAW

The tool trial will be followed by a short questionnaire asking for your feedback about the tool. This will be accessible via the tool on the last couple of days of the trial as well as being sent out via email.

A few more details….

For those of you I haven't met yet, my name is Miriam, I am a PhD student with the University of Auckland. The Morale-o-Meter trial is part of a collaborative study between WDHB and the University of Auckland. It aims to explore ways in which staff morale can be measured, gathering 'real-time' information that will enable staff wellbeing to be viewed and valued alongside other key performance indicators in the OR setting. If you would like more information about the study, please read the information sheet attached.

I plan to be in the tearoom most mornings during the three weeks, so please don't hesitate to come and say hello and ask any questions you may have.

Thank you so much for your support,
Miriam James-Scotter

Appendix 5.2 Participant information sheet

PARTICIPANT INFORMATION SHEET
The measurement tool trial

You are invited to take part in trialling the 'OR Staff Daily Pulse Check' tool. By participating in this research you are able to have input into the development of the tool ensuring it is of value to you and your team.

THE PROJECT TITLE: The value and viability of daily measurement of staff wellbeing/satisfaction in the surgical theatre setting

My name is Miriam James-Scotter, I am a PhD student with the University of Auckland.

What is the purpose of the study?
Honest and regular communication with management is essential to promptly and effectively address and improve staff issues impacting on overall staff wellbeing and workplace culture. This study aims to collaborate with personnel from the surgical theatre departments to develop, trial, and evaluate a measurement tool that is viable and of value to both management and clinical staff at all levels.

An IT measurement tool that is used regularly has the potential to empower staff and facilitate change as well as providing a safe and reliable platform with which to communicate both positive and negative job matters. It can enable managers to closely monitor and respond to staff needs as they arise, prioritising staff well-being outcomes along-side other existing metrics. This study has the potential to impact on how staff satisfaction is currently measured and addressed in the OR setting as well as the wider healthcare sector looking forward.

The study involves an initial three week testing period of the tool concept, followed by interviews with a small sample of staff members to provide specific feedback relating to their experience of the tool. Feedback gathered from interviews and from the tool itself will then be used to improve the tool. The second part of the study involves the tool being trialled for a longer period of time (six months) and then again followed by interviews with a range of job roles (phone or in person) in relation to their experience using the tool.

The study will be carried out in the OR department over a 10 month period from October / November 2018 to August 2019.

Participation in this research study is entirely voluntary. You do not have to take part in this study. Not participating will not affect your employment in any way. Any feedback you give will be treated with the utmost respect and confidentiality. You will not be identifiable to your employers at any time during this study. **You have the right to withdraw from participation at any time without giving a reason. There is no financial cost associated with participation.**

<u>What is involved?</u>

The tool trial part of the study is completely anonymous. The researcher or management will not be able to identify you. You are requested to firstly trial the tool for three weeks, the tool will be available on an iPad on-site. Once the tool has been improved based on feedback, a second and longer trial will be conducted for a period of six months. Although you are encouraged to use the tool daily, you are free to use it as much as you like.

Who will see my responses? The raw data from the tool will only be accessed by the researchers/supervisors and IT administrators. Management and staff from the hospital will receive regular summarised reports.

Will my issues be addressed? The information gathered from the tool will be given to relevant managers to address issues in an appropriate way, how they choose to do this is at their discretion it is not specified as part of the study, however, the study will look at the role of management in the efficacy of the tool.

What is the user name? You are asked to choose a user name that you use every time. This will not be used in any reporting to management. We cannot identify you with this. It is there is ensure that we know how many individual people are using the tool.

If you agree to participate in the tool trial you can begin as soon as the tool is up and running. Your consent is assumed by using the tool, so we encourage you to read all information carefully prior to beginning the trial. **Submission of the questionnaire will be taken as consent.** All participants are entitled to have a copy of the final research report or a summary, this can be emailed to you on completion of the study. You will need to email the researcher to advise you would like this.

Data storage, destruction and confidentiality

All printed data related to the study will be locked up in a filing cabinet at the University of Auckland for a period of six years. After this time they will be destroyed in a secure manner. **No material that could personally identify you will be used in any reports on this study.** Study data will be kept on a password-protected computer at the University of Auckland.

Funding

No funding has been sought at the present time for this research project.

Risks

There are no anticipated physical or psychological risks involved in this research. However, if you have any concerns or complaints, please contact any of the numbers provided below.

Contact details

Miriam James-Scotter, School of Nursing, University of Auckland.
Miriam - msco045@aucklanduni.ac.nz *or*
Dr Stephen Jacobs (key supervisor) 09-9233975, or email s.jacobs@auckland.ac.nz

Further contact details:

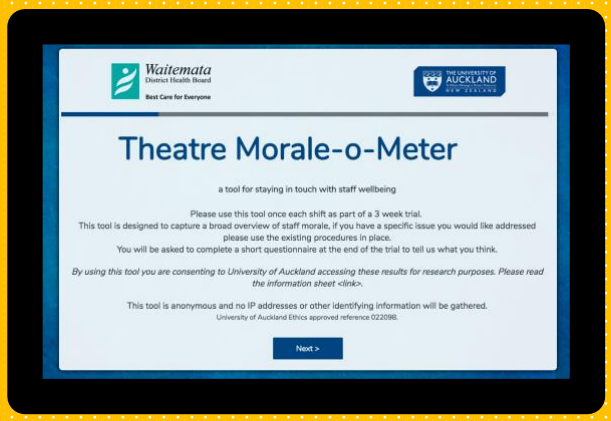
The contact information for Head of nursing: Alexandra (Sandie) McCarthy, School of Nursing, Faculty of Medical and Health Sciences, Ph: 09 923 2897
Email: alexandra.mccarthy@auckland.ac.nz

For any enquires or ethical concerns you may have you may contact the Chair, The University of Auckland Human Participants Ethics Committee, The University of Auckland, Research Office, Private Bag 92619, Auckland 1142. Telephone 09 3737599 extension 83711, or email **ro-ethics@auckland.ac.nz**

Appendix 5.3 Recruitment poster used during the trial

Reminder to all staff!

Theatre Morale-o-Meter
3 week trial running now



Less than 60 seconds, once each shift
iPads are in each theatre and NSH tearoom

Phone option here,
then just 'bookmark' it

or open the link on the email sent out

Scan me

www.qrstuff.com/scan

Please note: participation is completely voluntary.
Email msco045@aucklanduni.ac.nz for any questions or queries, more information is found on the tool and you should have received an email with a complete information sheet.

Approved by the University of Auckland Human Participants Ethics Committee on 12.10.18 for three years. Reference Number 022098

Appendix 5.4 Email inviting staff to complete the feedback and validation survey

Hi everyone,

Thank you all so much for your support and participation in the Morale-o-Meter trial over the past three weeks. I would really appreciate it if you could take two minutes to complete the post-trial survey.

The results from this survey are for University of Auckland research purposes only, you cannot be identified from this survey. It serves two purposes, to gather feedback and to help validate/test the effectiveness of the tool. You can skip any questions you don't feel comfortable answering.

https://auckland.au1.qualtrics.com/jfe/form/SV_2gTISBnV77kIO33

Thank you again for your support with the trial, I look forward to receiving your responses.

Ngā mihi,

Miriam James-Scotter
Doctoral Candidate - School of Nursing
Faculty of Medical and Health Sciences
The University of Auckland
mobile: +64 21 261 1490| email: msco045@aucklanduni.ac.nz

Appendix 5.5 University of Auckland ethic approval with amendments

Office of the Vice-Chancellor
Office of Research Strategy and Integrity (ORSI)

The University of Auckland
Private Bag 92019
Auckland, New Zealand

Level 11, 49 Symonds Street
Telephone: 64 9 373 7599
Extension: 83711
humanethics@auckland.ac.nz

UNIVERSITY OF AUCKLAND HUMAN PARTICIPANTS ETHICS COMMITTEE (UAHPEC)

13-May-2019

MEMORANDUM TO:

Dr Stephen Jacobs
Nursing

Re: Request for amendment of Ethics Approval (Our Ref. 022098): Amendments Approved

The Committee considered the amendment(s) requested to your ethics approval for the project entitled **The value and viability of daily measurement of staff satisfaction in a surgical theatre setting.**

Approval was granted for the following amendments on 13-May-2019:

1. Measurement tool changes (daily survey) - minor changes to the IT tool from the original proposal.

2. Qualitative component – to be reduced to senior managers only.

3. Additional feedback survey questions to participants on completion of the 3 week trial.

4. Modification to the reminder email.

5. The addition of a poster to remind staff of the survey.

6. Various amendments to the PIS.

The expiry date for your ethics approval is **12-Oct-2021.**

Completion of the project: In order that up-to-date records are maintained, you must notify the Committee once your project is completed.

Amendments to the project: Should you need to make any further changes to the project, please complete a new Amendment Request form giving full details along with revised documentation. If the project changes significantly, you are required to submit a new application to UAHPEC for approval.

The Chair and the members of the Committee would be happy to discuss general matters relating to ethics approvals. If you wish to do so, please contact the UAHPEC Ethics Administrators at

Appendix 5.6 WDHB Locality approval

Dear Miriam

The Research & Knowledge Centre has now received the relevant approvals for the following study:

Title: The value and viability of daily measurement of staff satisfaction in the surgical theatre setting

Registration #: RM14202

This study now has Waitemata DHB Locality Authorisation. All amendments to your study must be submitted to the Research & Knowledge Centre for review.

Note that all research, audit and related activity must meet ethical standards in relation to the safe storage, retention and destruction of research data.

At the conclusion of this study, a copy of any outputs, reports or publications should be forwarded to research@waitematadhb.govt.nz

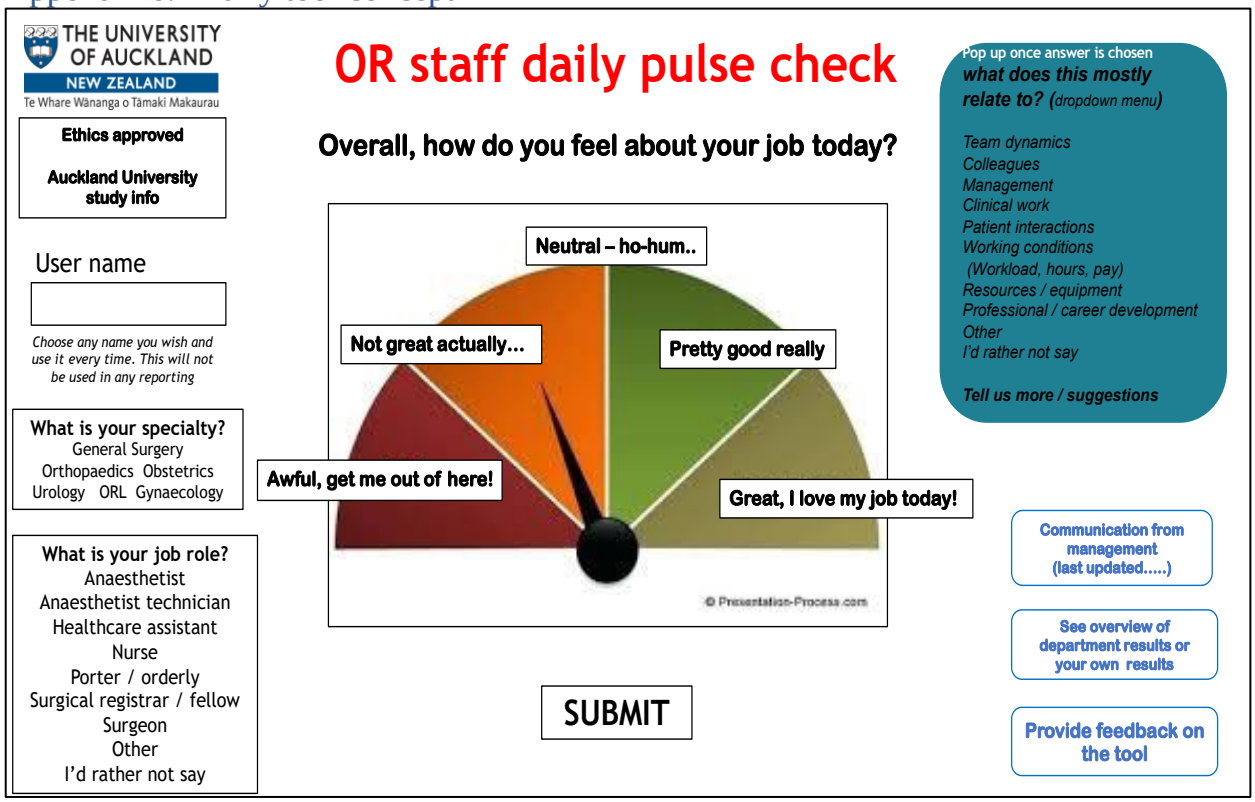
Good luck with your study.

Regards
Research & Knowledge Centre
Level 1, Kahui Manaaki (Building 5)
North Shore Hospital Campus
Waitemata DHB

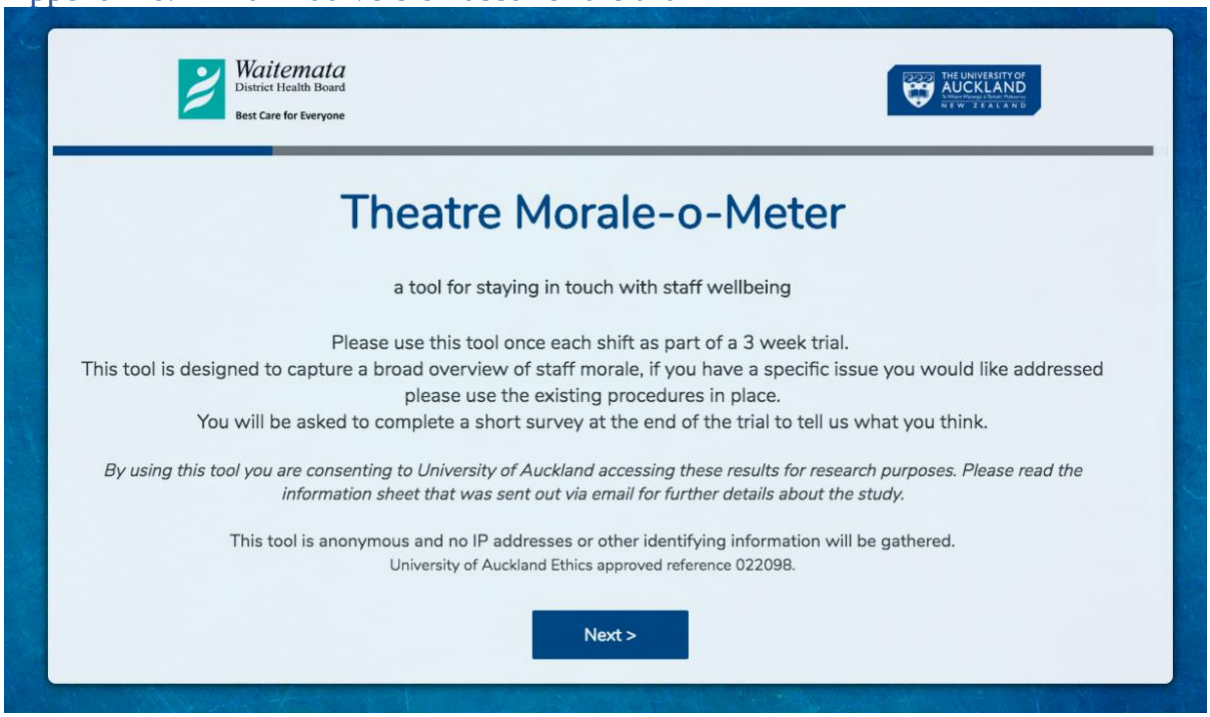
research@waitematadhb.govt.nz
ph. (09) 486 8920 ext 43740

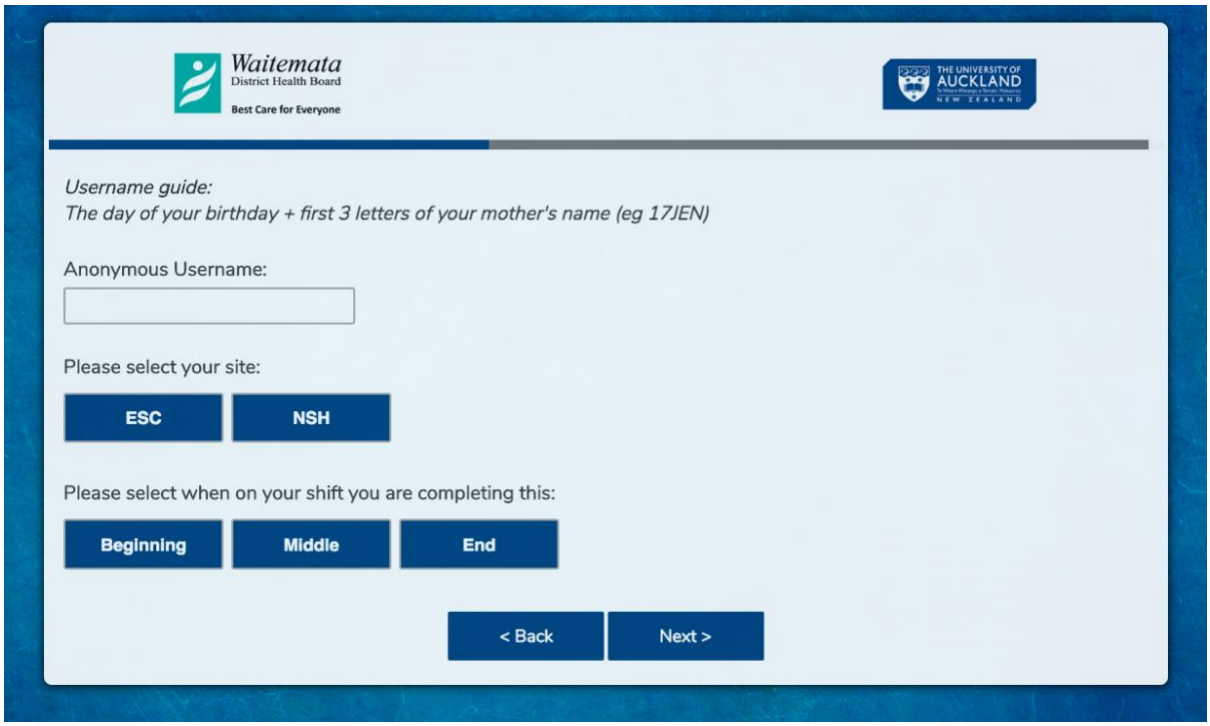
Cc Carlene Lawes

Appendix 6.1 Early tool concept



Appendix 6.2 Final iPad version used for the trial





Waitemata District Health Board
Best Care for Everyone

THE UNIVERSITY OF AUCKLAND NEW ZEALAND

Overall, how are you feeling about your job today?

- Great, I love my job today!
- Pretty good really
- Neutral, ho-hum
- Not great actually
- Awful, get me out of here!

What does this mostly relate to?

- [ ] The nature of the clinical work
- [ ] Relationships / communication with work colleagues
- [ ] Organisational factors (eg staffing, equipment, workload)
- [ ] Patient interactions
- [ ] Ethnic cultural wellbeing
- [ ] I'd rather not say
- [ ] Other - please specify

< Back | Next >

Waitemata District Health Board
Best Care for Everyone

THE UNIVERSITY OF AUCKLAND NEW ZEALAND

What area did you mostly work in today?

- General surgery
- Orthopaedics
- ORL
- Gynaecology
- Obstetrics
- Urology
- I'd rather not say
- Not applicable

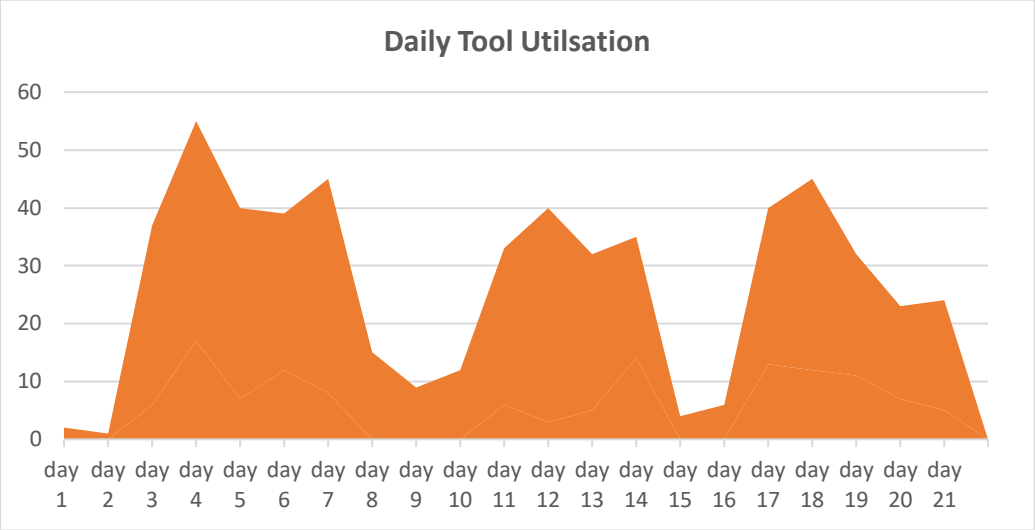
Job role

- Anaesthetist
- Anaesthetist registrar / fellow
- Anaesthetic technician
- Anaesthetic tech trainee
- Healthcare assistant
- Nurse
- Orderly
- Senior nurse
- Surgeon
- Surgical registrar / fellow
- I'd rather not say
- Other

Thank you for your time

< Back | Finish

Appendix 7.1 Daily tool utilisation



Appendix 7.2 Number of submissions

No. Submissions	1	2	3	4	5	6	7	8	9	10	11	12	13	14	**Total**
No. Participants	166	40	22	8	12	6	6	3	2	2	1	0	0	1	***269***
% of participants	62	15	8	3	5	2	2	1	1	1	0.5	0	0	0.5	**100 %**

Appendix: 7.3 Direct Quotes from Survey Respondents

Direct quotes gathered from the survey 'comments and suggestions ' section
• *More inclined to make an effort for a short period of time.* • *I actually did not participate in the survey, do not believe it is accurate.* • *Made me appreciative of the work that I do.* • *Not sure if it's actually going to improve morale or make anything happen but if it gives it a chance to improve, I will do it.* • *It was good, very easy and quick to fill in.* • *Options were limited and you could only choose one. Sometimes a combination of factors applied.* • *It would be forgotten about and usage would die off if it was a permanent thing.* • *Seems pointless.* • *Good idea, but I only used it once, mostly as too busy, but after I forgot a few times I thought it would skew the results to restart.* • *Not sure what will come of the info. Most staff can tell you what would make morale better.* • *Providing the solution is the battle.* • *Similar to "smiley face meters" seen at airports, offices, and all over, creates instant responses, great!* • *The Morale-o-Meter got the conversation started within the theatre setting of everybody's morale.* • *Even with the survey, I don't think it was used much, it will become another piece of equipment in an already crowded theatre & be ignored.* • *Accessibility was good, which encouraged me to frequently do the survey, the treats by the tearoom seemed a good way for people to be encouraged to take part in the survey. I'm not sure how accurately people were answering the survey, which would be interested to find out in the results.* • *There was no option for having a non-clinical reason for a good or bad mood? can't remember now.* • *I saw people fill it in when they were cheesed off about something but not when they were happy.* • *It was good to answer as most of the time my morale was not low around 6-7/10 but I don't see it being useful. It also takes up space in the workbench and sometimes the app doesn't load or takes a while to load.* • *Would be nice to have a small box for comment.* • *I could not log on, tried many times with the help of others too!* • *I find it a great tool, but would not have them in the theatre itself.*

References

Abraham, S. (2012). Job Satisfaction as an Antecedent to Employee Engagement. *SIES Journal of Management*, *8*(2), 27–36.

Afonso, A. M., Diaz, J. H., Scher, C. S., Beyl, R. A., Nair, S. R., & Kaye, A. D. (2013). Measuring determinants of career satisfaction of anesthesiologists: Validation of a survey instrument. *Journal of Clinical Anesthesia*, *25*(4), 289–295. https://doi.org/10.1016/j.jclinane.2013.01.007

Ahmad, A., & Rainyee, R. A. (2014). Which is the better predictor of employee turnover intentions: Job satisfaction or organizational commitment? A literature review. *International Journal of Information, Business and Management*, *6*(1), 2–10.

Ahmadiyeh, N., Cho, N. L., Kellogg, K. C., Lipsitz, S. R., Moore, F. D., Ashley, S. W., … Breen, E. M. (2010). Career Satisfaction of Women in Surgery: Perceptions, Factors, and Strategies. *Journal of the American College of Surgeons*, *210*(1), 23–28. https://doi.org/10.1016/j.jamcollsurg.2009.08.011

Ahmed, N., Conn, L. G., Chiu, M., Korabi, B., Qureshi, A., Nathens, A. B., & Kitto, S. (2012). Career satisfaction among general surgeons in Canada: A qualitative study of enablers and barriers to improve recruitment and retention in general surgery. *Academic Medicine*, *87*(11), 1616–1621. https://doi.org/10.1097/ACM.0b013e31826c81b6

Albion, M., Fogarty, G. J., Machin, M. A., & Patrick, J. (2008). Predicting absenteeism and turnover intentions in the health professions. *Australian Health Review*, *32*(2), 271–281. https://doi.org/10.1071/AH080271

Allen, N. J., & Meyer, J. P. (1990). The measurement and antecedents of affective, continuance and normative commitment to the organization. *Journal of Occupational Psychology*, *63*(1), 1–18. https://doi.org/10.1111/j.2044-8325.1990.tb00506.x

Arakelian, E., Gunningberg, L., & Larsson, J. (2008). Job satisfaction or production? How staff and leadership understand operating room efficiency: A qualitative study. *Acta Anaesthesiologica Scandinavica*, *52*(10), 1423–1428. https://doi.org/10.1111/j.1399-6576.2008.01781.x

Arvey, R. D., Bouchard, T. J., Segal, N. L., & Abraham, L. M. (1989). Job Satisfaction: Environmental and Genetic Components. *Journal of Applied Psychology*, *74*(2), 187–192. https://doi.org/10.1037/0021-9010.74.2.187

Ashton, T., Brown, P. M., Sopina, E., Cameron, L., Tenbensel, T., & Windsor, J. (2013).

Sources of satisfaction and dissatisfaction among specialists within the public and private health sectors. *New Zealand Medical Journal*, *126*(1383).

Aziri, B. (2011). Job Satisfaction: A Literature review management research. *Management Research and Practice*, *3*(4), 77–86.

Barth, S., Schraagen, J. M., & Schmettow, M. (2015). Network measures for characterising team adaptation processes. *Ergonomics*, *58*(8), 1287–1302. https://doi.org/10.1080/00140139.2015.1009951

Barton, T. (2016). What are the best apporaches to measuring employee engagement? Retrieved from https://employeebenefits.co.uk/issues/june-2016-2/what-are-the-best-approaches-to-measuring-employee-engagement/

Baumgardner, D. J. (2016). Complexity and Chaos in Surgical Start Times. *Journal of Patient-Centered Research and Reviews*, *3*(3), 121–122. https://doi.org/10.17294/2330-0698.1361

Beaman, S. E. (2005). Work-related stressors and job satisfaction of operating room nurses (Doctoral thesis). Retrieved from ProQuest Dissertations and Theses website: http://ezproxy.unbosque.edu.co:2048/login?url=https://www.proquest.com/docview/305360145?accountid=41311

Bendorf, D. C., Helmer, S. D., Osland, J. S., & Tenofsky, P. L. (2010). Income, productivity, and satisfaction of breast surgeons. *American Journal of Surgery*, *199*(3), 405–409. https://doi.org/10.1016/j.amjsurg.2009.09.006

Benson, S. G., & Dundis, S. P. (2003). Understanding and motivating health care employees: Integrating Maslow's hierarchy of needs, training and technology. *Journal of Nursing Management*, *11*(5), 315–320. https://doi.org/10.1046/j.1365-2834.2003.00409.x

Bergs, J., Lambrechts, F., Simons, P., Vlayen, A., Marneffe, W., Hellings, J., … Vandijck, D. (2015). Barriers and facilitators related to the implementation of surgical safety checklists: A systematic review of the qualitative evidence. *BMJ Quality and Safety*, Vol. 24, pp. 776–786. https://doi.org/10.1136/bmjqs-2015-004021

Bersin, J., Flynn, J., Mazor, A., & Melián, V. (2017). *Rewriting the rules for the digital age:2017 Deloitte Global Human Capital Trends*.

Birken, S. A., Powell, B. J., Presseau, J., Kirk, M. A., Lorencatto, F., Gould, N. J., … Damschroder, L. J. (2017). Combined use of the Consolidated Framework for Implementation Research (CFIR) and the Theoretical Domains Framework (TDF): A systematic review. *Implementation Science*, Vol. 12. https://doi.org/10.1186/s13012-016-0534-z

Bleakley, A. (2013). Working in “teams” in an era of “liquid” healthcare: What is the use of theory? *Journal of Interprofessional Care*, *27*(1), 18–26. https://doi.org/10.3109/13561820.2012.699479

Borda, R. G., & Norman, I. J. (1997). Testing a model of absence and intent to stay in employment: A study of registered nurses in Malta. *International Journal of Nursing Studies*, *34*(5), 375–384. https://doi.org/10.1016/s0020-7489(97)00030-8

Bovier, P. A., & Perneger, T. V. (2003). Predictors of work satisfaction among physicians. *European Journal of Public Health*. https://doi.org/10.1093/eurpub/13.4.299

Bowling, N. A., Eschleman, K. J., & Wang, Q. (2010). A meta-analytic examination of the relationship between job satisfaction and subjective well-being. *Journal of Occupational and Organizational Psychology*, *83*(4), 915–934. https://doi.org/10.1348/096317909X478557

Braithwaite, J., Churruca, K., Long, J. C., Ellis, L. A., & Herkes, J. (2018). When complexity science meets implementation science: A theoretical and empirical analysis of systems change. *BMC Medicine*, *16*(1). https://doi.org/10.1186/s12916-018-1057-z

Braithwaite, J., Clay-Williams, R., Nugus, P., & Plumb, J. (2018). Health care as a complex adaptive system. *Resilient Health Care*, 57–73. https://doi.org/10.4324/9781315385907-4

Brief, A. P., & Roberson, L. (1989). Job Attitude Organization: An Exploratory Study. *Journal of Applied Social Psychology*, *19*(9), 717–727. https://doi.org/10.1111/j.1559-1816.1989.tb01254.x

Brown, M. I. (2020). Comparing the validity of net promoter and benchmark scoring to other commonly used employee engagement metrics. *Human Resource Development Quarterly*, *31*(4), 355–370. https://doi.org/10.1002/hrdq.21392

Brydon-Miller, M., Greenwood, D., & Maguire, P. (2003). Why Action Research? *Action Research*, *1*(1), 9–28. https://doi.org/10.1177/14767503030011002

Cane, J., O’Connor, D., & Michie, S. (2012). Validation of the theoretical framework. *Implementation Science*, *7*, 37.

Careers New Zealand. (2020). Anaesthetic Technician. Retrieved from https://www.careers.govt.nz/jobs-database/health-and-community/health/anaesthetic-technician/

Carney, B. T., Mills, P. D., Bagian, J. P., & Weeks, W. B. (2010). Sex differences in operating room care giver perceptions of patient safety: A pilot study from the Veterans Health Administration Medical Team Training Program. *Quality and Safety in Health*

Care, *19*(2), 128–131. https://doi.org/10.1136/qshc.2008.028233

Castaneda, G. A., & Scanlan, J. M. (2014). Job satisfaction in nursing: A concept analysis. *Nursing Forum*, *49*(2), 130–138. https://doi.org/10.1111/nuf.12056

CFIR. (2020). Consolidated Framework for Implementation Research. Retrieved from https://cfirguide.org/

Chambers, C. N. L., Frampton, C. M. A., Barclay, M., & McKee, M. (2016). Burnout prevalence in New Zealand's public hospital senior medical workforce: A cross-sectional mixed methods study. *BMJ Open*, *6*(11). https://doi.org/10.1136/bmjopen-2016-013947

Charlesworth, M., & Pandit, J. J. (2020). Rational performance metrics for operating theatres, principles of efficiency, and how to achieve it. *British Journal of Surgery*, *107*(2), e63–e69. https://doi.org/10.1002/bjs.11396

Chen, C. K., Lin, C., Wang, S. H., & Hou, T. H. (2009). A study of job stress, stress coping strategies, and job satisfaction for nurses working in middle-level hospital operating rooms. *Journal of Nursing Research*, *17*(3), 199–211. https://doi.org/10.1097/JNR.0b013e3181b2557b

Chipps, E., Stelmaschuk, S., Albert, N. M., Bernhard, L., & Holloman, C. (2013). Workplace bullying in the OR: Results of a descriptive study. *AORN Journal*, *98*(5), 479–493. https://doi.org/10.1016/j.aorn.2013.08.015

Chiron, B., Michinov, E., Olivier-Chiron, E., Laffon, M., & Rusch, E. (2010). Job satisfaction, life satisfaction and burnout in french anaesthetists. *Journal of Health Psychology*, *15*(6), 948–958. https://doi.org/10.1177/1359105309360072

Coghlan, D., & Brydon-Miller, M. (2014). Collaborative action research. In *The SAGE encyclopedia of action research* (pp. 117–119). London: SAGE Publications Ltd.

Cohen, A., & Golan, R. (2007). Predicting absenteeism and turnover intentions by past absenteeism and work attitudes: An empirical examination of female employees in long term nursing care facilities. *Career Development International*, *12*(5), 416–432. https://doi.org/10.1108/13620430710773745

Coomber, B., & Barriball, L. K. (2007). Impact of job satisfaction components on intent to leave and turnover for hospital-based nurses: A review of the research literature. *International Journal of Nursing Studies*, *44*(2), 297–314. https://doi.org/10.1016/j.ijnurstu.2006.02.004

Costello, P. J. M. (2003). *Action Research (Continuum Research Methods)*. England: Continuum.

Cram, E. (2002). The effect of consistent operating room nursing teams on operating room nurses' perceptions of job stress, group cohesion, conflict, job satisfaction and anticipated turnover. (Doctoral thesis). Retrieved from http://ezproxy.usherbrooke.ca/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=rzh&AN=109877318&site=ehost-live

Creswell, J., & Plano Clark, V. (2007). Designing and Conducting Mixed Methods Research. *Australian and New Zealand Journal of Public Health*, *31*(4), 388–388. https://doi.org/10.1111/j.1753-6405.2007.00096.x

D'Amour, D., Ferrada-Videla, M., San Martin Rodriguez, L., & Beaulieu, M. D. (2005). The conceptual basis for interprofessional collaboration: Core concepts and theoretical frameworks. *Journal of Interprofessional Care*, *19*(1), 116–131. https://doi.org/10.1080/13561820500082529

Dalal, R. S., & Credé, M. (2013). Job satisfaction and other job attitudes. In *APA handbook of testing and assessment in psychology, Vol. 1: Test theory and testing and assessment in industrial and organizational psychology.* (pp. 675–691). https://doi.org/10.1037/14047-037

Damschroder, L. J., Aron, D. C., Keith, R. E., Kirsh, S. R., Alexander, J. A., & Lowery, J. C. (2009). Fostering implementation of health services research findings into practice: A consolidated framework for advancing implementation science. *Implementation Science*, *4*(1). https://doi.org/10.1186/1748-5908-4-50

Davar, S. C., & Bala, R. (2012). Relationship between job satisfaction and job performance: a metaanalysis.pdf. *The Indian Journal of Industrial Relations*, *48*(2), 290–305.

Denscombe, M. (2014). *The good research guide : for small-scale projects* (Fifth). Maidenhead, Bekshire: Open University Press.

Devon, H. A., Block, M. E., Moyle-Wright, P., Ernst, D. M., Hayden, S. J., Lazzara, D. J., … Kostas-Polston, E. (2007). A psychometric toolbox for testing validity and reliability. *Journal of Nursing Scholarship*, *39*(2), 155–164. https://doi.org/10.1111/j.1547-5069.2007.00161.x

Dolbier, C. L., Webster, J. A., McCalister, K. T., Mallon, M. W., & Steinhardt, M. A. (2005). Reliability and validity of a single-item measure of job satisfaction. *American Journal of Health Promotion*, *19*(3), 194–198. https://doi.org/10.4278/0890-1171-19.3.194

Donald, J. (1999). What makes your day? A study of the quality of worklife of OR nurses. *Canadian Operating Room Nursing Journal*, *17*(4), 17–27.

Dormann, C., & Zapf, D. (2001). Job satisfaction: A meta-analysis of stabilities. *Journal of*

Organizational Behavior, *22*(5), 483–504. https://doi.org/10.1002/job.98

Dowell, A. C., Westcott, T., McLeod, D. K., & Hamilton, S. (2001). A survey of job satisfaction, sources of stress and psychological symptoms among New Zealand health professionals. *New Zealand Medical Journal*, *114*(1145), 540–543.

Driessnack, M., Sousa, V. D., & Mendes, I. A. C. (2007). An overview of research designs relevant to nursing: part 2: qualitative research designs. *Revista Latino-Americana de Enfermagem*, *15*(4), 684–688. https://doi.org/10.1590/s0104-11692007000400025

Duffy, R. D., & Richard, G. V. (2006). Physician job satisfaction across six major specialties. *Journal of Vocational Behavior*, *68*(3), 548–559. https://doi.org/10.1016/j.jvb.2005.12.001

Dunn, H. (2003). Horizontal violence among nurses in the operating room. *AORN Journal*, *78*(6), 977–980. https://doi.org/10.1016/S0001-2092(06)60588-7

Eakin, S. (2017). Operating room nurses and surgical technologists perceptions of job satisfaction in the operating room environment. *Dissertation Abstracts International: Section B: The Sciences and Engineering*, *77*(7-B(E)).

Ellison-Loschmann, L., & Pearce, N. (2006). Improving access to health care among New Zealand's Maori population. *American Journal of Public Health*, *96*(4), 612–617. https://doi.org/10.2105/AJPH.2005.070680

End, A., Mittlboeck, M., & Piza-Katzer, H. (2004). Professional satisfaction of women in surgery: Results of a national study. *Archives of Surgery*, *139*(11), 1208–1214. https://doi.org/10.1001/archsurg.139.11.1208

Eskola, S., Roos, M., McCormack, B., Slater, P., Hahtela, N., & Suominen, T. (2016). Workplace culture among operating room nurses. *Journal of Nursing Management*, *24*(6), 725–734. https://doi.org/10.1111/jonm.12376

Farley, F. A., Kramer, J., & Watkins-Castillo, S. (2008). Work satisfaction and retirement plans of orthopaedic surgeons 50 years of age and older. *Clinical Orthopaedics and Related Research*, *466*(1), 231–238. https://doi.org/10.1007/s11999-007-0014-5

Farrell, D., & Rusbult, C. E. (1981). Exchange variables as predictors of job satisfaction, job commitment, and turnover: The impact of rewards, costs, alternatives, and investments. *Organizational Behavior and Human Performance*, *28*(1), 78–95. https://doi.org/10.1016/0030-5073(81)90016-7

Fasbender, U., Van der Heijden, B. I. J. M., & Grimshaw, S. (2019). Job satisfaction, job stress and nurses' turnover intentions: The moderating roles of on-the-job and off-the-job embeddedness. *Journal of Advanced Nursing*, *75*(2), 327–337.

https://doi.org/10.1111/jan.13842

Fisher, N. I., & Kordupleski, R. E. (2019). Good and bad market research: A critical review of Net Promoter Score. *Applied Stochastic Models in Business and Industry*, *35*(1), 138–151. https://doi.org/10.1002/asmb.2417

Flin, R., Yule, S., McKenzie, L., Paterson-Brown, S., & Maran, N. (2006). Attitudes to teamwork and safety in the operating theatre. *Surgeon*, *4*(3), 145–151. https://doi.org/10.1016/S1479-666X(06)80084-3

Foulkrod, K. H., Field, C., & Brown, C. V. R. (2010). Trauma surgeon personality and job satisfaction: Results from a national survey. *American Surgeon*, *76*(4), 422–427. https://doi.org/10.1177/000313481007600422

Frampton, A., Fox, F., Hollowood, A., Northstone, K., Margelyte, R., Smith-Clarke, S., & Redwood, S. (2017). Using real-time, anonymous staff feedback to improve staff experience and engagement. *BMJ Quality Improvement Reports*, *6*(1), u220946.w7041. https://doi.org/10.1136/bmjquality.u220946.w7041

Frank, E., McMurray, J. E., Linzer, M., & Elon, L. (1999). Career satisfaction of US women physicians: Results from the Women Physicians' Health Study. *Archives of Internal Medicine*, *159*(13), 1417–1426. https://doi.org/10.1001/archinte.159.13.1417

Gambacorta, R., & Iannario, M. (2013). Measuring job satisfaction with CUB models. *Labour*, *27*(2), 198–224. https://doi.org/10.1111/labr.12008

Gaszynska, E., Stankiewicz-Rudnicki, M., Szatko, F., Wieczorek, A., & Gaszynski, T. (2014). Life satisfaction and work-related satisfaction among anesthesiologists in Poland. *Scientific World Journal*, *14*, 1–9. https://doi.org/10.1155/2014/601865

Gates, R., Workman, A., & Collier, B. (2019). Job satisfaction and workplace stressors among surgical providers at a single institution. *Journal of the American Academy of Physician Assistants*, *32*(11), 42–47. https://doi.org/10.1097/01.JAA.0000586332.19619.b6

Geerligs, L., Rankin, N. M., Shepherd, H. L., & Butow, P. (2018). Hospital-based interventions: A systematic review of staff-reported barriers and facilitators to implementation processes. *Implementation Science*, *13*(1), 36. https://doi.org/10.1186/s13012-018-0726-9

Gillespie, B. M., Chaboyer, W., Longbottom, P., & Wallis, M. (2010). The impact of organisational and individual factors on team communication in surgery: A qualitative study. *International Journal of Nursing Studies*, *47*(6), 732–741. https://doi.org/10.1016/j.ijnurstu.2009.11.001

Godin, I., Kittel, F., Coppieters, Y., & Siegrist, J. (2005). A prospective study of cumulative job stress in relation to mental health. *BMC Public Health*, *5*(3), 237. https://doi.org/10.1186/1471-2458-5-67

Göras, C., Wallentin, F. Y., Nilsson, U., & Ehrenberg, A. (2013). Swedish translation and psychometric testing of the safety attitudes questionnaire (operating room version). *BMC Health Services Research*, *13*(1). https://doi.org/10.1186/1472-6963-13-104

Gorgone, P. D., Arsenault, L., Milliman-Richard, Y. J., & Lajoie, D. L. (2016). Development of a New Graduate Perioperative Nursing Program at an Urban Pediatric Institution. *AORN Journal*, *104*(1), 23-29.e2. https://doi.org/10.1016/j.aorn.2016.05.006

Grant, P. (2004). Physician job satisfaction in New Zealand versus the United Kingdom. *New Zealand Medical Journal*, *117*(1204).

Greenhaus, J. H., Parasuraman, S., & Wormley, W. M. (1990). Effects of Race on Organizational Experiences, Job Performance Evaluations, and Career Outcomes. *Academy of Management Journal*, *33*(1), 64–86. https://doi.org/10.5465/256352

Groysberg, B., & Slind, M. (2012). Leadership is a conversation. *Harvard Business Review*, *90*(6).

Gurley, L. E., Spence, G. J., Briner, C. C., & Edwards, S. C. (2003). Ideal and perceived satisfaction of patient care providers. *Health Care Manager*, *22*(2), 128–135. https://doi.org/10.1097/00126450-200304000-00008

Haar, J. M., & Brougham, D. M. (2013). An Indigenous Model of Career Satisfaction: Exploring the Role of Workplace Cultural Wellbeing. *Social Indicators Research*, *110*(3), 873–890. https://doi.org/10.1007/s11205-011-9962-y

Hackman, J. R., & Lawler, E. E. (1971). Employee reactions to job characteristics. *Journal of Applied Psychology*, *55*(3), 259.

Hall, L. H., Johnson, J., Watt, I., Tsipa, A., & O'Connor, D. B. (2016). Healthcare staff wellbeing, burnout, and patient safety: A systematic review. *PLoS ONE*, Vol. 11. https://doi.org/10.1371/journal.pone.0159015

HappyorNot. (n.d.). Happy or not in human resources. Retrieved July 16, 2020, from https://www.happy-or-not.com/en/human-resources/

Harms, B. A., Heise, C. P., Gould, J. C., Starling, J. R., Ellison, E. C., Jeekel, J. H., … Meyer, A. A. (2005). A 25-year single institution analysis of health, practice, and fate of general surgeons. *Annals of Surgery*, *242*(4), 520–529. https://doi.org/10.1097/01.sla.0000184223.76854.29

Harnish, V., & Ross, S. (2013). A better way to measure employee happiness. Retrieved from

https://docplayer.net/10437456-A-better-way-to-by-verne-harnish-and-sebastian-ross-www-gazelles-com.html

Harter, J. K., Schmidt, F. L., & Hayes, T. L. (2002). Business-unit-level relationship between employee satisfaction, employee engagement, and business outcomes: A meta-analysis. *Journal of Applied Psychology*, *87*(2), 268–279. https://doi.org/10.1037/0021-9010.87.2.268

Hayes, B., Bonner, A., & Pryor, J. (2010). Factors contributing to nurse job satisfaction in the acute hospital setting: A review of recent literature. *Journal of Nursing Management*, *18*(7), 804–814. https://doi.org/10.1111/j.1365-2834.2010.01131.x

Health Quality & Safety Commision New Zealand. (2015). Surgical Culture Safety Survey Research Report. Retrieved from https://www.hqsc.govt.nz/assets/Perioperative-Harm/PR-files--images/surgical-culture-safety-survey-Dec-2015.pdf

Health Research Council of New Zealand. *Guidelines for researchers on health research involving Māori.* , (2010).

Healthstream. (2015). Use Targeted Pulse Surveys to Achieve Healthcare Workforce Alignment. Retrieved from https://www.healthstream.com/resources/blog/blog/2015/01/21/use-targeted-pulse-surveys-to-achieve-healthcare-workforce-alignment

Heinzelman, S. Z. (2014). Retention of baby boomer operating room nurses. *Retention of Baby Boomer Operating Room Nurses*, *75*(2), 195 p.

Herzberg, F. (1959). Two-Factor Theory of Motivation. In *The motivation to work*. New York: Wiley.

Highhouse, S., & Becker, A. S. (1993). Facet measures and global job satisfaction. *Journal of Business and Psychology*, *8*(1), 117–127. https://doi.org/10.1007/BF02230397

Hinsley, K. E., Marshall, A. C., Hurtig, M. H., Thornton, J. M., O'Connell, C. A., Porter, C. L., … Hickey, P. A. (2016). Monitoring the health of the work environment with a daily assessment tool: The REAL - Relative Environment Assessment Lens - Indicator. *Cardiology in the Young*, *26*(6), 1082–1089. https://doi.org/10.1017/S1047951115001808

Holzer, E., Tschan, F., Kottwitz, M. U., Beldi, G., Businger, A. P., & Semmer, N. K. (2019). The workday of hospital surgeons: What they do, what makes them satisfied, and the role of core tasks and administrative tasks; A diary study. *BMC Surgery*, *19*(1). https://doi.org/10.1186/s12893-019-0570-0

Hoppock, R., & Robinson, H. A. (1949). Job Satisfaction Researches of 1948. *Occupations:*

The Vocational Guidance Journal, *28*(3), 153–161. https://doi.org/10.1002/j.2164-5892.1949.tb01579.x

Horinouchi, H., Tokuda, Y., Nishimura, N., Terai, M., Takahashi, O., Ohde, S., … Fukui, T. (2008a). Influence of Residents' Workload, Mental State and Job Satisfaction on Procedural Error : a prospective daily questionnaire-based study. *General Medicine*, *9*(2), 57–64. https://doi.org/10.14442/general.9.57

Horinouchi, H., Tokuda, Y., Nishimura, N., Terai, M., Takahashi, O., Ohde, S., … Fukui, T. (2008b). Influence of Residents' Workload, Mental State and Job Satisfaction on Procedural Error : a prospective daily questionnaire-based study. *General Medicine*, *9*(2), 57–64. https://doi.org/10.14442/general.9.57

Hox, J. J. (2010). Multilevel analysis: Techniques and applications: Second edition. In *Multilevel Analysis: Techniques and Applications: Second Edition*. https://doi.org/10.4324/9780203852279

Huang, H. B. (2010). What is good action research?: Why the resurgent interest? *Action Research*, *8*(1), 93–109. https://doi.org/10.1177/1476750310362435

Hyman, S. A., Michaels, D. R., Berry, J. M., Schildcrout, J. S., Mercaldo, N. D., & Weinger, M. B. (2011). Risk of burnout in perioperative clinicians: A survey study and literature review. *Anesthesiology*, *114*(1), 194–204. https://doi.org/10.1097/ALN.0b013e318201ce9a

Iaffaldano, M. T., & Muchinsky, P. M. (1985). Job Satisfaction and Job Performance. A Meta-Analysis. *Psychological Bulletin*, *97*(2), 251–273. https://doi.org/10.1037/0033-2909.97.2.251

Iida, M., Shrout, P. E., Laurenceau, J.-P., & Bolger, N. (2012). Using diary methods in psychological research. In *APA handbook of research methods in psychology, Vol 1: Foundations, planning, measures, and psychometrics.* (pp. 277–305). https://doi.org/10.1037/13619-016

Ilies, R., & Judge, T. A. (2002). Understanding the dynamic relationships among personality, mood, and job satisfaction: A field experience sampling study. *Organizational Behavior and Human Decision Processes*, *89*(2), 1119–1139. https://doi.org/10.1016/S0749-5978(02)00018-3

Ilies, R., & Judge, T. A. (2004). An experience-sampling measure of job satisfaction and its relationships with affectivity, mood at work, job beliefs, and general job satisfaction. *European Journal of Work and Organizational Psychology*, *13*(3), 367–389. https://doi.org/10.1080/13594320444000137

Irvine, D. M., & Evans, M. G. (1995). Job satisfaction and turnover among nurses: Integrating research findings across studies. *Nursing Research*, *44*(4), 246–253. https://doi.org/10.1097/00005721-199511000-00004

Ivankova, N., & Wingo, N. (2018). Applying Mixed Methods in Action Research: Methodological Potentials and Advantages. *American Behavioral Scientist*, *62*(7), 978–997. https://doi.org/10.1177/0002764218772673

Jackson, T. N., Pearcy, C. P., Khorgami, Z., Agrawal, V., Taubman, K. E., & Truitt, M. S. (2018). The Physician Attrition Crisis: A Cross-Sectional Survey of the Risk Factors for Reduced Job Satisfaction Among US Surgeons. *World Journal of Surgery*, *42*(5), 1285–1292. https://doi.org/10.1007/s00268-017-4286-y

James-Scotter, M., Walker, C., & Jacobs, S. (2019). An interprofessional perspective on job satisfaction in the operating room: a review of the literature. *Journal of Interprofessional Care*, *33*(6), 782–794. https://doi.org/10.1080/13561820.2019.1593118

Jeanes, E. (2019). A Dictionary of Organizational Behaviour. In *A Dictionary of Organizational Behaviour*. https://doi.org/10.1093/acref/9780191843273.001.0001

Jenkins, K., & Wong, D. (2001). A survey of professional satisfaction among Canadian anesthesiologists. *Canadian Journal of Anesthesia*, *48*(7), 637–645. https://doi.org/10.1007/BF03016196

John Hopkins Medicine. (2020). Types of Surgery. Retrieved from https://www.hopkinsmedicine.org/health/treatment-tests-and-therapies/types-of-surgery

Johnson, D. A. (2008). Job satisfaction in the operating room: an analysis of the cultural competence of nurses. *ProQuest Dissertations and Theses*, (August), 120.

Judge, T. A., Cable, D. M., Boudreau, J. W., & Bretz, R. D. (1995). an Empirical Investigation of the Predictors of Executive Career Success. *Personnel Psychology*, *48*(3), 485–519. https://doi.org/10.1111/j.1744-6570.1995.tb01767.x

Judge, T. A., Thoresen, C. J., Bono, J. E., & Patton, G. K. (2001). The job satisfaction–job performance relationship: A qualitative and quantitative review. *Psychological Bulletin*, *127*(3), 376–407. https://doi.org/10.1037/0033-2909.127.3.376

Judge, T. A., Weiss, H. M., Kammeyer-Mueller, J. D., & Hulin, C. L. (2017). Job attitudes, job satisfaction, and job affect: A century of continuity and of change. *Journal of Applied Psychology*, *102*(3), 356–374. https://doi.org/10.1037/apl0000181

Kang, S. H., Boo, Y. J., Lee, J. S., Han, H. J., Jung, C. W., & Kim, C. S. (2015). High occupational stress and low career satisfaction of Korean surgeons. *Journal of Korean Medical Science*, *30*(2), 133–139. https://doi.org/10.3346/jkms.2015.30.2.133

Kaplan, S. A., Warren, C. R., Barsky, A. P., & Thoresen, C. J. (2009). A note on the relationship between affect(ivity) and differing conceptualizations of job satisfaction: Some unexpected meta-analytic findings. *European Journal of Work and Organizational Psychology*, *18*(1), 29–54. https://doi.org/10.1080/13594320701873264

Karathanasi, K., Prezerakos, P., Maria, M., Siskou, O., & Kaitelidou, D. (2014). Operating room nurse manager competencies in Greek hospitals. *Clinical Nursing Studies*, *2*(2). https://doi.org/10.5430/cns.v2n2p16

Katz, A., Mallory, B., Gilbert, J. C., Bethel, C., Hayes-Jordan, A. A., Saito, J. M., … Farmer, D. (2010). State of the practice for pediatric surgery-career satisfaction and concerns. A report from the American Pediatric Surgical Association Task Force on Family Issues. *Journal of Pediatric Surgery*, *45*(10), 1975–1982. https://doi.org/10.1016/j.jpedsurg.2010.05.011

Keller, A. C., & Semmer, N. K. (2013). Changes in situational and dispositional factors as predictors of job satisfaction. *Journal of Vocational Behavior*, *83*(1), 88–98. https://doi.org/10.1016/j.jvb.2013.03.004

Khamisa, N., Oldenburg, B., Peltzer, K., & Ilic, D. (2015). Work related stress, burnout, job satisfaction and general health of nurses. *International Journal of Environmental Research and Public Health*, *12*(1), 652–666. https://doi.org/10.3390/ijerph120100652

Khan, A., Hussain, R., Plummer, D., & Minichiello, V. (2004). Too many surveys! Eliciting the views of general practitioners for not participating in postal surveys. *Australian Journal of Primary Health*, *10*(2), 76–81. https://doi.org/10.1071/PY04029

Kibwana, S., Yigzaw, M., Molla, Y., van Roosmalen, J., & Stekelenburg, J. (2018). Job satisfaction among anesthetists in Ethiopia—a national cross-sectional study. *International Journal of Health Planning and Management*, *33*(4), e960–e970. https://doi.org/10.1002/hpm.2573

Kinzl, J. F., Knotzer, H., Traweger, C., Lederer, W., Heidegger, T., & Benzer, A. (2005). Influence of working conditions on job satisfaction in anaesthetists. *British Journal of Anaesthesia*, *94*(2), 211–215. https://doi.org/10.1093/bja/aei035

Kisten, P., & Kluyts, H. (2018). An evaluation of personality traits associated with job satisfaction among South African anaesthetists using the big five inventory. *Southern African Journal of Anaesthesia and Analgesia*, *24*(1), 9–15. https://doi.org/10.1080/22201181.2018.1433986

Kjellström, S., & Mitchell, A. (2019). Health and healthcare as the context for participatory action research. *Action Research*, *17*(4), 419–428.

https://doi.org/10.1177/1476750319891468

Klimo, P., Decuypere, M., Ragel, B. T., McCartney, S., Couldwell, W. T., & Boop, F. A. (2013). Career satisfaction and burnout among U.S. neurosurgeons: A feasibility and pilot study. *World Neurosurgery*, *80*(5). https://doi.org/10.1016/j.wneu.2012.09.009

Kluger, M. T., & Bryant, J. (2008). Job satisfaction, stress and burnout in anaesthetic technicians in New Zealand. *Anaesthesia and Intensive Care*, *36*(2), 214–221. https://doi.org/10.1177/0310057x0803600212

Kluger, M. T., Townend, K., & Laidlaw, T. (2003). Job satisfaction, stress and burnout in Australian specialist anaesthetists. *Anaesthesia*, *58*(4), 339–345. https://doi.org/10.1046/j.1365-2044.2003.03085.x

Kondrat, B. K. (2001). Operating room nurse managers--competence and beyond. *AORN Journal*, *73*(6). https://doi.org/10.1016/s0001-2092(06)61838-3

Koshy, R. C., Ramesh, B., Khan, S., & Sivaramakrishnan, A. (2011). Job satisfaction and stress levels among anaesthesiologists of south India. *Indian Journal of Anaesthesia*, *55*(5), 513–517. https://doi.org/10.4103/0019-5049.89891

Krumpal, I. (2013). Determinants of social desirability bias in sensitive surveys: A literature review. *Quality and Quantity*, *47*(4), 2025–2047. https://doi.org/10.1007/s11135-011-9640-9

Kuerer, H. M., Eberlein, T. J., Pollock, R. E., Huschka, M., Baile, W. F., Morrow, M., … Shanafelt, T. D. (2007). Career satisfaction, practice patterns and burnout among surgical oncologists: Report on the quality of life of members of the Society of Surgical Oncology. *Annals of Surgical Oncology*, *14*(11), 3043–3053. https://doi.org/10.1245/s10434-007-9579-1

Kunin, T. (1955). The Construction of a New Type of Attitude Measure. *Personnel Psychology*, *8*(1), 65–77. https://doi.org/10.1111/j.1744-6570.1955.tb01189.x

Kurimoto, S., Minagawa, T., & Tamura, A. (2020). Operating-room nurses' classifications in job satisfaction. *Journal of Medical Investigation*, *67*(1.2), 113–123. https://doi.org/10.2152/jmi.67.113

Kutney-Lee, A., McHugh, M. D., Sloane, D. M., Cimiotti, J. P., Flynn, L., Neff, D. F., & Aiken, L. H. (2009). Nursing: A key to patient satisfaction. *Health Affairs*, *28*(4). https://doi.org/10.1377/hlthaff.28.4.w669

Kyriazos, T. A., & Stalikas, A. (2018). Applied Psychometrics: The Steps of Scale Development and Standardization Process. *Psychology*, *09*(11), 2531–2560. https://doi.org/10.4236/psych.2018.911145

Lee, S. E., MacPhee, M., & Dahinten, V. S. (2020). Factors related to perioperative nurses' job satisfaction and intention to leave. *Japan Journal of Nursing Science*, *17*(1). https://doi.org/10.1111/jjns.12263

Leticia, F., Cauduro, F., Sarquis, L. M., Maria, L., Sarquis, M., Drehmer, E., & Cruz, D. A. (2015). Safety culture among surgical center professionals*. *Cogitare Enferm*, *20*(1), 128–137.

Li, H., Zuo, M., Gelb, A. W., Zhang, B., Zhao, X., Yao, D., … Huang, Y. (2018). Chinese anesthesiologists have high burnout and low job satisfaction: A cross-sectional survey. *Anesthesia and Analgesia*, *126*(3), 1004–1012. https://doi.org/10.1213/ANE.0000000000002776

Li, W. D., Zhang, Z., Stanek, K. C., Ones, D. S., & McGue, M. (2016). Are genetic and environmental influences on job satisfaction stable over time? A three-wave longitudinal twin study. *Journal of Applied Psychology*, *101*(11), 1598–1619. https://doi.org/10.1037/apl0000057

Lindfors, P. M., Meretoja, O. A., Töyry, S. M., Luukkonen, R. A., Elovainio, M. J., & Leino, T. J. (2007). Job satisfaction, work ability and life satisfaction among Finnish anaesthesiologists. *Acta Anaesthesiologica Scandinavica*, *51*(7), 815–822. https://doi.org/10.1111/j.1399-6576.2007.01343.x

Linzer, M., Konrad, T. R., Douglas, J., McMurray, J. E., Pathman, D. E., Williams, E. S., … Rhodes, E. (2000). Managed care, time pressure, and physician job satisfaction: Results from the physician worklife study. *Journal of General Internal Medicine*, *15*(7), 441–450. https://doi.org/10.1046/j.1525-1497.2000.05239.x

Linzer, M., Poplau, S., Brown, R., Grossman, E., Varkey, A., Yale, S., … Barbouche, M. (2017). Do Work Condition Interventions Affect Quality and Errors in Primary Care? Results from the Healthy Work Place Study. *Journal of General Internal Medicine*, *32*(1), 56–61. https://doi.org/10.1007/s11606-016-3856-2

Lischetzke, T. (2014). Daily Diary Methodology. In *Encyclopedia of Quality of Life and Well-Being Research* (pp. 1413–1419). https://doi.org/10.1007/978-94-007-0753-5_657

Liu, Y., Aungsuroch, Y., & Yunibhand, J. (2016). Job satisfaction in nursing: A concept analysis study. *International Nursing Review*, *63*(1), 84–91. https://doi.org/10.1111/inr.12215

Locke, E. A. (1976). The nature and causes of job satisfaction. In *Handbook of Industrial and Organizational Psychology* (pp. 1297–1349).

Lu, H., Barriball, K. L., Zhang, X., & While, A. E. (2012). Job satisfaction among hospital

nurses revisited: A systematic review. *International Journal of Nursing Studies*, Vol. 49, pp. 1017–1038. https://doi.org/10.1016/j.ijnurstu.2011.11.009

Lu, H., While, A. E., & Barriball, L. . (2005). Job satisfaction among nurses: A literature review. *International Journal of Nursing Studies*, *42*(2), 211–227. https://doi.org/10.1016/j.ijnurstu.2004.09.003

Lu, H., Zhao, Y., & While, A. (2019). Job satisfaction among hospital nurses: A literature review. *International Journal of Nursing Studies*, *94*, 21–31. https://doi.org/10.1016/j.ijnurstu.2019.01.011

Lu, P. W., Columbus, A. B., Fields, A. C., Melnitchouk, N., & Cho, N. L. (2020). Gender Differences in Surgeon Burnout and Barriers to Career Satisfaction: A Qualitative Exploration. *Journal of Surgical Research*, *247*, 28–33. https://doi.org/10.1016/j.jss.2019.10.045

Mache, S., Vitzthum, K., Klapp, B. F., & Danzer, G. (2014). Surgeons' work engagement: Influencing factors and relations to job and life satisfaction. *Surgeon*, *12*(4), 181–190. https://doi.org/10.1016/j.surge.2013.11.015

MacHe, S., Vitzthum, K., Klapp, B. F., & Groneberg, D. A. (2012). Improving quality of medical treatment and care: Are surgeons' working conditions and job satisfaction associated to patient satisfaction? *Langenbeck's Archives of Surgery*, *397*(6), 973–982. https://doi.org/10.1007/s00423-012-0963-3

Mahoney, S. T., Strassle, P. D., Schroen, A. T., Agans, R. P., Turner, P. L., Meyer, A. A., … Brownstein, M. R. (2020). Survey of the US Surgeon Workforce: Practice Characteristics, Job Satisfaction, and Reasons for Leaving Surgery. *Journal of the American College of Surgeons*, *230*(3), 283-293.e1. https://doi.org/10.1016/j.jamcollsurg.2019.12.003

Makary, M. A., Sexton, J. B., Freischlag, J. A., Holzmueller, C. G., Millman, E. A., Rowen, L., & Pronovost, P. J. (2006). Operating Room Teamwork among Physicians and Nurses: Teamwork in the Eye of the Beholder. *Journal of the American College of Surgeons*, *202*(5), 746–752. https://doi.org/10.1016/j.jamcollsurg.2006.01.017

Mann, A., & Harter, J. (2016). Amid Rapid-Fire Workplace Change, Pulse Surveys Emerge. Retrieved from Gallup website: http://news.gallup.com/businessjournal/189875/amid-rapid-fire-workplace-change-pulse-surveys-emerge.aspx

Mays, N., & Pope, C. (2000). Qualitative research in health care: Assessing quality in qualitative research. *British Medical Journal*, *320*(7226), 50–52. https://doi.org/10.1136/bmj.320.7226.50

McDaniel, R. R. (2008). Management Strategies for Complex Adaptive Systems Sensemaking, Learning, and Improvisation. *Performance Improvement Quarterly*. https://doi.org/10.1111/j.1937-8327.2007.tb00438.x

McGregor, D. M. (1985). the Human Side of Enterprise. In *Readings and Exercises in Organizational Behavior* (pp. 28–35). https://doi.org/10.1016/b978-0-12-054752-4.50008-7

McIsaac, D. I., Jen, T., Mookerji, N., Patel, A., & Lalu, M. M. (2017). Interventions to improve the outcomes of frail people having surgery: A systematic review. *PLoS ONE*, *12*(12). https://doi.org/10.1371/journal.pone.0190071

Medical Council of New Zealand. (2020). Register of Doctors. Retrieved from https://www.mcnz.org.nz/registration/register-of-doctors/?keyword=surgery&location=&area=&status=practising

Meyer, J. P., Stanley, D. J., Herscovitch, L., & Topolnytsky, L. (2002). Affective, continuance, and normative commitment to the organization: A meta-analysis of antecedents, correlates, and consequences. *Journal of Vocational Behavior*, *61*(1), 20–52. https://doi.org/10.1006/jvbe.2001.1842

Meyers, D. C., Durlak, J. A., & Wandersman, A. (2012). The Quality Implementation Framework: A Synthesis of Critical Steps in the Implementation Process. *American Journal of Community Psychology*, *50*(3–4), 462–480. https://doi.org/10.1007/s10464-012-9522-x

Miech, E. J., Rattray, N. A., Flanagan, M. E., Damschroder, L., Schmid, A. A., & Damush, T. M. (2018). Inside help: An integrative review of champions in healthcare-related implementation. *SAGE Open Medicine*, *6*, 1–11. https://doi.org/10.1177/2050312118773261

Ministry of Health. (n.d.). District health boards. Retrieved July 30, 2020, from https://www.health.govt.nz/new-zealand-health-system/key-health-sector-organisations-and-people/district-health-boards#:~:text=Board membership,board's chair and deputy chair.

Ministry of Health. (2016). Health of the Health Workforce 2015. Retrieved from https://www.health.govt.nz/system/files/documents/publications/health-of-health-workforce-2015-feb16_0.pdf

Ministry of Health. (2019). Services delivered: Acute and elective patient discharge volume. Retrieved from. Retrieved from https://www.health.govt.nz/publication/services-delivered-acute-and-elective-patient-discharge-volumes

Minkler, M. (2000). Using Participatory Action Research to Build Healthy Communities. *Public Health Reports (1974-)*, *115*(2/3), 191–197.

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *BMJ (Online)*, *339*(7716), 332–336. https://doi.org/10.1136/bmj.b2535

Montgomery, A., Doulougeri, K., & Panagopoulou, E. (2015). Implementing action research in hospital settings: a systematic review. *Journal of Health, Organisation and Management*, *29*(6), 729–749. https://doi.org/10.1108/JHOM-09-2013-0203

Moule, P., & Goodman, M. (2014). *Nursing Research: An Introduction*. Sage pub.

Mousavi, S. M., Asayesh, H., Sharififard, F., & Qorbani, M. (2019). Job satisfaction and turnover intention among anesthesiologists: An Iranian study. *Anesthesiology and Pain Medicine*, *9*(3). https://doi.org/10.5812/aapm.83846

Muthén, L., & Muthén, B. (2015). Mplus. Seventh edition. In *Los Angeles, CA: Muthén & Muthén*.

Nagy, M. S. (2002). Using a single-item approach to measure facet job satisfaction. *Journal of Occupational and Organizational Psychology*, *75*(1), 77–86. https://doi.org/10.1348/096317902167658

Nembhard, I. M., & Edmondson, A. C. (2006). Making it safe: The effects of leader inclusiveness and professional status on psychological safety and improvement efforts in health care teams. *Journal of Organizational Behavior*, *27*(7), 941–966. https://doi.org/10.1002/job.413

Nilsen, P. (2015). Making sense of implementation theories, models and frameworks. *Implementation Science*, *10*(1). https://doi.org/10.1186/s13012-015-0242-0

Nilsen, P., Birken, S., Damschroder, L. J., Reardon, C. M., & Lowery, J. C. (2020). The Consolidated Framework for Implementation Research (CFIR). In *Handbook on Implementation Science* (pp. 88–113). https://doi.org/10.4337/9781788975995.00011

Norman, G. (2010). Likert scales, levels of measurement and the “laws” of statistics. *Advances in Health Sciences Education*, *15*(5), 625–632. https://doi.org/10.1007/s10459-010-9222-y

Nursing Council of New Zealand. (2015). The New Zealand Nursing Workforce. Retrieved from http://nursingcouncil.org.nz/Publications/Reports

Nylenna, M., Gulbrandsen, P., Førde, R., & Aasland, O. G. (2005). Unhappy doctors? A longitudinal study of life and job satisfaction among Norwegian doctors 1994 - 2002. *BMC Health Services Research*, *5*. https://doi.org/10.1186/1472-6963-5-44

Oh, H. C., Phua, T. B., Tong, S. C., & Lim, J. F. Y. (2011). Assessing the performance of operating rooms: What to measure and why? *Proceedings of Singapore Healthcare*, *20*(2), 105–109. https://doi.org/10.1177/201010581102000206

Ohly, S., Sonnentag, S., Niessen, C., & Zapf, D. (2010). Diary Studies in Organizational Research: An Introduction and Some Practical Recommendations. *Journal of Personnel Psychology*, *9*(2), 79–93. https://doi.org/10.1027/1866-5888/a000009

Oliver, K., Innvar, S., Lorenc, T., Woodman, J., & Thomas, J. (2014). A systematic review of barriers to and facilitators of the use of evidence by policymakers. *BMC Health Services Research*, *14*. https://doi.org/10.1186/1472-6963-14-2

Paglione, N. L., Vannuchi, M. T. O., Tenani, M. N. F., & Pissinati, P. de S. C. (2016). Professional satisfaction of the nursing team of the surgical center in a medium complexity public hospital. *Revista de Enfermagem UFPE on Line*, *10*(3), 1080–1087. https://doi.org/10.5205/1981-8963-v10i3a11061p1080-1087-2016

Perry, W., Civil, I., Mitchell, S., Shuker, C., & Merry, A. F. (2015). Reducing perioperative harm in New Zealand: The WHO surgical safety checklist, briefings and debriefings, and venous thrombembolism prophylaxis. *New Zealand Medical Journal*, *128*(1424), 54–67.

Phelps, R., & Hase, S. (2002). Complexity and action research: Exploring the theoretical and methodological connections. *Educational Action Research*, *10*(3), 507–524. https://doi.org/10.1080/09650790200200198

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies. *Journal of Applied Psychology*, *88*(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879

Preacher, K. J., Zyphur, M. J., & Zhang, Z. (2010). A general multilevel SEM framework for assessing multilevel mediation. *Psychological Methods*, *15*(3), 209–233. https://doi.org/10.1037/a0020141

Pype, P., Krystallidou, D., Deveugele, M., Mertens, F., Rubinelli, S., & Devisch, I. (2017). Healthcare teams as complex adaptive systems: Focus on interpersonal interaction. *Patient Education and Counseling*, *100*(11), 2028–2034. https://doi.org/10.1016/j.pec.2017.06.029

Rama-Maceiras, P., Parente, S., & Kranke, P. (2012). Job satisfaction, stress and burnout in anaesthesia: Relevant topics for anaesthesiologists and healthcare managers? *European Journal of Anaesthesiology*, *29*(7), 311–319.

https://doi.org/10.1097/EJA.0b013e328352816d

Ramirez, A. J., Graham, J., Richards, M. A., Cull, A., & Gregory, W. M. (1996). Mental health of hospital consultants: The effects of stress and satisfaction at work. *Lancet*, *347*(9003), 724–728. https://doi.org/10.1016/S0140-6736(96)90077-X

Raptis, D. A., Schlegel, A., Tschuor, C., & Clavien, P. A. (2012). Job satisfaction among young board-certified surgeons at academic centers in Europe and North America. *Annals of Surgery*, *256*(5). https://doi.org/10.1097/sla.0b013e31827386eb

Rees, G. H., Crampton, P., Gauld, R., & Macdonell, S. (2018). New Zealand's health workforce planning should embrace complexity and uncertainty. *New Zealand Medical Journal*, *131*(1477), 109–115.

Reis, H. T., & Gable, S. L. (2000). Event-sampling methods. In *Handbook of Research Methods in Social Psychology*.

Reyka, M. E. (2015). The impact of disruptive behavior on operating room nurse satisfaction. Retrieved from Impact of Disruptive Behavior on Operating Room Nurse Satisfaction (Dissertation) website: http://search.ebscohost.com/login.aspx?direct=true&AuthType=sso&db=ccm&AN=109828669&site=ehost-live&scope=site&custid=ns206789

Saari, L. M., & Judge, T. A. (2004). Employee attitudes and job satisfaction. *Human Resource Management*, *43*(4), 395–407. https://doi.org/10.1002/hrm.20032

Sabitova, A., Hickling, L. M., & Priebe, S. (2020). Job morale: a scoping review of how the concept developed and is used in healthcare research. *BMC Public Health*, *20*(1), 1166. https://doi.org/10.1186/s12889-020-09256-6

Sacks, G. D., Shannon, E. M., Dawes, A. J., Rollo, J. C., Nguyen, D. K., Russell, M. M., … Maggard-Gibbons, M. A. (2015). Teamwork, communication and safety climate: A systematic review of interventions to improve surgical culture. *BMJ Quality and Safety*, *24*(7), 458–467. https://doi.org/10.1136/bmjqs-2014-003764

Samadi Miarkolaei, H., & Samadi Miarkolaei, H. (2014). An investigation on relationship between employees' job satisfaction and organizational commitment. *Management Science Letters*, *4*(4), 669–678. https://doi.org/10.5267/j.msl.2014.2.026

Scarpello, V., & Campbell, J. P. (1983). Job Satisfaction: Are All the Parts There? *Personnel Psychology*, *36*(3), 577–600. https://doi.org/10.1111/j.1744-6570.1983.tb02236.x

Schaufeli, W., Salanova, M., González-romá, V., & Bakker, A. (2002). The Measurement of Engagement and Burnout: A Two Sample Confirmatory Factor Analytic Approach. *Journal of Happiness Studies*, *3*(1), 71–92. https://doi.org/10.1023/A:1015630930326

Scheepers, R. A., Boerebach, B. C. M., Arah, O. A., Heineman, M. J., & Lombarts, K. M. J. M. H. (2015). A Systematic Review of the Impact of Physicians' Occupational Well-Being on the Quality of Patient Care. *International Journal of Behavioral Medicine, 22*(6), 683–698. https://doi.org/10.1007/s12529-015-9473-3

Scheurer, D., McKean, S., Miller, J., & Wetterneck, T. (2009). U.S. physician satisfaction: A systematic review. *Journal of Hospital Medicine, 4*(9), 560–568. https://doi.org/10.1002/jhm.496

Seibert, S. E., & Kraimer, M. L. (2001). The Five-Factor Model of Personality and Career Success. *Journal of Vocational Behavior, 58*(1), 1–21. https://doi.org/10.1006/jvbe.2000.1757

Shanafelt, T. D., Balch, C. M., Bechamps, G. J., Russell, T., Dyrbye, L., Satele, D., … Freischlag, J. A. (2009). Burnout and career satisfaction among american surgeons. *Annals of Surgery, 250*(3), 463–470. https://doi.org/10.1097/SLA.0b013e3181ac4dfd

Sharma, A., Sharp, D. M., Walker, L. G., & Monson, J. R. T. (2008). Stress and burnout in colorectal and vascular surgical consultants working in the UK National Health Service. *Psycho-Oncology, 17*(6), 570–576. https://doi.org/10.1002/pon.1269

Shetti, A., Karigar, S., & Mustilwar, R. (2018). Assessment of job satisfaction and quality of life among practicing Indian anesthesiologists. *Anesthesia: Essays and Researches, 12*(2), 302. https://doi.org/10.4103/aer.aer_59_18

Smith, P. C. (1974). *The development of a method of measuring job satisfaction: The Cornell studies. Studies in personnel and industrial psychology* (3rd ed.). Homewood, IL: Dorsey.

Spector, P. (1997). Job satisfaction: application, assessment, cause, and consequences. *Choice Reviews Online, 35*(01), 35–38. https://doi.org/10.5860/choice.35-0383

Spurgoen, A. (1998). Evaluating Stress: A Book of Resources. *Psychological Medicine, 28*(5), 1245–1252. https://doi.org/10.1017/s0033291798257163

Stevenson, M. (2018). Measuring Employee Experience: How the Pulse Survey is an Indicator of Company Health. Retrieved from HR Exchange Network website: https://www.hrexchangenetwork.com/employee-engagement/articles/measuring-employee-experience-how-the-pulse-survey

Stewart, L., & Gardner, D. (2015). Developing mahi oranga: A culturally responsive measure of ma¯ori occupational stress and wellbeing. *New Zealand Journal of Psychology, 44*(2), 79–88.

Stott, A., & Lynne Johnstone, P. (2013). "After 28 years I'm still absolutely fascinated by

what I do": Exploring job satisfaction in experienced perioperative nurses. *Acorn*, *26*(1), 12–18.

Stoyanov, S. (2017). A theory of human motivation. In *A Theory of Human Motivation*. https://doi.org/10.4324/9781912282517

Surgenor, L. J., Spearing, R. L., Horn, J., Beautrais, A. L., Mulder, R. T., & Chen, P. (2009). Burnout in hospital-based medical consultants in the New Zealand public health system. *New Zealand Medical Journal*, *122*(1300), 11–18.

Sveinsdóttir, H., & Blöndal, K. (2014). Surgical nurses' intention to leave a workplace in Iceland: A questionnaire study. *Journal of Nursing Management*, *22*(5), 543–552. https://doi.org/10.1111/jonm.12013

Sveinsdóttir, H., Ragnarsdóttir, E. D., & Blöndal, K. (2016). Praise matters: The influence of nurse unit managers' praise on nurses' practice, work environment and job satisfaction: A questionnaire study. *Journal of Advanced Nursing*, *72*(3), 558–568. https://doi.org/10.1111/jan.12849

The Health Foundation. (2010). Evidence scan: Complex adaptive systems. Retrieved from file:///Users/miriamscotter/Downloads/ComplexAdaptiveSystems.pdf

Tomas, D. (2015). A Strategy For Measuring Employee Happiness (And Acting On The Result). Retrieved from https://www.forbes.com/sites/theyec/2015/06/02/a-strategy-for-measuring-employee-happiness-and-acting-on-the-result/?sh=2ad82218220f

Tostes, M. F. do P., & Galvão, C. M. (2019). Implementation process of the surgical safety checklist: Integrative review. *Revista Latino-Americana de Enfermagem*, *27*. https://doi.org/10.1590/1518-8345.2921.3104

Troppmann, K. M., Palis, B. E., Goodnight, J. E., Ho, H. S., & Troppmann, C. (2009). Career and Lifestyle Satisfaction among Surgeons: What Really Matters? The National Lifestyles in Surgery Today Survey. *Journal of the American College of Surgeons*, *209*(2), 160–169. https://doi.org/10.1016/j.jamcollsurg.2009.03.021

Tsai, M. H., Sanford, J. A., Black, I. H., Boggs, S. D., & Urman, R. D. (2017). Operating Room Management at the Edge of Order and Chaos. *The Journal of Medical Practice Management : MPM*, *32*(4), 250–255.

Tsigilis, N., Koustelios, A., & Togia, A. (2004). Multivariate relationship and discriminant validity between job satisfaction and burnout. *Journal of Managerial Psychology*, *19*(7), 666–675. https://doi.org/10.1108/02683940410559365

Tzeng, H. M., Ketefian, S., & Redman, R. W. (2002). Relationship of nurses' assessment of organizational culture, job satisfaction, and patient satisfaction with nursing care.

International Journal of Nursing Studies, *39*(1), 79–84. https://doi.org/10.1016/S0020-7489(00)00121-8

Vahey, D. C., Aiken, L. H., Sloane, D. M., Clarke, S. P., & Vargas, D. (2004). Nurse burnout and patient satisfaction. *Medical Care*, *42*(2 Suppl). https://doi.org/10.1097/01.mlr.0000109126.50398.5a

Van Beuzekom, M., Akerboom, S., Boer, F., & Dahan, A. (2013). Influence of latent risk factors on job satisfaction, job stress and intention to leave in anaesthesia teams: A cross-sectional survey. *European Journal of Anaesthesiology*, *30*(5), 222–228. https://doi.org/10.1097/EJA.0b013e32835d2db2

van Wulfften Palthe, O. D. R., Neuhaus, V., Janssen, S. J., Guitton, T. G., & Ring, D. (2016). Among Musculoskeletal Surgeons, Job Dissatisfaction Is Associated With Burnout. *Clinical Orthopaedics and Related Research*, *474*(8), 1857–1863. https://doi.org/10.1007/s11999-016-4848-6

Wai, P. Y., Dandar, V., Radosevich, D. M., Brubaker, L., & Kuo, P. C. (2014). Engagement, workplace satisfaction, and retention of surgical specialists in academic medicine in the United States. *Journal of the American College of Surgeons*, *219*(1). https://doi.org/10.1016/j.jamcollsurg.2014.03.027

Wang, J. O., Li, C. Y., Kao, S., Yeh, T. C., Arens, J. F., & Ho, S. T. (2015). Factors associated with Taiwan anesthesiologists' intention to leave anesthesia practice. *Journal of the Formosan Medical Association*, *114*(6), 509–516. https://doi.org/10.1016/j.jfma.2013.11.005

Wanous, J. P., Reichers, A. E., & Hudy, M. J. (1997). Overall job satisfaction: How good are single-item measures? *Journal of Applied Psychology*, *82*(2), 247–251. https://doi.org/10.1037//0021-9010.82.2.247

Warr, P., Cook, J., & Wall, T. (1979). Scales for the measurement of some work attitudes and aspects of psychological well-being. *Journal of Occupational Psychology*, *52*(2), 129–148. https://doi.org/10.1111/j.2044-8325.1979.tb00448.x

Weiss, H. M., & Cropanzano, R. (1996). Affective Events Theory: A theoretical discussion of the structure, causes and consequences of affective experiences at work. In *Research in Organizational Behavior*. https://doi.org/1-55938-938-9

Welbourne, T. M. (2016). The Potential of Pulse Surveys: Transforming Surveys into Leadership Tools. *Employment Relations Today*, *43*(1), 33–39. https://doi.org/10.1002/ert.21548

Weller, J. M., Jowsey, T., Skilton, C., Gargiulo, D. A., Medvedev, O. N., Civil, I., … Merry,

A. F. (2018). Improving the quality of administration of the Surgical Safety Checklist: A mixed methods study in New Zealand hospitals. *BMJ Open*, *8*(12). https://doi.org/10.1136/bmjopen-2018-022882

West, C. P., Dyrbye, L. N., Sloan, J. A., & Shanafelt, T. D. (2009). Single item measures of emotional exhaustion and depersonalization are useful for assessing burnout in medical professionals. *Journal of General Internal Medicine*, *24*(12), 1318–1321. https://doi.org/10.1007/s11606-009-1129-z

West, M. (2016). New tools for measuring and improving employee engagement. Retrieved from https://ssir.org/articles/entry/new_tools_for_measuring_and_improving_employee_engagement

Whittemore, R., & Knafl, K. (2005). The integrative review: Updated methodology. *Journal of Advanced Nursing*, *52*(5), 546–553. https://doi.org/10.1111/j.1365-2648.2005.03621.x

Wicks, A. M., & St. Clair, L. (2007). Competing values in healthcare: Balancing the (Un)balanced scorecard. *Journal of Healthcare Management*, *52*(5), 309–323. https://doi.org/10.1097/00115514-200709000-00007

Williams, E. S., Manwell, L. B., Konrad, T. R., & Linzer, M. (2007). The relationship of organizational culture, stress, satisfaction, and burnout with physician-reported error and suboptimal patient care: Results from the MEMO study. *Health Care Management Review*, *32*(3), 203–212. https://doi.org/10.1097/01.HMR.0000281626.28363.59

Williamson, G. R., Bellman, L., & Webster, J. (2012). *Action research in nursing and healthcare*. Los Angeles, Calif: Sage.

Wright, T. A. (2006). The emergence of job satisfaction in organizational behavior: A historical overview of the dawn of job attitude research. *Journal of Management History*, Vol. 12, pp. 262–277. https://doi.org/10.1108/17511340610670179

Yin, J. C. T., & Yang, K. P. A. (2002). Nursing turnover in Taiwan: A meta-analysis of related factors. *International Journal of Nursing Studies*, *39*(6), 573–581. https://doi.org/10.1016/S0020-7489(01)00018-9

York, A. S., & McCarthy, K. A. (2011). Patient, staff and physician satisfaction: A new model, instrument and their implications. *International Journal of Health Care Quality Assurance*, *24*(2), 178–191. https://doi.org/10.1108/09526861111105121

Yurek, L. A., Vasey, J., & Sullivan Havens, D. (2008). The use of self-generated identification codes in longitudinal research. *Evaluation Review*, *32*(5), 435–452.

https://doi.org/10.1177/0193841X08316676