Optimizing the Role of the Dermatology Nurse

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Certificate of Approval

Abstract

According to the 2012 CSPA, wait times for dermatology care in Canada are becoming worse. Healthcare professionals other than Dermatologists can provide care. The purpose of this study is to understand how the dermatology nursing role can be optimized in Canada. An on-line survey of dermatology nurses and Dermatologists was completed to assess current and desired nurse activities. Barriers and views on enhancing the role of the nurse were explored. Results overall found that dermatology nurses in Canada are working at competent to proficient levels in most activities however wish for increased education and desire to be working at more proficient levels. Dermatologists had differing past experiences with nurses however desired for them to be working at expert levels in most activities. Areas for optimization were with teledermatology, having nurse-led clinics, prescribing, wound care, Moh's surgery, and skin cancer screening. Recommendations for practice, education and, research are discussed.

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Chapter 1: Introduction

1.1 Background

The skin has a range of functions, including synthesizing vitamin D, providing defense against infections and infestations, protection against irritants, ultraviolet irradiation, and injury. The skin also helps control water and heat loss and is an important sensory organ which distinguishes pain, touch, itching, hot, and cold (Schofield, Grindlay, & Williams, 2009). It's the largest organ in the body. Skin diseases can be closely associated with general medicine as most major systemic diseases have manifestations on the skin (Schofield et al. 2009).

At any given time, approximately half of the population is coping with a skin condition, disease or trauma (Canadian Skin Patient Alliance (CSPA), 2012). There are over 3,000 skin diseases, some can be life-threatening and many affect the social, psychological and quality of life for patients and their families (CSPA, 2012).

According to the 2012 CSPA report card, wait times for dermatology care in Canada are becoming progressively worse. In 2001, Ontarians waited a median of five weeks for routine consultations (Chow & Searles, 2010). In 2011, half of patients waited at least 12 weeks for an initial consultation and a quarter waited 24 weeks or longer (CSPA, 2012). The CSPA report card also highlights a shortage in healthcare professionals working in dermatology. The average age of a Dermatologist in Canada is 55. The number of Dermatologists being trained will not keep up with expected retirements and increasing demands for services (CSPA, 2012).

Healthcare professionals other than Dermatologists can also be involved with providing dermatology care. Nurses for example have an important role in the prevention and delivery of healthcare services. In Canada, however, there are limited numbers of dermatology nurses, and no specialized training or Canadian certifications available. Dermatology is not given any focus in nursing schools. There is no information as to who the dermatology nurses in Canada are. Some dermatology nurses are working on salary in hospitals which are publicly funded agencies while others are working in private practice in the community. Their activities could vary depending on the Dermatologists that they work with. Dermatology nurses have expressed in personal communications that they want to be able to optimize their role and be more effective.

There is currently one nurse for every five Dermatologists (CSPA, 2012). In comparison, in the United States (US) 30 % of Dermatologists work with a nurse or a Nurse Practitioner (NP) (Resneck & Kimball, 2008). In the United Kingdom (UK), there are four nurses/NP working with every five Dermatologists (Surgeons, 2008).

With wait times on the rise, a shortage of healthcare professionals, greater demands for services, an aging population, and limited access all threaten the ability of patients to receive the medical care they need for any skin problems or diseases (CSPA, 2012). Optimizing the role of nurses working in dermatology in Canada may help address this problem and improve patient care. It is hoped that through this research, the population of dermatology nurses in Canada can be described and that both their current and desired proficiencies are better understood. The views of the Dermatologists, who are the primary treatment provider, will be helpful to further understand where nurses may be needed most, at what proficiency, as well as identify any barriers, and opportunities for their advancement and ultimately optimize the dermatology nursing role.

1.2 Research Questions

This study will focus on the following research questions:

1- What activities (knowledge and skills) do nurses have to practice in dermatology in Canada?

2- What activities (knowledge and skills) do nurses desire to be proficient at to function more effectively in their role in dermatology. How does this compare with the knowledge, skills and proficiency that Dermatologists think nurses should have?

While this chapter provided the introduction, the following chapter will provide a detailed overview of both grey and scientific literature review searches. Chapter 3 will summarise the methodology that was used in the study. The second half of the thesis will focus on providing an overview of the key study results (Chapter 4), followed by a discussion of the results (Chapter 5), and lastly the overall study conclusion and recommendations (Chapter 6). Let's begin by reviewing what literature is in the public domain that provided further information and guidance into the structure of this study. The knowledge gained from the literature review helped to define the existing gap in knowledge and assist in defining the areas for data collection in this study.

Chapter Two: Literature Review

To determine what strategies and research have been conducted in the field of dermatology nursing, a search of scientific peer reviewed journals and grey literature was conducted.

A search of the internet using Google was conducted using the following keywords: 'nursing role optimisation', and 'optimising dermatology nursing'. Inclusion criteria included English language reports dated from 2006 to 2016.

A search of scientific peer reviewed published papers using databases such as Cumulative Index to Nursing and Allied Health Literature (CINAHL) and OVID was conducted in November, 2016 using the keywords *Nurs* AND role* AND dermatology*. Additional searches in CINHAL used the search terms: *nursing education AND dermatology nursing* and in OVID using the keywords *(nurse AND education AND dermatology)* within titles and abstracts. Inclusion criteria were English language peer reviewed publications between 2006 and 2016. These databases were recommended based on their focus within healthcare and nursing. Since the focus was on medical dermatology, publications were excluded if they had a cosmetic focus due to differences in financial reimbursement and healthcare infrastructure. Publications were also excluded if they were not in English, were not peer reviewed and if they were published more than 10 years ago. Ten years was recommended and considered most relevant based on the development of the field of dermatology in nursing and the greater demand for services due to the aging population, increase in skin diseases, better treatments, and the changing expectations around skin conditions (Eedy, 2015). A search of greater than 10 years did not reveal articles of interest .

A manual search of references identified from retrieved articles was also conducted.

The following four themes were identified:

1- Optimization in nursing in general

2- Optimization in dermatology nursing

3- Roles of the nurse has three sub themes: nurse prescribers, nurse-led clinics, and teledermatology

4 - Advanced nursing functions within specialties includes two sub themes: skin cancer, Moh's surgery (chemosurgery to treat skin cancer), and biologics

2.1 Optimization in Nursing in General

For the purpose of this research study, dermatology nursing role optimization is defined as increased proficiency and education in dermatological nursing activities, interprofessional collaboration and the partnering of organizations that are aligned and supportive.

Australia and the province of Alberta have overall strategies to optimize nursing in their region across multiple nursing disciplines. Some of the studies done in Alberta (Besner, Drummond, Oelke, McKim, & Carter, 2011) however focused on nursing in the primary care setting where dermatology is not specifically identified. Both Australia and Alberta recognise that optimising the nursing role can result in many benefits to the health of their population. With these benefits of nurse optimization identified, it provides further support for this research thesis to better understand the role of dermatology nurses in Canada.

Australia has taken a key interest in optimising the role of nurses across all disciplines. In their Strengthening Health Services Through Optimising Nursing Strategy Action Plan (2013-2016) issued by the Department of Health, they hope to have an empowered nursing workforce

that is sustainable and provide a safer healthcare system (Queensland Government, 2013). They acknowledge that a strong nursing workforce can result in:

- Decreased length of stay
- Improved clinical outcomes
- Reduced patient mortality
- Reduced wait times and better access to care
- Increased productivity and efficiency
- Reduced costs (Queensland Government, 2013)

They want to achieve a stronger nursing workforce by enabling nurses to work to their full potential and scope as well as to expand the delivery of nursing services in a range of settings to increase service capacity and consumer choice (Queensland Government, 2013). They furthermore want to involve nurses as key agents of change to improve the quality and the value for money in health services (Queensland Government, 2013).

At a provincial level, Alberta, Canada has taken an interest in how they can optimize the role of their nurses in Primary Care Networks (PCNs). In particular, Besner et al (2011) used knowledge translation to study nursing practices and engage nurses in population health approaches to patient care. Their report titled 'Optimizing the Practice of Registered Nurses in the Context of an Interprofessional Team in Primary Care' targeted the evolution of the introduction of nurses to three PCNs in Alberta and identified potential opportunities for improving their utilization. PCNs were established in the province in 2003 to deliver care to defined regions. Although their programs are tailed to the particular needs of the regions they support, they all have the same overall objectives of: improving 24/7 services; emphasising population health, health promotion, disease prevention; improving care for patients with chronic

and complex needs; and facilitating team approaches to healthcare delivery (Besner et al., 2011). Since health promotion and disease prevention initiatives are recognised as an integral part of healthcare, nurses are acknowledged as having an important role to play in the delivery of services. These authors identify that previous studies have shown that nurses may not work to their full scope of practice in primary care and even perform tasks such as clerical, equipment cleaning, and stocking supplies.

Their study work consisted of interviews with nurses, allied health professionals, physicians, PCN stakeholders, and administrators. It also consisted of shadowing eight nurses on the job. Fifty-four patients completed questionnaires and interviews and there were 26 interviews with stakeholders. Data on patients was also pulled to provide additional background information helping with the interviews.

The results of the study highlighted the importance of clarifying role functions among nurses and other interprofessional team members. There was significant ambiguity on role and scope of practice even between Registered Nurses (RNs) and Licensed Practical Nurses (LPNs). Conflict and tension between members of the interprofessional team (e.g. physicians, dieticians) lessened as they learned and understood each other's role and tasks better. In addition to clarifying role confusion, strong leadership and organisational support was found to be integral in optimizing the role of the nurse in the primary care setting.

The current funding model mechanisms and structures were also identified as a barrier to optimising the nurse's role. Funding affected patient's ability to directly interact with non-physician health professionals. The fee for service model for physician services reinforced that physicians are the gatekeepers who control what patients are seen and by which provider.

The introduction of nurses to the primary care setting had improved the individual management of patients with chronic disease however, they did not do so in a holistic view including health and well-being. Nurses were more familiar with the traditional biomedical model of care of treating disease/illness individually. This paradigm shift from a biomedical model to a holistic view of health will require change within the complete multidisciplinary team.

Similarly, another study conducted at the PCN – Rocky Mountain House examined the nurse's role and if it could be optimized (Primary Care Network, Rocky Mountain House, 2009). They also found several barriers such as the lack of nursing staff's understanding or their role and scope of practice. There were also communication barriers in working as team due to not having an Electronic Medical Records (EMR) system accessible to all. The systems that were in place only accommodated the physician's practice (e.g. billing, scheduling). There were also breaks in information sharing between primary care providers and when patients were discharged or admitted for acute care, tertiary care, and long term care.

The final recommendations from this study were firstly, to ensure an understanding amongst the team members of each other's roles and scopes of practice through team building and interdisciplinary project planning. Implementing an EMR system and having better information sharing between community partners was also identified.

In 2012, a second report was issued by Oelke, Wilhelm, Jackson, Suter and Carter, (2012) with Alberta Health Services titled 'Optimizing Collaborative Practice of Nurses in Primary Care Settings. Its aim was to facilitate nurses to practice to the full extent of their knowledge and skills in a primary care setting. There were key areas of project focus:

1- To better understand nursing service delivery models and provider roles in primary care settings
2- To better understand the educational needs of primary care nurses, conduct interviews with nurses, managers, educators and regulatory bodies
3- To hold a Summit to bring together the key provincial stakeholders to discuss role optimization, review prior research, validate data collected and obtain input on recommendations
4- To develop actionable recommendations to facilitate optimization of nurses in the primary care setting.

Interestingly, the results of this project (environmental scan and interviews) showed a clear distinction in the nursing role based on the age of the nurses. Younger nurses tended to have a greater emphasis on health promotion, disease prevention, and community health. They also had increased understanding of primary care concepts and were better prepared to work in collaborative interprofessional teams.

Some concerns raised in the project included inconsistencies across the various PCNs in terms of orientation, education, and nursing role enactment. There was also role ambiguity and the lack of nurses' ability to work to the full extent of their capability. The NP role was underutilized compared to other areas in the county. There was also the issue of 'turf protection' that existed among nurses and between other team healthcare professionals.

The final five recommendations from the report were as follows:

1. To build on foundational components in primary care to facilitate the optimization of nursing roles:
    - Increase patient and community engagement

    - Establish funding and governance models to support nursing roles and interprofessional collaboration
    - Include evaluation of nursing role optimization in a broader evaluation framework
2. To define nursing roles, responsibilities, and core competencies
3. To support interprofessional education and facilitate clinical placements
4. To implement interprofessional collaboration practice
5. To establish a standardized continuing education program for nurses in primary care settings including orientation and mentorship of new nurses

Overall each region (the country of Australia and the province of Alberta) recognize the opportunities and advantages of nurses within their publicly funded healthcare system and wants to investigate ways in which the structure of care can be improved by optimizing their role. Most applicable to support this research is the plan in Alberta since it is Canadian based. Healthcare funding and organisation is the responsibilities of the province and territories in Canada. A national plan however like they have in Australia could have broader implications. Both regions plans unfortunately do not call out dermatology nursing specifically. These results support the need for further investigation of nursing within dermatology in Canada.

The Canadian Nurses Association (CNA) (2013) developed a report on optimizing the nursing role in providing care at home. It discussed how the population was aging, had chronic concomitant conditions and wanted to be cared for in their own home and not in long-term care facilities or hospitals. Key messages included that nurses could have a strong leadership role in providing community based care, that there were existing barriers with the healthcare system that

needed to be addressed (e.g. funding, the convergence of healthcare specialists/systems), and a lack of role clarity. There was a recommendation for improving nursing proficiency (through education and practice standards) to help maintain competencies and confidence in the role. There was no mention of dermatological care.

CNA in their pursuit of optimizing the nursing published a second document in 2014, this time focusing on optimizing the role of nurses in primary care. Some of the key messages were that nurses providing primary care represent a small proportion of nurses in Canada, there is a lack of information about the number of nurses required to meet increasing demands and the need to establish a national consensus on the dimensions and competencies of the role of RNs working in primary care.

A scientific publication by Ludwick, Lortie, Doucette, Rao and Samoil- Schelstraete (2010) on dermatological care was referenced in this report on primary care. It identified the possibility of telehealth combined with interdisciplinary team-based care reducing wait times for dermatologic consultation however the focus was on Dermatologists, and not on nurses leading the initiative or optimising their role.

2.2 Optimization in Dermatology Nursing

A report in the UK specific to dermatology nursing was published in 2012 by the British Dermatological Nursing Group. This report begins by discussing the changing healthcare policies in the UK, to care for patients closer to home and make care more accessible. This report quotes a National Health Services (NHS) White paper from the Department of Health in 2010 that recognizes that healthcare professionals that are empowered, engaged and supported, provide better patient care (British Dermatology Working Group, 2012). With healthcare policies and agendas evolving, the authors of this report thought it was important to have a career

framework for nurses that are competency based. They define nurse competence as 'when he/she possesses the knowledge, skills, and abilities required for lawful, safe and effective professional practice (p. 4). The framework focuses on core competencies for RNs working across various dermatology settings to develop from novice to expert. The framework consists of the following six domains:

- Underpinning knowledge
- Dermatological assessment and investigations
- Therapeutic interventions
- Caring for the patient with a dermatological condition
- Psychological impact of living with a dermatological condition
- Patient education

Competencies are set out within each of these domains and are then divided into three levels. Level one is an entry point for nurses new to dermatology. Level two defines the competent nurse and the minimum level of knowledge and skills required for nurses working within dermatology. Lastly level three defines the Specialist Nurse and reflects the expanded role. Level three nurses conduct a diverse range of roles and can work autonomously to co-ordinate and deliver comprehensive care patients.

There are also standard indicators that set out the level of knowledge and understanding in which the nurse should have in relation to the three levels of competence. The last piece is the evidence or demonstration of the learning or an area that requires further development.

2.3 Roles of the Nurse

2.3.1 Nurse Prescribers

There have been several studies conducted looking at the positive impact of nurse prescribing. One large study in the UK was conducted to assess multiple aspects of nurse prescribing (Courtenay, Carey & Burke, 2007). Phase I of this study was a postal mail survey. A total of 638 of 1187(53.7%) nurses who prescribe for dermatological conditions completed the survey, of which 90% worked in a primary care setting. Nurses that had higher academic qualifications and those over 45 years of age prescribed for a significantly broader range of skin conditions and a greater number of treatments were prescribed each week. Ninety-five percent felt confident in independently prescribing (Courtenay et al., 2007).

Phase II of this study used case interviews, questionnaires, and video consultations at 10 offices in the UK where nurses prescribed for dermatology patients. To explore the impact of nurse prescribing on stakeholders**,** Carey, Stenner and Courtenay (2009), conducted 40 semi-structured interviews with stakeholders such as physicians, nurses (prescriber and non-prescriber), and administrative staff. The greatest benefit of nurse prescribing was improved speed and access to medication and services. These stakeholders felt that nurses were approachable and easily built report. Some patients preferred the nurse especially if they perceived their problem to be minor or sensitive in nature. As a result, the Dermatologists saw patients that are more complex, had fewer interruptions, and less signing for prescriptions for patients that they had not fully assessed (Carey et al., 2009).

Stenner et al. (2009) similarly conducted interviews with stakeholders however, did not include prescribing nurses. Twelve doctors and six non-prescribing nurses participated.

Respondents felt that the benefits of nurse prescribing in dermatology outweighed any disadvantages. Some of the disadvantages expressed included fear of eroding boundaries between doctors and nurses, as well as a reluctance of nurses to take on the additional competency without an increase in pay. Doctors expressed confidence in the nurse's ability to choose cost-effective and evidence based products. They felt that years of experience in nursing was essential especially in the dermatology specialty. Having a trusting working relationship with a nurse that they knew was important (Stenner et al., 2009).

Further investigation by Courtenay, Carey and Stenner (2009), consisted of videotaped consultations between nurses and patients as well as patient questionnaires. Semi-structured interviews also took place with the nurse prescribers and other members of the healthcare team. The findings showed that patients felt nurses were more accessible for consultations and provided continuity of care. Communication was key to the relationship that nurses had with their patients. Important competencies demonstrated to strengthen the patient-nurse relationship included providing emotional support and having good listening skills (Courtenay et. al., 2009).

More recently, a study by Courtenay, Carey, Stenner, Lawton and Peters (2011), was conducted interviewing patients on their views of nurse prescribing in the UK with 42 dermatology patients. Similarly, these patients reported that prescribing nurses spent more time with them, where more approachable, easier to talk to and made them more relaxed than doctors. Discussions were broader including lifestyle behaviours. All patients were supportive and had a high level of trust and confidence in the nurse prescriber. There was improved access to services, better availability of appointments, telephone access, efficiency, and continuity of care. Continuity and familiarity of care was especially important as it improved relations, resulted in more open discussions and motivated treatment adherence (Courtenay et al. 2011).

These responses from patients in Courtenay et al. (2009, 2011) are important since the adherence rates for dermatological conditions is poor. Having strong relationships with healthcare providers, feeling involved in disease management, and being provided with detailed information and instructions have all been shown to help improve patient adherence (Courtenay et al., 2011).

Each of these studies using either quantitative, mixed or qualitative methodology discussed above provides justification that nurses can have a more advanced role in the clinic with prescribing privileges in dermatology. These studies have included feedback from all relevant stakeholders such as patients, prescribing and non-prescribing nurses, administrative staff, Dermatologists). Results were positive regardless of the methodology used to collect data (e.g. survey, interviews, video consults, questionnaires). Benefits included improved speed and access to medication, relationship and trust building, and improved access of care for patients. Interestingly, a barrier identified was boundaries between doctors and nurses. This area of role clarification is important for consideration in this research.

2.3.2 Nurse-led clinic

Nurse-led services are another method for improving healthcare provision. In a review of studies by Courtenay and Carey (2006a, 2006b) nurse-led care in dermatology showed a reduction in the severity of the patient's condition and more appropriate use of topical therapies in patients due to increased education and counseling that was provided by nurses (Courtenay & Carey, 2006a, 2006b). Patients experiencing nurse led dermatology care reported faster access to treatment and a reduction in referrals to the physician (Courtenay & Carey, 2006b). Patients had increased knowledge of their condition, treatment application and ability to cope (Courtenay &

Carey, 2006a). Having successful nurse led clinics in dermatology provides further support for nurses having more of a leadership role in patient care and management.

2.3.3 Teledermatology

Since dermatology relies heavily on visual information, teledermatology is considered a good option for delivering healthcare to remote and underserviced areas. A qualitative study by Lawton and Timmons (2005), examined nurse-led teledermatology in communities in the UK by interviewing nurses, patients, general physicians and consultants who had interacted with a nurse-led teledermatology service. Collaboration with professionals was important as the nurse would only contact the Dermatologist if she felt it was needed for further assessment. The community nurse was able to provide continuity to patients through history taking, diagnostics and management. Nurses worked autonomously using skills and judgment in diagnosis and observations. Patients reported benefits such as quicker access to care and convenience of being seen locally as major benefits (Lawton & Timmons, 2005).

2.4 Advanced Nursing Functions Within Specific Specialties

2.4.1 Skin Cancer

In the past three decades, there have been more people with skin cancer than from all other cancers combined (Stern, 2010). Fortunately, most skin cancers have a high rate of survival when detected in early stages. There is no screening test for skin cancer other than visual examination of the skin by a trained professional (Loescher, Harris & Curiel-Lewandrowski, 2011).

In a US survey of 140 dermatology nurses, Phelan and Heneghan (2008) found that 83% of dermatology nurses were performing total-body skin examinations with 15% confident and 52% reporting very confident in their skills. In terms of taking the photographs which help identify any changes, 25% reported taking the pictures themselves with 6% were confident and 44% very confident in their ability.

In the US, Advanced Practice Nurses (APNs) have advanced knowledge and skills and can prescribe (Courtenay et al. 2007). Loescher et al., (2011) conducted a review on the barriers, skills, and training required for APNs to assess skin cancer. When looking at their skills, APNs were inconsistent in their ability to accurately identify skin cancers and benign lesions. Time constraints were the biggest barrier to preventing nurse skin assessments. The authors felt that there were too few training programs available for APNs and that more should be developed to reach large numbers across the country e.g., e-learning. Given the importance of patient education on sun protection and screening, it is important that nurses have the available time, competencies and training to allocate to these patients. While these publications focused on skin cancer detection, nurses can also be involved in their treatment.

2.4.2 Moh's Surgery

Moh's surgery is a common microscopic surgery used to treat common types of skin cancer. A 2005 US mail survey was conducted looking at the role of Physician Extenders (PE) in this specialized surgery (Tierney, Hanke, & Kimball, 2011). PEs included both Physician Assistants and Nurse Practitioners (NPs). Thirty-seven percent of Dermatologists belonging to the American Academy of Dermatology completed the survey (n= 1,363 of 4316 Dermatologists). Results showed that Moh's fellowship–trained (MMSFT) dermatologic surgeons were more likely to employ RNs (n = 85, 73.9%) than non-fellowship-trained

(NMMSFT) surgeons (n = 65, 50.0%, *p*o.05). Both surgeon types reported that their Physician Assistants and NPs spent most their time treating medical dermatology patients, but NMMSFT surgeons were twice as likely as MMSFT surgeons to have their PEs involved in performing or assisting with cosmetic procedures. It was found that overall, regardless of if fellowship trained or not, Dermatological surgeons are increasing relying on Physician Assistants (PA) and NPs in treating medical dermatology patients. This is thought to result in greater patient volume, increased referrals and associated revenue. PA and NPs specializing in dermatology however have no specific training or certification requirements and this was a great concern.

In summary, given the importance of early skin cancer detection, skin examinations could be an area where dermatology nurses could have a more advanced role. However, as identified, proper training to build ability and confidence would be required before implementation. Additionally, with the increased demand for Moh's surgery due to increasing skin cancer rates, having nurses assist in treatment is another area nurses could assist. As Tierney et al. (2011) point out however in their publication, establishing training guidelines, scope of practice, proper supervision, reporting of patient outcomes, and credentialing are of utmost importance.

2.4.3 Biologics

Biologic treatments are becoming more widely used in dermatology (Palmer & Miedany, 2010). Safe prescribing of these therapies requires good infrastructure and specialist nursing personnel as has been done in rheumatology where nurses have taken a leading role. With additional training, the specialty dermatology nurse may take responsibility for screening, treatment administration, patient education, prescription coordination for home drug delivery, patient support, monitoring, and data collection (Palmer & Miedany, 2010). Given the number of

new advanced biological treatments entering the marketplace, this research will ask nurses their current and desired role in treatment management.

2.5 Summary

In summary, Australia, a country with a comparable healthcare system to Canada has acknowledged the importance of nurses and how their role can be optimized to meet the needs of today's healthcare challenges by having a national action plan strategy. They have invested significant time and funding into developing the nursing role. Canada does not have a similar strategy at a national level. A barrier to a national strategy in Canada is that each of the provinces is responsible for the delivery of healthcare to their population. The CNA has acknowledged that there could be nursing optimization and have made some recommendations. The focus of their recommendations however has been on primary care nurses and nursing home healthcare.

Through the research conducted in Alberta with primary care nurses and the publications from the CNA several barriers have been identified such as a funding mechanism for nurses, education and the need for role clarification that can be further explored in this research. To have clarity in one's role can be defined as 'Learners and practitioners understand their own roles and the roles of those in other professions, and use this knowledge appropriately to establish and achieve patient/client/family and community goals' (Canadian Interprofessional Health Collaborative, 2010, p. 11).

The UK, another country with a public healthcare system has gone as far as creating a framework specifically addressing Dermatology Nurse Competencies. This is of particular interests and relevant for this research. The framework will be incorporated into the

questionnaire for this study. In particular, the six domains of the competency framework will be incorporated.

All documents reviewed were supportive of optimizing the role of nurses in the healthcare system with many benefits identified. This provides further support for this research to understand the role, skills and barriers in dermatology nursing in Canada. The lack of evidence is an indication of the paucity of research and strategy that have been implemented to date to enhance the roles of nurses in dermatology.

While the findings are limited, both grey literature and peer reviewed publications have addressed that clarity in the role of nurses is required when looking at optimizing it. Education and training were also identified as being of key importance in providing adequate care. Specific skill sets have been identified to date that can be further explored in this study. In particular, nurse prescribing (non-NPs), nurse led clinics, teledermatology, skin examinations, Moh's surgery and treatment management.

For the few published studies in this field, different methodologies have been incorporated. Canadian data from Alberta focused more on qualitative data (e.g. interviews, shadowing). All the publications on dermatology nurse prescribing specifically were from the UK. Researchers in the UK have used multiple methodologies (both qualitative and quantitative) and incorporated varied stakeholders in their sample. Overall, few studies have been published in teledermatology, skin cancer, Moh's surgery and nurse led clinics so more studies building on these results, with larger sample sizes and multiple stakeholders (e.g. dermatologists, patients, other nurses, administrative staff, etc.) would provide further insight into those specific activities. In Canada, no broad scale quantitative study with dermatology nurses has ever been published covering the nurse specialty or any of their activities.

2.6 Gaps in literature

None of the published studies in the literature review focus on the roles of dermatology nurses in Canada. Additionally, there is no information on the perceptions of Dermatologists or nurses on their role, competencies, or educational and training opportunities.

As little research has been done in Canada about dermatology nursing there are endless opportunities for investigation including assessing perceptions, the role of nurses within specific dermatology functions, steps towards improving educational opportunities, stakeholders, etc.

The World Health Organization (WHO) states that enhancing the role of healthcare workers is considered key to improving the accessibility of care (WHO 2006 as cited in Stenner et al., 2009). In some countries, dermatology nurses are successfully developing enhanced competencies like prescribing and leading clinics with positive outcomes. Canada should capitalize on the advances that have been made elsewhere. Increased education and responsibilities could lead to greater job satisfaction for nurses and Dermatologists. While nursing in some dermatology treatment areas has been studied, more educational opportunities are required to further develop their knowledge and skills to improve patient care. With the increasing demands on the healthcare system, innovative solutions must be further explored. The next chapter will further detail the methodology that was used in this study.

Chapter Three: Methodology and Methods

This chapter will include the research questions, design, development of the questionnaire and the methods.

3.1 Design

This will be a cross-sectional study. The research questions are asking about current and desired nurse activities in Dermatology at one point in time. Due to large geography in Canada, an on-line survey questionnaire was the best method identified to reach nurses across the country effectively. Surveys can be distributed to a large population quickly via e-mail with low financial burden. Completion of an on-line questionnaire provides flexibility to respondents as they can enter the data at a time and pace that is convenient with their schedule.

Data will be collected on:

- The demographics of Canadian dermatology nurses (not nurses in general)
- A description of their current skills and knowledge
- The identification of additional desired skills and knowledge
- An assessment of the agreement between nurses and dermatologists on additional nursing skills and knowledge
- A summary of nurse educational and resource needs
- An overview of barriers in further optimizing the dermatology nurse's role

3.2 Development of the Questionnaires

The first draft of the questionnaires (one for the nurse and one for the Dermatologist) were based on the findings of the literature review and the research questions. Attempts were made to

ensure that the questionnaires were not too long. Questions were to be multiple choice when possible, short, concise, and structured with few open-ended questions. Some open-ended questions were added to allow respondents to share any additional thoughts or comments. Leading questions were not included to reduce response bias. The thesis supervisor, two experienced dermatology nurses and a leading Dermatologist all helped in the further development and refinement of the questionnaires by providing their expert review and opinions into the type of questions that would be most valid and applicable to the field of dermatology and nursing. The Dermatologist and nurses helped further in refining the listing of 32 knowledge and skill based activities used in the questionnaires. They identified the main activities where nurses have/could assist more. They further had discussions with colleagues to ensure an accurate listing that was inclusive of the main activities and yet not be too long of a questionnaire. See Table 1 below. There were several rounds of review and comment provided by all until the completion of the final two questionnaires. See Appendix A and B for the nurse and Dermatologist questionnaires.

Table 1 - Dermatology Nursing Activities

Telephone triage and patient counseling	Prescribing topical treatments
Assisting patients navigating through the Healthcare System	Assessing treatment adherence
Developing a holistic treatment plan of care with the patient including awareness of emotional needs, psychological impact, cognitive and sensory impairment, customs and beliefs	Bedside dopplers for measurement of ankle-brachial indices **(**ABIs)
Monitoring symptoms and adverse events and the ability to make recommendations for treatment changes.	Conducting assessments (e.g. (Psoriasis Area Severity Index) (PASI)or other standardized scales)
Leading quality improvement initiatives	Nurse-led clinics (having patient appointments and working independently to assess patients)
Educating patients on the skin condition/disease, identifying risk factors and	Perform skin examinations and identification (e.g. benign vs. malignant lesions)

co-morbidities and assessing how they may impact the individual	
Educating and counseling the patient in determining risks/ benefits of all treatment options, including complementary and behavioural therapies	Teledermatology with rural areas
Educating and counseling patient on psychological/emotional distress, coping mechanisms.	Diagnostic testing/specimen collection (e.g. KOH (potassium hydroxide), throat swabs)
Ability to encourage empowerment and self-management. Educating on health promotion strategies and ability to develop, implement and evaluate strategies for health promotion with patients and the Community.	Obtaining and recording a complete medical history that includes current problems, health status, psychosocial status
Have a comprehensive knowledge and understanding of medications (first and second line) used to treat eczema, psoriasis, bullous skin disorders, severe drug eruptions, erythrodermic conditions, acute skin infections and infestations, cutaneous cancers and pre-cancerous lesions, acne, rosacea, leg ulcers and scalp conditions	Performing skin biopsies
Using the hyfrecator (low-powered medical apparatus used in electrosurgery on conscious patients)	Knowledge of anatomy, physiology, and immunology of the skin and its appendages (eg. hair, nails, sweat glands and the sebaceous glands) and how it is impacted by skin disorders
Proficient delivery of treatment (eg. phototherapy, cryotherapy, intramuscular injections) according to medical directives	Interdisciplinary/interprofessional teaching
Performing chemical/mechanical debridement of wounds	Having the knowledge, deep understanding and ability to recognise psychosocial issues which impact dermatology patients and the ability to incorporate into the plan of care
Applying wound dressings, compression therapy.	Performing an insertion/removing of a peripherally inserted central catheter (PICC) line
Administering intralesional steroid	Leg ulcer treatment and management
Assisting with surgeries in Mohs (involves maintaining a clear surgical site,	Using lasers

hemostasis and manipulating various surgical instruments)	

3.2.1 Frameworks

Two frameworks were identified for inclusion to help construct the questionnaire. The first framework had been identified through the literature search: the British Dermatology Nursing Group Dermatology Nursing Competencies (2012). The 32 activities of the nurses from Table 1.0 were classified under the headings of the six framework domains:

- Underpinning knowledge
- Dermatological assessment and investigations
- Therapeutic interventions
- Caring for the patient with a dermatological condition
- Psychological impact of living with a dermatological condition
- Patient education

An evaluation framework was then incorporated so that respondents could self-rate both their current and desired ability on each activity as: novice, advanced beginner, competent, proficient and expert. This classic evaluation framework was adapted from the Canadian Association of Nurses in Oncology Practice Standards (2006) which was an adaptation from Haag-Heitman & Kramer (1998), which is based on Benner's (1984) "novice to expert" and Dreyfus' (1986) model of skill acquisition.

The following definitions in Table 2 from the framework were provided to assist with accuracy and consistency of responses.

Table 2 - Definitions of Framework

Ability	Definition
Novice	• Beginner with no experience • You seek assistance in making clinical decisions • You have minimal skills or practice in this area
Advanced Beginner	• You have limited exposure to clinical situations • You are able to identify normal findings • You are guided by what you need to do rather than by patient responses
Competent	• You have had varied exposure to many situations • You are able to identify normal and abnormal findings • You have an awareness of patient and family view points • You are able to manage complex situations • You are able to prioritize
Proficient	• You have had extensive exposure in most situations • You are able to prioritize in response to changing situations • You are able to interpret the patient and family experience from a wider perspective
Expert	• You have had extensive exposure with deep understanding of the situations • You are able to rapidly and consistency identify actual and potential assessment changes • You are able to rapidly change priorities under all conditions • You are able to keep personal values in perspective and therefore able to encourage and support patient and family choices

3.2.2 Items Included and layout of the Questionnaire

Based on the gaps identified in the literature and the research questions, the questions included in the questionnaire were laid out as follows:

1. Nurse demographic questions
2. Questions on educational opportunities and resource needs to work as a nurse within dermatology
3. Questions on current and desired knowledge and skills
4. Questions on barriers to optimizing the nurse's role within dermatology. These questions were asked since there was no information found in the literature review that addressed these barriers.

The Dermatologist questionnaire was laid out as follows:

1. Demographic questions
2. Questions on the dermatologist's experience working with nurses
3. Questions on desired knowledge and skills for dermatology nurses

The questions on desired knowledge and skills for the dermatology nurses included the same 32 nursing activities, under the six domains. The questions provided the same evaluations provided for each of the 32 activities: novice, advanced beginner, competent, proficient, and expert. This would allow for comparison in responses between the dermatology nurses and dermatologists.

3.3 Methods

3.3.1 Ethical Consideration

This research involved human subjects and therefore the Principal Investigator (PI) required Ethics Approval from the committee at the University of Ontario Institute of Technology (UOIT), file 13-116. See Appendix C and D for the ethics approval letter and renewal.

3.3.2 Participants – Inclusion/Exclusion Criteria

This research is descriptive and exploratory in nature. According to Nulty (2008) the average on-line survey response rate is approximately 33%. If there is 33% participation, 20 out of 60 nurses and 50 out of 150 Dermatologists would be expected to complete the questionnaire. Inclusion criteria included nurses who were a member of one of the US Dermatology Nursing Association Chapters or Dermatologist members with the Ontario Medical Association.

3.3.2 Methods of Data Collection

The survey was created on-line using University of Ontario Institute of Technology (UOIT) software platform MachForm. MachForm was recommended as it is the program developed by UOIT, with the data housed at UOIT and met with privacy and confidentiality requirements. A nurse designee distributed the web link for the survey through the e-mail distribution list of the central, Western and Eastern Canadian chapters of the United States Dermatology Nurses Association. The Principal Investigator was never made aware of the names or e-mail addresses of the respondents as the distribution lists were kept confidential by

the nurse designee. The nurse designee was a volunteer who assists with the administration of the chapter. After reading the consent form in the e-mail, the nurse respondent could then click on a web link to enter the anonymous survey. By accessing the web link for the survey, the responses entered could not be linked to the respondent's computer or e-mail address. Based on a test run, it is expected that the questionnaire would take ~ 10-12 minutes to complete. It is approximated that there are 60 nurses in total in the three chapters in Canada. The nurse designee sent out three e-mail reminders to complete the questionnaire over a one month starting on February 18th, 2015. The nurses that provided feedback into the design of the questionnaire had also verbally encouraged other nurses they came across at various events to complete the survey. The survey for the Dermatologist was similarly created on-line using MachForm. It was however distributed by the Ontario Medical Association (OMA) to dermatologists in Ontario during one of their quarterly e-mail blasts. It is approximated that there are 150 Dermatologists in Ontario. After reading the consent form in the e-mail, the dermatologist respondent could click on a web link to enter the anonymous survey. It is expected that the Derrmatologist survey took 5-10 minutes to complete.

As previously mentioned, when the respondents opened the e-mail the consent form was available for viewing first. The consent form provided information on the purpose and objectives of the research as well as the contact information for the researchers. A privacy and confidentiality section explained that the research was voluntary and the results anonymous. No personal identifying data was collected. It also explained that the data will be stored in a locked file on the Principal Investigator's password-protected computer during the study and the data destroyed after seven years (May 2021) by erasing the electronic files. See Appendix E and F for the nurse and Dermatologist consent form.

3.3.4 Data Analysis

The data from Machform was imported into a SAS database. Frequencies and cross tabulations were made to compare values and how they distribute. Data on knowledge and skills were assessed by community verses hospital nurse and also all combined. Comparisons were made between nurse and Dermatologists responses to the questions on desired skills and knowledge. The data was also analysed for the largest difference in scores between the current levels of function of nurses verses the desired level of function across the various activities.

Chapter Four: Results

This chapter will provide an overview of the results from both the Dermatologist and the dermatology nurse questionnaires. For both groups, the demographics of the participants will be presented.

Results from the nurse questionnaire will include the following: nurses' educational experiences, opportunities and views on wait times, nurse recognition as well as current and desired level of functioning, and overview of barriers in optimizing the nurses' role. These results will conclude with a table listing general comments and suggestions that nurses shared on optimizing their role.

For the Dermatologists, the results of their experiences working with nurses will be summarized along with their responses to questions on desired level of nurse functioning.

An analysis of the differences between nurses and Dermatologists responses to desired levels of functioning is also provided.

4.1 Demographics of Dermatology Nurses

The nurse questionnaire began with six questions on demographics to provide a better understanding of this group. Thirty-seven respondents out of an estimated 60 completed the questionnaire (62%). The amount is estimated because it is not currently known how many nurses are working in dermatology in Canada. The majority were female (97.3%) within the ages of 41 to 50 years old (37%). Twenty – seven percent were newer to dermatology having one to five years of experience followed by 18.9% having six to ten years and 21.6% having 11 to 15 years of experience. The highest level of education completed by most nurses was a diploma in nursing (56.8%) with a minority having received the US Dermatology nursing certificate (21.6%). The majority worked at a teaching hospital (51.4%), in an urban area (91.9%) and spent

most of their time working in medical dermatology (68.1%). Almost half-specialized (45.9%), mostly in light therapy (27%) followed by psoriasis specifically (13%). See Table 3 below for a full summary of the nurse's demographics.

Table 3- Demographic Data of Dermatology Nurses

Demographics of Dermatology Nurses (N=37)	
Question	**Response**
Sex: Female Male	 36/37 (97.3%) 1/37 (2.7%)
Age Category: 20-30 31-40 41-50 51-60 61-70 71+	 2/37 (5.4%) 7/37 (18.9%) 14/37 (37.8%) 9/37 (24.3%) 4/37 (10.8%) 1/37 (2.7%)
# years practicing as a nurse in dermatology: 1-5 years 6-10 years 11-15 years 16-20 years More than 20 years Missing value	 10/37 (27%) 7/37 (18.9%) 8/37 (21.6%) 3/37 (8.1%) 8/37 (21/6%) 1/37 (2.7%)
Highest level of education achieved in nursing: Diploma Baccalaureate Masters	 21/37 (56.8%) 14/37 (37.8%) 2/37 (5.4%)
Primary work setting: Hospital Community Hospital, Teaching yes/no Missing value	 21/37 (56.8%) 15/37 (40.5%) Yes =19/37 (51.4%) 1/37 (2.7%)

Urban or rural practice: rural urban	3/37 (8.1%) 34/37 (91.9%)
US Dermatology Nursing Association certificate: No yes	 29/37 (78.4%) 8/37 (21.6%)
Breakdown of time spent within clinic: - Percentage in dermatology RESEARCH - Percentage conducting COSMETIC dermatology - Percentage conducting MEDICAL dermatology	 21/37 (17.9%) 20/37 (7.5%) 19/37 (68.1%)
Within medical dermatology, do you specialize within a certain area? Yes No Missing Value If yes from above: Moh's surgery/skin cancer Light therapy Wound care Other:	 17/37 (45.9%) 18/37 (48.6%) 2/37 (5.4%) 4/37 (10.8%) 10/37 (27%) 1/37 (2.7%) Psoriasis: 5/37 (13.5%) Derma research: 1/37 (2.7%)

4.2 Educational Experiences, Opportunities and Views on Wait Times and Nurse Recognition

There were six questions about educational experiences, opportunities, and dermatology nurse's views on wait times and nurse recognition (see Appendix G). The majority (70.3%) felt that there should be more formal dermatology education included within nursing school programs. Most nurses received their education through industry led programs (35.1%). Fifty-four percent felt that the Dermatologists they work with were often or always supportive of furthering their education. The majority felt that patient's wait too long to receive care (75.7%) and that nurses are not recognized for their contribution (70.3%). A trend was noted in that many respondents (19/37) also provided suggestions for additional education in particular more training specific on dermatology within nursing school would be beneficial**.** Some examples include, *'Dermatology education should be offered as a separate module within nursing programs' and 'Maybe as an added certificate that can be obtained post grad'*.

4.3 Nurse Responses to Current Level of Functioning

Dermatology nurses were asked to evaluate their current level of functioning for the 32 activities that were listed in the questionnaire (see Appendix H). In the domain of *Caring for the Patient with a Dermatological Condition*, the nurses reported frequently at being proficient in all five activities (e.g. telephone triage 45.9% and monitoring symptoms and adverse events and the ability to make recommendations for treatment changes 40.5%). The *Patient Education* domain was split with activities in the competent range (e.g. ability to encourage empowerment and self-management 40.5%) and the proficient range (e.g. educating and counseling the patient in determining risk and benefits of all treatment options including complementary and behavioral therapies 48.6%). The *Therapeutic Intervention* domain had a mix of self-evaluations. One

activity was rated highest as expert (e.g. proficient delivery of treatment 29.7%), while seven activities were evaluated at the novice level (e.g. using lasers 75.7%); the remaining four activities in were in-between novice and expert. *Dermatological Assessment and Investigation* domain also had a range of activities from novice (e.g. tele dermatology with rural areas 78.4%) to proficient (e.g. nurse-led clinics 29.7%). In the fifth domain, *Underpinning Knowledge*, evaluations for the two activities were rated highest as competent (e.g. knowledge of anatomy, physiology, and immunology of the skin and its appendages e.g. hair, nails, sweat glands and the sebaceous glands and how it is impacted by skin disorders 45.9%, and 35.1% for interdisciplinary/interprofessional teaching). The sixth and final domain of *Psychological Impact of Living with a Dermatological Condition* had one activity most frequency rated as proficient (e.g. having the knowledge, deep understanding and ability to recognize psychosocial issues with impact dermatology patients and the ability to incorporate into the plan of care 40.5%). Table 4 below provides a summary of results under each domain.

Table 4- Current Level of Nurse Functioning

	Current Level of Functioning					
Nursing Activity	**No Data**	**Novice**	**Advanced Beginner**	**Competent**	**Proficient**	**Expert**
CARING FOR THE PATIENT WITH A DERMATOLOGICAL CONDITION						
Telephone triage and patient counseling	2/37 (5.4%)	1/37 (2.7%)	2/37 (5.4%)	6/37 (16.2%)	17/37 (45.9%)	9/37 (24.3%)
Monitoring symptoms and adverse events and the ability to make recommendations for treatment changes.	2/37 (5.4%)	1/37 (2.7%)	1/37 (2.7%)	10/37 (27.0%)	15/37 (40.5%)	8/37 (21.6%)
PATIENT EDUCATION						
Educating and counseling the patient in determining risks/ benefits of all treatment options, including complementary and behavioral therapies	2/37 (5.4%)		4/37 (10.8%)	10/37 (27.0%)	18/37 (48.6%)	3/37 (8.1%)
Ability to encourage empowerment and self-management. Educating on health promotion strategies and ability to develop, implement and evaluate strategies for health promotion with patients and the community.	2/37 (5.4%)		5/37 (13.5%)	15/37 (40.5%)	9/37 (24.3%)	6/37 (16.2%)
THERAPEUTIC INTERVENTIONS						
Proficient delivery of treatment (e.g. phototherapy, cryotherapy, intramuscular injections) according to medical directives	3/37 (8.1%)	3/37 (8.1%)	3/37 (8.1%)	8/37 (21.6%)	9/37 (24.3%)	11/37 (29.7%)
Using lasers	3/37 (8.1%)	28/37 (75.7%)	1/37 (2.7%)	3/37 (8.1%)	1/37 (2.7%)	1/37 (2.7%)
DERMATOLOGICAL ASSESSMENT AND INVESTIGATION						
Nurse-led clinics (having patient appointments and working independently to assess patients)	3/37 (8.1%)	6/37 (16.2%)	4/37 (10.8%)	9/37 (24.3%)	11/37 (29.7%)	4/37 (10.8%)
Perform skin examinations and identification (e.g. benign vs. malignant lesions)	3/37 (8.1%)	6/37 (16.2%)	9/37 (24.3%)	9/37 (24.3%)	9/37 (24.3%)	1/37 (2.7%)
Tele dermatology with rural areas	2/37 (5.4%)	29/37 (78.4%)	4/37 (10.8%)		1/37 (2.7%)	1/37 (2.7%)
UNDERPINNING KNOWLEDGE						
Knowledge of anatomy, physiology, and immunology of the skin and its appendages (e.g. hair, nails, sweat glands and the sebaceous glands) and how it is impacted by skin disorders	2/37 (5.4%)	1/37 (2.7%)	6/37 (16.2%)	17/37 (45.9%)	11/37 (29.7%)	
Interdisciplinary/interprofessional teaching	2/37 (5.4%)	4/37 (10.8%)	7/37 (18.9%)	13/37 (35.1%)	11/37 (29.7%)	

PSYCHOLOGICAL IMPACT OF LIVING WITH A DERMATOLOGICAL CONDITION						
Having the knowledge, deep understanding and ability to recognize psychosocial issues which impact dermatology patients and the ability to incorporate into the plan of care	3/37 (8.1%)	2/37 (5.4%)	2/37 (5.4%)	12/37 (32.4%)	15/37 (40.5%)	3/37 (8.1%)

4.4 Nurse Responses to Desired Level of Functioning

Nurses were also asked to rate their desire to work at an increased level of functioning. See Appendix I for a full listing of the results from the self-rated assessments of desired functioning for the 32 activities. Table 5 provides a summary of some of the results under each domain.

Table 5- Nurse Desired Level of Functioning

	Nurse Desired Level of Functioning					
Activity	**No Data**	**Novice**	**Advanced Beginner**	**Competent**	**Proficient**	**Expert**
THERAPEUTIC INTERVENTIONS						
Using the hyfrecator (low-powered medical apparatus used in electro surgery on conscious patients)	2/37 (5.4%)	7/37 (18.9%)	2/37 (5.4%)	8/37 (21.6%)	10/37 (27.0%)	8/37 (21.6%)
Proficient delivery of treatment (e.g. phototherapy, cryotherapy, intramuscular injections) according to medical directives	4/37 (10.8%)		1/37 (2.7%)	4/37 (10.8%)	9/37 (24.3%)	19/37 (51.4%)
Performing chemical/mechanical debridement of wounds	2/37 (5.4%)	4/37 (10.8%)	4/37 (10.8%)	5/37 (13.5%)	11/37 (29.7%)	11/37 (29.7%)
Performing an insertion/removing of a peripherally inserted central catheter (PICC) line	4/37 (10.8%)	12/37 (32.4%)	6/37 (16.2%)	4/37 (10.8%)	4/37 (10.8%)	7/37 (18.9%)
Using lasers	3/37 (8.1%)	10/37 (27.0%)	2/37 (5.4%)	6/37 (16.2%)	5/37 (13.5%)	11/37 (29.7%)

In five of the six domains nurses reported wanting to be an 'expert' level of functioning in: *Caring for the Patient with a Dermatological Condition, Patient Education, Therapeutic Interventions, Underpinning Knowledge, and Psychological Impact of Living with a Dermatological Condition.*

The domain, with the most activities, *Therapeutic Interventions*, had varied responses with one activity rated most as wanting to be functioning at a novice level (e.g. performing an

insertion/removing of a peripherally inserted central catheter (PICC) line 32.4%) and seven activities rated as wanting to be most at an expert level of functioning (e.g. proficient delivery of treatment 51.4%). Using lasers was one of the activities rated the most as expert (29.7%) however the rating of novice was closely behind at 27%. Three activities were tied with highest responses in proficient and expert (e.g. performing chemical/mechanical debridement of wounds 29.7%). One activity was rated most frequently as proficient (e.g. using the hyfrecator 27%).

4.5 Barriers to Optimizing the Nurse Role within Dermatology

The nurse respondents agreed with all the potential barriers identified in the questionnaire. The results can be found in Table 6. Two barriers were most frequently identified as an *extreme barrier*. Lack of high quality educational programs in dermatology for nurses (35.1%) and lack of nurse billing codes for community nurses (29.7%). Three potential barriers were most frequently rated as *somewhat of barrier*: lack of medical directives (37.8%), lack of CNA certification in dermatology (32.4%), and resistance from dermatologists (32.4%). Two barriers were rated as *moderate* barriers: lack of Canadian dermatology nursing association (29.7%) and resistance from health care administrators/associations/agencies (32.4%). The last question was open ended and asked for any additional comments on barriers. These responses provided additional details on barriers such as financial constraints ("*Dermatologists in the community do not see the value of a nurse because they say they are too costly. They employ nurses to do procedures that make a lot of money such as research and cosmetic procedures"* and value of the nurses not being recognized by Dermatologists *("No formal training, poor respect from dermatologists, dermatologists feel threatened by our knowledge- lack of recognition for")*. No major trends were identified. The full listing of comments can be found in Appendix J.

Table 6- Barriers to Optimizing the Nurses Role

Question	No data	Not a barrier	Somewhat a barrier	Moderate barrier	Extreme barrier
Lack of high quality educational programs in dermatology for nurses	2/37 (5.4%)		12/37 (32.4%)	10/37 (27.0%)	13/37 (35.1%)
Lack of a Canadian dermatology nursing association	2/37 (5.4%)	10/37 (27.0%)	9/37 (24.3%)	11/37 (29.7%)	5/37 (13.5%)
Lack of CNA certification in dermatology	2/37 (5.4%)	5/37 (13.5%)	12/37 (32.4%)	9/37 (24.3%)	9/37 (24.3%)
Lack of medical directives	4/37 (10.8%)	3/37 (8.1%)	14/37 (37.8%)	9/37 (24.3%)	7/37 (18.9%)
Resistance from dermatologists (role conflict, financial loss, etc.)	3/37 (8.1%)	6/37 (16.2%)	12/37 (32.4%)	9/37 (24.3%)	7/37 (18.9%)
Lack of nurse billing codes for community nurses	3/37 (8.1%)	7/37 (18.9%)	8/37 (21.6%)	8/37 (21.6%)	11/37 (29.7%)
Resistance from health care administrators associations/ agencies	3/37 (8.1%)	7/37 (18.9%)	5/37 (13.5%)	12/37 (32.4%)	10/37 (27.0%)

4.6 Desired Verses Current Nurse Responses to Level of Functioning

Table 7 identifies the difference in the current verses desired level of functioning for each of the 32 activities. For analysis purposes, numbers were assigned to each of the skill levels: 1- Novice, 2 – Advanced Beginner, 3=Competent, 4= Expert and 5 = Proficient. The difference was then calculated between the desired level and the current level. Table 7 provides the tabulation of the score differences (positive values correspond to a reported desirable skill level larger than the current one) as well as the average difference (based on the paired differences). For the average difference score, the standard deviation of the differences is shown in brackets beside the mean. The mean and the standard deviation exclude any missing values. Very few negative differences were reported (see Appendix K for complete

responses). A score of '0' indicates that there is no difference in the answer for that activity so essentially, nurses would currently be working at the level they desire to be.

Table 7- Desired Verses Current Nurse Responses to Level of Functioning

Desired vs. Current Nurse Responses to Level of Functioning										
Activity	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**	**4**	**No Data**	**Average Difference Score**
CARING FOR THE PATIENT WITH A DERMATOLOGICAL CONDITION										
Telephone triage and patient counseling				18/37 (48.6%)	12/37 (32.4%)	2/37 (5.4%)	2/37 (5.4%)		3/37 (8.1%)	0.6 (0.85)
Assisting patients navigating through the Health Care System				9/37 (24.3%)	16/37 (43.2%)	8/37 (21.6%)	2/37 (5.4%)		2/37 (5.4%)	1.1 (0.85)
THERAPEUTIC INTERVENTIONS										
Performing chemical/mechanical debridement of wounds				4/37 (10.8%)	7/37 (18.9%)	9/37 (24.3%)	8/37 (21.6%)	6/37 (16.2%)	3/37 (8.1%)	2.1 (1.28)
Applying wound dressings, compression therapy.			3/37 (8.1%)	14/37 (37.8%)	12/37 (32.4%)	4/37 (10.8%)	1/37 (2.7%)		3/37 (8.1%)	0.6 (0.92)
Assisting with surgeries in Mohs (involves maintaining a clear surgical site, hemostasis and manipulating			2/37 (5.4%)	12/37 (32.4%)	5/37 (13.5%)	9/37 (24.3%)	1/37 (2.7%)	3/37 (8.1%)	5/37 (13.5%)	1.1 (1.39)

various surgical instruments)										
Activity	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**	**4**	**No Data**	**Average Difference Score**
Prescribing topical treatments				8/37 (21.6%)	10/37 (27.0%)	8/37 (21.6%)	4/37 (10.8%)	3/37 (8.1%)	4/37 (10.8%)	1.5 (1.25)
DERMATOLOGICAL ASSESSMENT AND INVESTIGATION										
Nurse-led clinics (having patient appointments and working independently to assess patients)			1/37 (2.7%)	10/37 (27.0%)	7/37 (18.9%)	8/37 (21.6%)	3/37 (8.1%)	4/37 (10.8%)	4/37 (10.8%)	1.4 (1.41)
Perform skin examinations and identification (e.g. benign vs. malignant lesions)				4/37 (10.8%)	14/37 (37.8%)	5/37 (13.5%)	7/37 (18.9%)	3/37 (8.1%)	4/37 (10.8%)	1.7 (1.21)
Tele dermatology with rural areas				7/37 (18.9%)	8/37 (21.6%)	9/37 (24.3%)	2/37 (5.4%)	8/37 (21.6%)	3/37 (8.1%)	1.9 (1.45)

In the domain of *Caring for the Patient with a Dermatological Condition,* while there was overall no difference in current verses desired level for telephone triage and patient counseling (48.6% indicated no desired change, with an average change score of 0.6), the four other activities in this domain most frequently had a difference in one and an average difference score near or at one. For example, for assisting patients navigating through the health system, 43.2% had an average change score of 1.1., indicating a one level increase in proficiency). Similarly, in the *Patient Education, Underpinning*

Knowledge, Psychological Impact of Living with a Dermatological Condition domains, a difference in one proficiency level/level of functioning was most frequently selected for all activities.

In the domain of *Dermatological Assessment and Investigation*, tele dermatology with rural areas almost had a two-level difference with an average difference score of 1.9 (greatest frequency amongst responses was at level two with 24.3%). This was followed closely by performing skin examinations and identification (greatest frequency at level one with 37.8%) which had an average difference score of 1.7.

In the *Therapeutic Interventions* domain consisting of 12 activities, most of the activities indicated a desired level change of one based on the average difference score. Applying wound dressings/compression was the exception, which had most responses (37.8%), desiring a zero difference in level of functioning with an average difference score of only 0.6. A 2.1 difference, which was the largest difference, was reported with the activity of performing chemical/mechanical debridement of wounds (24.3% at level two).

4.7 Desired Minus Current Nurse Responses to Level of Functioning Broken Down by Practice at Community Clinic or Hospital

Based on descriptive statistics, an analysis was completed to further understand if the responses vary between nurse respondents based in the community clinic verses hospital based nurses. The last column of Table 8 represents the difference in score between the results of the community clinic nurses verses the hospital based nurses. The larger the difference score, the bigger the difference between the results of the two groups. Results generally ranged minimally from -0.3 to 0.7 indicating that there was little variance between the responses of the community nurse verses the nurses based in the teaching hospitals. The two responses that have a score

difference greater than or equal to one (indicating a larger variation in responses) are shown below in Table 8. Nurses working primarily in the teaching hospitals desired to be administering intralesional steroid (difference of 1.1) and performing skin biopsies (difference of 1.3) more than the community-based nurses do. The full results can be found in Appendix L.

Table 8- Desired minus Current Nurse Responses to Level of Functioning Broken Down by Practice at Community Clinic or Hospital.

Desired minus Current Nurse Responses to Level of Functioning Broken Down by Practice at Community Clinic or Hospital			
Activity	**Primary Work Setting**		**Difference in Score**
	Don't work in a hospital	**Teaching Hospital**	
THERAPEUTIC INTERVENTIONS			
Administering intralesional steroid	N=13 0.9 (1.55) 0.0 [-1.0 - 4.0]	N=15 2.0 (1.36) 2.0 [0.0 - 4.0]	-1.1
DERMATOLOGICAL ASSESSMENT AND INVESTIGATION			
Performing skin biopsies	N=14 1.0 (1.47) 0.0 [0.0 - 4.0]	N=16 2.3 (1.65) 3.0 [0.0 - 4.0]	-1.3

4.8 General Comments from Dermatology Nurses

The dermatology nurse survey ended with an open-ended free text area where respondents could enter any additional thoughts, recommendations or experiences. Overall, a trend that was identified was that all the comments were positive for their profession and encouraged more training for dermatology nurses (e.g. attendance allowed at the Canadian Dermatologist meeting, Canadian certificate). There was interest in having more responsibilities at the site. Some nurses reporting enjoying working in dermatology and recognized the importance of their role in the field. One respondent commented that the Dermatologists in the

community don't recognise their value. Funding for nurses was also mentioned. Themes that were also reflected in the survey results, see Appendix M for a full listing of the comments provided.

4.9 Demographics of Dermatologist

Six demographic questions were asked at the beginning of the Dermatologist questionnaire to describe this participant population (see Appendix N). Nineteen Dermatologists out of approximately 150 Dermatologists in Ontario completed the questionnaire (11 male and 8 females) this is not equal. The majority (N=14) were between 51 and 70 years of age and practiced dermatology for over 20 years in urban areas. The majority (78.9%) primarily worked in community clinics outside of the hospital. In terms of their time spent, the majority spent 76.5% of their time treating medical dermatology, followed 18.5% cosmetic and 4.1% research.

4.10 Dermatologist Experience with Nurses

Questions were asked to the Dermatologist in terms of their experiences working with nurses (see Table 9). More than half (57.9%) had experience with hiring nurses which speaks to their experience with nurses and that they felt nurses were valuable enough to hire them. Of those, the majority (81.8%) retained the nurse in their clinic. The Dermatologist you would expect were therefore pleased with the work and the assistance that the nurses were providing. Nurses in turn were satisfied with their work enough to stay. Equal numbers of respondents (N=9) were currently working with nurses the majority within clinics in the community (66.7%) and with a focus on medical dermatology (77.8%). For those that do not work with nurses, the main reason was due to lack of funding mechanism for dermatology nurses (55.6%) followed by being not in need of their services (44.4%) and that they are not trained or experienced enough

with dermatological specific conditions (33.3%). The open-ended questions resulted in six Dermatologists providing comments on their mixed experiences with nurses (see Appendix O), some positive and other negative. Two of the positive experiences included comments such as *Excellent working with nurses. Make practice more efficient.* Other comments were more negative such as that *they required intense training* and that *they are a totally unnecessary expensive waste of money hire.* The open-ended comments were therefore a mix of both positive and negative indicating that there was a large variation in the experiences that Dermatologists have had working with nurses.

Table 9- Dermatologists Responses to their Experiences with Nurses

Dermatologist Experience with Nurses		
Ever hired a nurse: Yes No Missing Data		 7/19 (36.8%) 11/19 (57.9%) 1/19 (5.3%)
If yes above, able to retain nurse:	<u>Yes</u> (9, 81.8%) - yes for years - I have had a nurse for years.	<u>No</u> (3, 27.3%) - Difficult retain part time nurse - Left to work at another dermatology centre - Fired her -- got greedy and started to sabotage me.
Currently work with nurses: Yes No Missing data		 9/19 (47.4%) 9/19 (47.4%) 1/19 (5.3%)
If yes, in which settings: Community hospital Teaching hospital Clinic in the community Other:		 1/9 (11.1%) 2/9 (22.2%) 6/9 (66.7%) 1/9 (11.1%) private office
If yes, type of work: Medical Cosmetic Research		 7/9 (77.8%) 1/9 (11.1%) 1/9 (11.1%)
If no, why don't work with nurses: - Lack of funding mechanism for dermatology nurses - Not in need of their services - Not confident in their abilities - Previous bad experience - They aren't trained or experienced enough with dermatological specific conditions - Other: Missing data		 5/9 (55.6%) 4/9 (44.4%) 2/9 (22.2%) 1/9 (11.1%) 3/9 (33.3%) (11.1%) I now only have 1 examining room so nothing would be added by my having a nurse now 1/9 1/9 (11.1%)

4.11 Dermatologist Responses to Desired Level for Nurses to be Functioning

Table 10 represents some of the answers that approximately half (not all Dermatologists answered these questions) of the Dermatologists had to the desired level of functioning for nurses across the 32 activities in the questionnaire. A full listing of these results can be found in Appendix P. It is evident that most dermatologists expect nurses to be working within the expert level (27 of 32 activities). Dermatologists wanted nurses in the following domains to be functioning at an expert level of functioning: *Dermatological Assessment and Evaluation, Underpinning Knowledge,* and *Psychological Impact of Living with a Dermatological Condition*

There was varied desirability expressed in the *Caring for the Patient with a Dermatological Condition* domain. Desirability for the activity of telephone triage and patient counseling were most rated at the competent level (31.6%) while the other three activities were rated most as expert. Leading quality improvement initiatives tied at competent and expert (21.1% each).

All activities in the *Patient Education* domain were rated most to be at the expert level however the activity of educating and counseling patient on psychological/emotional distress, coping mechanisms, was tied with equal responses at the competent and expert level (26.3%).

Activities in the *Therapeutic Interventions* domain were most frequently rated as desiring being at the proficient or expert level. The one exception was assessing treatment adherence, which was rated most frequently at the competent level.

Table 10- Dermatologist Desired level for Nurses to be Functioning

	Dermatologist Desired Level for Nurses to be Functioning					
Activity	**No Data**	**Novice**	**Advanced Beginner**	**Competent**	**Proficient**	**Expert**
CARING FOR THE PATIENT WITH A DERMATOLOGICAL CONDITION						
Telephone triage and patient counseling	8/19 (42.1%)			6/19 (31.6%)		5/19 (26.3%)
Leading quality improvement initiatives	9/19 (47.4%)			4/19 (21.1%)	2/19 (10.5 %)	4/19 (21.1%)
PATIENT EDUCATION						
Educating and counseling patient on psychological/emotional distress, coping mechanisms.	8/19 (42.1%)			5/19 (26.3%)	1/19 (5.3%)	5/19 (26.3%)
THERAPEUTIC INTERVENTIONS						
Performing chemical/mechanical debridement of wounds	8/19 (42.1%)	3/19 (15.8%)		1/19 (5.3%)	1/19 (5.3%)	6/19 (31.6%)
Applying wound dressings, compression therapy.	8/19 (42.1%)			3/19 (15.8%)	6/19 (31.6 %)	2/19 (10.5%)
Assisting with surgeries in Mohs (involves maintaining a clear surgical site, hemostasis and manipulating various surgical instruments)	9/19 (47.4%)			3/19 (15.8%)	3/19 (15.8 %)	4/19 (21.1%)
Prescribing topical treatments	9/19 (47.4%)	2/19 (10.5%)	1/19 (5.3%)			7/19 (36.8%)
Assessing treatment adherence	9/19 (47.4%)		1/19 (5.3%)	4/19 (21.1%)	2/19 (10.5 %)	3/19 (15.8%)

4.12 Comparison of Dermatologist and Nurse Responses to Current Level of Functioning

An analysis was conducted to see if there was a difference between the Dermatologist and nurse responses to their desired level of functioning. On each group (e.g. Dermatologist and nurses), the summary statistics (mean, standard deviation, median and range) and then the mean difference at 95% **co**nfidence interval for the difference of the scores were calculated.

A summary of the results is provided in Table 11 whereas the table in Appendix Q provides the full response details. The tables display the Dermatologist score on desired level of functioning minus the nurse's response to desired level of functioning to give a mean difference with 95% confidence intervals. None of the differences observed were statistically significant at p 0.05 and there were no differences observed within the six domains. The activity with the greatest change observed was that Dermatologists desired nurses to be working at a higher level than the nurses had desired for the activity of performing an insertion/removing of a peripherally inserted central catheter (PICC) line (difference of 1.0[-0.4-2.4].

Negative responses indicate when nurses desired level of functioning is higher than the Dermatologists desired level of nurse functioning. This was the case for 19 of the 32 activities. The activity with the greatest negative difference was for assessing treatment adherence. This activity had a difference of -0.7 [-1.5-0.1]. Table 11 represents these two activities.

Table 11- Comparison of Dermatologist and Nurse Responses to Current Level of Functioning

Comparison of Dermatologist and Nurse Responses to Current Level of Functioning			
Question	**Dermatologist**	**Nurse**	**Difference = Dermot – Nurse (95% C.I.)**
THERAPEUTIC INTERVENTIONS			
Performing an insertion/removing of a peripherally inserted central catheter (PICC) line	N=10 3.6 (1.84) 4.5 [1.0 - 5.0]	N=33 2.6 (1.60) 2.0 [1.0 - 5.0]	1.0 [-0.4 - 2.4]
Assessing treatment adherence	N=10 3.7 (1.06) 3.5 [2.0 - 5.0]	N=33 4.4 (0.66) 5.0 [3.0 - 5.0]	-0.7 [-1.5 - 0.1]

The discussion in chapter 5 will provide an interpretation and further define the study results.

Chapter Five: Discussion

This chapter is an interpretation of the study results based on the research questions. It will review the key findings from the dermatology nurse's questionnaire to determine ways of optimizing their role. This includes a discussion about demographics in addition to their current and desired activities and barriers. Results from the Dermatologist questionnaire are discussed and how they can factor into optimizing the role of the nurse in the field of dermatology. Study strengths and limitations are identified.

5.1 What Knowledge and Skills do Nurses Have to Practice in Dermatology in Canada?

Most nurses had indicated a diploma in nursing (56.8%) as their highest level of education. This means that they would have likely completed a two to three-year nursing program in nursing at a college. This is consistent with the RN 2010 Workplace Profile (CNA, 2012) where 57.6% of Canadian RNs had a nursing diploma as their highest level of education. Since the late 1990s, the provinces and territories have been moving away from diplomas for entry into nursing. With the exception of Quebec, they all now require or are in the process or requiring a bachelor's degree for entering into nursing. Bachelor degree programs can be between two and four years in length with many programs offering accelerated, condensed and advanced entry options (CNA, 2017). The reason for this change in requirements is that there is evidence that nurses that have a baccalaureate degree are able to provide more safe, ethical, cost-effective and high quality nursing care (RNAO, 2017). Since the majority of the nurses in this survey have a college diploma's and not bachelor degree from a university, this may explain their increasing desire for wanting more nurse education. Having a bachelor degree however would not have provided more education on

dermatology specifically compared with those with college degrees since dermatology is not covered as a therapeutic area in either program. Recent graduates are receiving additional nurse training before they enter into the field, although not in dermatology.

Higher levels of nursing education have been identified to positively affect hospital in-patient outcomes. A study by Aiken, Clarke, Cheung, Sloane, and Silber (2003) in the US found that having more RNs at the baccalaureate level or higher, resulted in lower mortality and failure-to-rescue rates (deaths in surgical patients with serious complications) in surgical patients. Similarly, a cross-sectional study also in the US by Blegen, Goode, Park, Vaughn, and Spetz (2013) found that hospitals with a higher percentage of RNs with a baccalaureate degree or higher had patients with lower congestive heart failure mortality, decubitus ulcers, failure-to- rescue, and postoperative deep vein thrombosis or pulmonary embolism as well as a shorter length of hospital stay. Whether these positive patient outcomes translate into outpatient and private clinics in Canada and in other specialized areas like dermatology where surgery is sometimes needed would require more research and investigation.

`The majority of the nurse respondents did not pursue the US Dermatology Nursing Association (DNA) certificate (78.4%) although they are part of the Canadian Chapter of the US DNA by which the questionnaire was circulated. With no specific course in nursing schools or offered by the Canadian Nurses Association (CNA), most reported receiving dermatology training by industry led programs (35.1%) and from the dermatologist they work with (18.9%). There is a perceived bias with industry led programs that generally target the prescriber, which could affect the quality of the training that the nurses are receiving. Accredited, scientific and holistically balanced programs focusing on nursing specifically would be most beneficial to aid in the work of the dermatology nurses. The majority of nurses rated lack of high quality educational programs in

dermatology as the most extreme barrier to optimizing their role within dermatology. Similarly, 70.3% of nurses believe that there should be advanced formal dermatology education included within nursing school programs. Because the large majority of nurses in this study felt strongly that there should be advanced formal education, it is interpreted that the nurses feel their work is valuable and impactful.

The CNA promotes continuing competence in their June 2004 Position Statement: Promoting Continuous Competence for registered nurses (CNA, 2014). They state that continuing nursing education both develops and enhances competencies significantly. Continuing competence contributes to the quality of nursing and enables nurses to base their practice on the most recent and strongest evidence. Benefits include higher-quality client outcomes, assisting in preventing poor practice and protecting the public. It further states that continuous learning requires nurses to understand their competencies based on changes occurring in society and with the health-care environment. The CNA offers 20 certificate programs in various specialties such as cardiovascular, community health, and gastroenterology, however no certificate exists in dermatology. Having such a certificate available for nurses interested in pursuing a career in dermatology or for nurses already working in dermatology to improve their competence could be highly relevant. The CNA would have to agree to invest both time and resources into creating and rolling out such a program within dermatology specifically as they have done for other specialties. Dermatology would have to be recognised as an important specialty area, with a demand for increasing education and opportunities available for nurses to excel.

Provincial organizations such as the College of Nurses in Ontario have Practice Standards and Guidelines (2002) that also address continuous learning. Similarly, they also feel continuing

competence ensures nurse's abilities to perform in a changing health care environment, contribute to quality nursing practice and increase the public's confidence in the nursing profession. They have their own Quality Assurance (QA) Program that is to help nurses participate in activities that promote lifelong learning to maintain and improve competence. It is a professional requirement to participate in QA. The program is not specialty or skill specific however. It is a self-assessment to identify areas where nurses could improve and seek further education on their own.

In relation to the nurses' self-evaluation of their current level of functioning in 32 activities, nurses felt that their knowledge and skills were currently at competent to proficient levels for the *Patient Education*, *Underpinning Knowledge* and the *Psychological Impact of Living with Dermatological Condition domains*. Based on these results, it can be determined that the dermatology nurses were confident, comfortable and experienced with these domains. Having competence in nursing can have many benefits. A qualitative study by Kieft, de Brouwer, Francke and Delnoij (2014), studied Dutch nurses' views of how their work and work environment contributed to positive patient experiences. Based on the results of focus groups, essential elements were developed that the nurses believe improved patient experiences of the quality of nursing care. These elements were firstly clinically competent nurses, collaborative working relationships, autonomous nursing practice, adequate staffing, control over nursing practice, managerial support and patient-centred culture. In terms of having competence, the nurses identified that to have expertise (knowledge, technical skills and communicative capabilities.), they needed to continually invest in gaining knowledge and education.

Nurses rated that they did not have as much proficiency in the domain of *Therapeutic Interventions.* A novice level of functioning was reported in several of these related activities. Upon review of the novice activities, they are all very specialized and more technical skills which

would require more advanced training or medical directives that are not available (e.g. using the hyfrecator, PICC line, assisting with Moh's surgery, using lasers, prescribing topical treatments). Nurses did rate themselves as higher in the delivery of treatment (e.g. phototherapy, cryotherapy, intramuscular injections). This is not surprising as phototherapy (light therapy) is one of the most common and efficacious treatment options for psoriasis (Wong, Hsu, & Liao, 2013). Twenty-seven percent had reported being specialized in light-therapy and 13.5% in psoriasis specifically.

Responses were also varied in the *Dermatological Assessment and Investigation* domain. The nurses rated as being proficient in conducting assessments/scales, nurse led clinics, and obtaining medical history. As discussed, nurse led clinics in dermatology was an activity identified by Courtenay and Carey (2006a, 2006b) as having a positive impact on patient management. Some of the positive outcomes of nurse led clinics as discussed by Courtenay and Carey (2006a, 2006b) included faster access to treatment and a reduction in referrals to the physician, patients having increased knowledge of their condition, treatment application and ability to cope. Although the majority of nurses in this study report being proficient with nurse-led clinics, most are wanting to be working at an expert level and thus is an additional area of focus for training and role optimization.

Other activities in the domain of *Dermatological Assessment and Investigation* were rated more frequently in the novice range (e.g. tele dermatology, diagnostic testing/specimen collection and performing skin biopsies). Tele dermatology, as outlined by Lawton & Timmons (2005) is an area where the nurses could assist. Most of the dermatology nurses in Canada report working in urban areas (91.9%) meaning that there is little/no dermatology nursing support in rural communities, which are common across the country. Having more education and resources for nurses to provide tele dermatology could be beneficial and result in positive patient access (Lawton

& Timmons 2005). As indicated by Lawton and Timmons (2005), with tele dermatology, the nurse could provide continuity to patients through history taking, diagnostics and management. Patients reported benefits such as quicker access to care and convenience of being major benefits

Another area of specialization identified by Phelan and Heneghan (2008) was performing skin exams. The nurses in this study had mixed self-assessment results in performing skin exams ranging from advanced beginner, competent and proficient all at 24.3% each. The majority expressed that they wanted to be functioning at expert levels (48.6%). With the rising rates of skin cancer, skin examinations are clearly an area where there could be an increase in education, knowledge and skill building for Canadian Dermatology nurses. As per the American Cancer Society (2017), most skin cancers can be found early with skin exams. Basal cell and squamous cell skin cancers are by far the most common skin cancers, and are more common than any other form of cancer. Melanoma skin cancer accounts for only about 1% of skin cancers however causes a large majority of skin cancer deaths in the US. It is estimated by the Canadian Cancer Society that in 2017, 7,200 Canadians will be diagnosed and 1,250 will die from melanoma skin cancer. The Canadian Cancer Society also identifies that the best way to find melanoma early is to recognize symptoms and get routine health checkups. Optimizing the role of the dermatology nurse could therefore include greater education and performance of patient skin exams.

As shown in the results of this study, many of the nurses are also involved with providing UV photo/light care as treatment to patients. It is therefore even more an area where it would be important for nurses to have the ability to detect any pre-or cancerous skin lesions. A recent publication by Lucas, Chung, Marchetti, and Marghoob (2016) further discuss the important role that nurses are increasingly playing in the diagnosis and management of skin cancer in the UK. In addition to providing education for skin cancer prevention, nurses are performing screening

such as total body skin examinations as well as the triage of symptomatic and skin lesions of concern. These authors insist that nurses must obtain an accurate and relevant patient history and be sufficiently confident to perform a skin examination including being educated on the various diagnostic aids.

The current levels of self-reported functioning overall were generally high. It is perhaps difficult for a professional to downplay what they do daily. As shown in these study results, caring, patient education, and psychological impact are judged as more proficient on the scale. As has been shared with the Principal Investigator during personal communications with nurses, these are activities more subjective and common in the nursing profession in general. However, when it comes to the more objective measures (e.g. technical dermatological skills), the nurses do not see themselves as proficient. Nevertheless, these study results indicate that most nurses preferred to be expert in all (subjective and objective) these activities.

5.2 What Knowledge And Skills So Nurses Desire To Be Proficient At To Function More Effectively In Their Role?

In looking at the difference in the current verses desired level of functioning, the magnitude of the differences was examined to determine whether these values could be considered important (e.g. is a difference of one point an important difference between the desired and actual levels?). Overall, the nurses expressed that they wanted to function at one level of functioning higher than they currently were. This may not seem like much however when reviewing the descriptions of proficient verses expert, there is a clear difference in the level of functioning. Considering yourself proficient and desiring to be an expert is a big difference as per their definitions. Per Benner's Stages of Clinical Competence (Benner, 1984):

The Proficient nurse perceives situations as wholes rather than in terms of chopped up parts or aspects. Proficient nurses understand a situation as a whole because they perceive its meaning in terms of long-term goals. The Proficient nurse learns from experience what typical events to expect in a given situation and how plans need to be modified in response to these events. The Proficient nurse can now recognize when the expected normal picture does not materialize. This holistic understanding improves the Proficient nurse's decision-making; it becomes less labored because the nurse now has a perspective on which of the many existing attributes and aspects in the present situation are the important ones.

The Expert nurse has an intuitive grasp of each situation and zeroes in on the accurate region of the problem without wasteful consideration of a large range of unfruitful, alternative diagnoses and solutions. The Expert operates from a deep understanding of the total situation. His/her performance becomes fluid, flexible, and highly proficient. Highly skilled analytic ability is necessary for those situations with which the nurse has had no previous experience.

Based on these definitions, there is a clear difference in being proficient and expert. The nurses in this study clearly expressed a desire to be working at higher levels of proficiency across a range of activities. With the rapid changes occurring within healthcare, it is not surprising that nurses desire for continuing education to updating their knowledge and maintain their competency.

In the CNA Framework for the Practice of Registered Nurses (2015) it is recognised that formal and informal learning can be part of moving from a level of novice to expert. They state that RNs can develop expertise in their chosen area of practice by self-learning, post-RN specialty education programs and specialty certification, mentorship programs, advanced academic education and best practice guidelines. The only formal education program available for the

Canadian nurses is the completion of the certificate of the US Dermatology Association. The CNA framework further states that standards and competencies have been developed for most of the nursing specialties and that the Canadian Association of Schools of Nursing (CASN) has added specialties to their growing list. Currently, there is no specific training for nursing specialists nor is it listed on the CASNs list.

Nurses responded that they wanted to be functioning at expert levels in five of the six domains of the questionnaire and for almost all activities in the sixth domain **(***Therapeutic Interventions***).** This clearly represents their desire to excel in their role. The activity in which the nurses most wanted to increased their skill and knowledge level the most was in performing chemical/mechanical debridement of wounds. The ability of dermatology nurses to be more active in wound care was not completely surprising as this was shared during personal communications with the nurses when the activity was identified to be an activity in the questionnaire. Traditionally, wound care has been a specialty area located and managed on its own in the hospital settings, and not blended with the dermatology nurse's role. A review by the Ontario Ministry of Health and Long-Term Care (MOHLTC) noted that the treatment approach provided by a "specialist nurse-led multidisciplinary team" was effective in reducing wound healing times by eight weeks and decreasing treatment costs by about $18,000 per person (Browne, Birch, & Thabane, 2012). Wound Care Alliance Canada estimates (2012) that adopting nursing best practices in wound care could result in annual savings of $390 million (CNA, 2012). Wound care is clearly an area that is generating some interest amongst nursing, government and professional associations.

After wound care, tele dermatology with rural areas was the next activity that the nurses wanted to increase their skill and knowledge level of. This highlights an important area that nurses

want to become more involved resulting in positive outcomes for dermatology patients i.e. greater access to care. Nurses also expressed that they wanted to have more knowledge and skill in performing skin examinations which is another area discussed by Lawton and Timmons, 2005 as an area for increasing dermatology nursing function.

Nurse prescribing was identified by Courtenay et al. (2007, 2011), Carey et al. (2009) and Stenner et al. (2009) as an activity conducted by dermatology nurses frequently and successfully within the UK. In this study, nurses were asked about their current and desired proficiency in prescribing topical treatments. In Canada, NPs have the authority to autonomously diagnose, order tests, and prescribe medications. Many provinces and territories have enhanced authority for RNs to dispense medications by delegated medical authority only (CNA, 2013). The CNA acknowledges that nurses (not specific to dermatology) are prescribing successfully in other countries with positive outcomes and that work is occurring that would enable RNs to autonomously prescribe more in Canada in the future. The CNA (2013) recognizes that extending prescribing authority to RNs will decrease wait times, improve health-care efficiencies and reduce the cost of health-care delivery.

The Ontario Government has announced that the MOHLTC are investigating implementing nurse prescribing privileges (Glauser, Pendharkar & Bournes, 2016). Many other provinces are also considering the possibility. Currently in Ontario, only licensed doctors and NPs can prescribe. It is thought that allowing RNs to prescribe would be beneficial to rural areas where there is less access to physicians and NPs. In busy clinics, it is felt that RN prescribing could allow for the physicians and NPs to focus more on complex cases while the RN focuses on more common less severe cases. A Counsel, appointment by the MOHLTC is examining three potential models of implementation. The first is independent prescribing where the nurse can diagnose and treat

certain conditions. This model is currently used, with limitations, in British Columbia. The second model is protocol based prescribing, like having medical directives. The final model is supplementary prescribing. In this model, the physician or NP comes up with a plan for the patient and the RN implements/treats according to the patient's plan (Glauser et al., 2016). The Ontario MOHLTC recognizes the value that RNs can provide by having prescribing privileges.

Lastly, the fact that the dermatology nurses identified barriers is a testament to the fact that nurses do want to improve their practices however have obstacles. Barriers such as lack of high quality educational programs in dermatology for nurses, lack of nurse billing codes for community nurses and resistance from health care administrators' associations, agencies must be addressed in order for their role to be optimized. Since the nurses have identified high quality educational programs as a barrier, the US Dermatology Nursing Association is clearly not meeting their needs for education. The conferences themselves are costly to attend since they require travel, lodging and a high currency exchange. These barriers could also perhaps be impacting the low number of nurses working in the field of dermatology in Canada. As per the RN Workforce Profile by Area of Responsibility (2010), there are 268,512 RNs in Canada. In this study, a total of 60 nurses completed the on-line questionnaire. Based on discussions with the lead of the Canadian Central/Western/Eastern chapters of the US Dermatology Nurses Association, it is felt that this is almost the total number or nurses working in dermatology in Canada. This is a very low amount considering the increasing demand for dermatology care.

5.3 How Do The Desired Knowledge And Skills From The Nurses Compare To The Desired Activity Level From the Dermatologist?

The Dermatologists that completed the survey were in the higher age range with 52.6% being over age 51. This is consistent with the CSPA (2012) in that most dermatologists are

reaching retirement age. The finding was also consistent with the 2006 Canadian Dermatology Association (CDA) Member Survey which had listed the median age as being 55 years. Its publication is titled 'The Amazing Vanishing Canadian Dermatologist'. The publication discusses the concern amongst the dermatology community of a shortage in dermatologists. The changing demographics of the Canadian baby boom generation is expected to have a major negative impact on the effectiveness of Canadian dermatology in the service of the Canadian population. The authors conclude that it is critically imperative for the specialty to adapt to the future of a shrinking workforce in the face of expanding demand for its services.

In one large meta-analysis, the mean response rate for 68 physician web-based surveys reported in 49 studies was 39.6% (Cook, Health & Thompson, 2001), which is much higher than the 12.6% in this study. Response rates have been found to increase when studies with physicians incorporate financial incentives, prize lottery, token nonmonetary incentives, gift cards, and/or reminders to help increase physician response rate. None of these incentives were incorporated into this study. While there was little missing data in the demographic questions, less than half (~ 8/19) skipped through the questions on the desired level of activities. Future studies with Dermatologists could incorporate financial incentives to help improve response rate.

Some of the challenges expressed by Dermatologists to working with nurses where lack of funding mechanism for dermatology nurses (55.6%), not needing their services (44.4 %), and not having enough training or experience (33.3%). Similarly, these were also identified by the nurses in this study as potential barriers to optimizing their role (lack of nurse billing codes for community nurses, resistance from dermatologists, and lack of high quality educational programs). In looking at the desired level of functioning that the Dermatologists have for nurses, most fell within the competent to expert range.

When comparing Dermatologist and nurse desired proficiency levels, overall, the nurses had self-rated that they wanted to be working at slightly higher levels that the Dermatologists desired although the differences were not significant between the two. This is positive in that both professions have similar opinions as to what nurses can be doing in the clinic and expectations for level of functioning. Having consistency in clarifying role functions is a step-in building interdisciplinary care. Clarifying role functions is just one of the six competency domains in the Canadian Interprofessional Health Collaborative (CIHC) (2010) competency framework essential for interprofessional collaborative practice. The other five are: interprofessional communication, patient/client/family /community-centred care team functioning, collaborative leadership, and interprofessional conflict resolution. Clarifying role functions is defined as the learners/practitioners understand their own role and the roles of those in other professions, and use this knowledge appropriately to establish and meet patient/client/family and community goals. The CNA also specifically recognises the importance of interprofessional collaboration as documented in their 2011 position statement. They recognise that interprofessional collaborative can be successful in improving patient flow with good results for the patient, the care providers and the health care system (CNA, 2011).

The importance of interprofessional collaborations was also identified in three reports on nurse optimization in Alberta (Besner et al. 2011, Primary Care Network, Rocky Mountain House, 2009, Oelke et al. 2012). Consideration should be given to ensure interprofessional collaboration and role clarification amongst other healthcare professionals as well as healthcare administrators.

In terms of implementation, NPs in Canada could be used as a parallel example. A study by Gould, Johnstone & Wasylkiw (2006) investigated the experiences of NPs one year after they

were first introduced in New Brunswick. The barriers that NPs experienced included acceptance (by patients and physicians), relationships with other professionals (e.g. physicians), and healthcare system issues (fee for service model). Overall the authors felt that territoriality and ill-defined roles were a culprit that needed to be addressed. The roll out of optimization of dermatology nurses can learn and build upon this similar type of implementation.

NPs are RNs that have additional graduate or post-graduate education and clinical practice experience. NPs are educated to autonomously diagnose, order and interpret diagnostic tests, prescribe treatment (including drugs) and perform specific procedures (CNA, 2017). The implementation could be similar in that it has a range of impacts on the healthcare system/structure/economics as well as in the relationships and integration with patients, physicians and other healthcare professionals. Being that there are an estimated 60 dermatology nurses across Canada currently compared with 2,486 NPs practicing in Canada in 2010 (Picard, 2012), the scale of the implementation would be smaller however lessons and experiences could be shared and used accordingly.

Each province would need to embrace the expanded role of dermatology nurses in part by providing a mechanism for financial reimbursement. Currently, nurses outside of the hospital are paid by the Dermatologist through research or funds from private practice. The dermatology nurses that are based in hospitals work on salary. For NPs, of the 2,486 in Canada in 2010, 1,482 work in Ontario. Quebec only has 64, while B.C. has 129 and Alberta 263 (Picard, 2012). The Yukon does not license NPs (Picard, 2012). Wide provincial variability is likely to occur in the role out of the optimized dermatology nurse role as well due to differing priorities and infrastructure.

Progress is continuously being made however in advancing their capabilities at a federal level. An article by St. Denis (2017), in Canadian Nurse mentioned that the government proposed to add NPs to the list of medical practitioners that can certify the impacts of impairments for Disability Tax Credit applicants (St. Denis, 2017). This was seen as a big accomplishment towards recognizing the profession and its capabilities.

As recently as June 22, 2017 the passage of Bill C-44 has allowed for changes to the Income Tax Act, Employment Insurance Act and Canada Labour Code specifically for NPs. Barriers have been removed that prevented NPs from working to their licensed scope of practice. Benefits are to have less duplication of services, lower health-care costs and fewer barriers to care for patients (CNA,2017). These recent changes in 2017 are thought to set precedent for similar improvements throughout all levels of government to expand the NP role. This trailblazing can only help dermatology nurses who are also looking to expand their role and take on further responsibilities.

In terms of dermatology nursing, to help further refine nursing tasks specifically, the British Dermatology Working Group's (2012) Dermatology Nursing Competencies document could be used as a guide to develop Canada's own competency framework. An experienced group of dermatology nurses had formed the British Dermatological Nursing Group who was tasked to develop the competency-based framework. Having a framework helps to outline evidence for learning and development and would help provide structure to the optimized role. As an early step towards optimizing the nurse's role, Canadians could similarly build a Group with Dermatology as well as nursing framework expertise.

5.4 Strengths

The strength of this study lies in the methodology. Being that there is little literature available, the gaps in knowledge were large. This was an exploratory study and much data was able to be obtained. The access to the three Canadian Chapters of the US Dermatology Association membership to distribute the survey (~62% response rate) as well as to the OMA membership of Dermatologists was of utmost importance in order to connect with the survey population. Having the nurses and dermatologist who could provide their input and experience into the development of the questionnaire was extremely valuable and provided the background needed to formulate a relevant questionnaire to address the research questions. While most of the data was quantitative, a few open-ended questions also allowed respondents to express and share some additional thoughts that may not have been covered in the question specifically.

5.5 Limitations

There were a small sample of Dermatologists that completed the survey. Nineteen in this study had entered the survey but only half completed the questions on the nurses desired level of functioning.

In the design of the electronic questionnaire, questions were not able to be set-up with a response being required in order to move to the next question. This was due to requirements of the Research Ethics Board of forcing subjects to answer questions they may feel uncomfortable answering. Thus, many Dermatologists skipped questions and almost half the data was missing. Due to the availability of the Ontario Medical Association e-mail blasts, reminders to the Dermatologist to complete the survey was not possible.

It is also postulated that perhaps the layout of the questionnaire influenced the nurse's responses to their current and desired level of functioning. Due to limitations with the Machform program, the columns for current and desired level of functioning could not all be on the same screen. The tables therefore had been separated with first nurses having completed the current level and then the desired level in a separate table lower in the questionnaire. Without having seen how they had rated their current knowledge and skill – perhaps the desired was not indicated as strongly. The questionnaire that was used was not validated or previously used in other studies.

Another limitation has to do with the nursing sample size. There is no published number on the number of nurses working in dermatology in Canada. Not all nurses are members of one of the three Canadian chapters of the US Dermatology Association. The number of 60 was provided by the leads of the chapters based on their membership and other non-member nurses they were aware of within their region. The populations in the study were also different, the Dermatologists being based in Ontario verses the nurses having representation across the country.

As the nurse respondents were self-evaluating their proficiency in activities – there is the potential for a response bias. The respondents may not have honestly answered the questions on their current proficiency level for fear of giving an inappropriate answer or for the results to show any delinquencies.

In terms of literature, there was very little evidence in Canada available on dermatology nursing. This is indicative of the lack of focus in this area. Most of the literature was therefore taken from other countries such as the US and UK.

5.6 Summary

In this chapter, we discussed the key results from the dermatology nurse and Dermatologist questionnaire. The study results overall found that dermatology nurses in Canada are working at competent to proficient levels in most activities however wish for increased education and desire to be working at more proficient levels. Some areas for further optimization of the role were identified. Recommendations for implementation of the optimized role are discussed. Key opinions from the Dermatologist results were identified as well as study strengths and limitations. The next chapter will conclude with a critical analysis of the overall study and implications.

Chapter Six: Conclusion

This final chapter will summarise the key findings, recommendations and impact of this study and conclude this thesis report. The two research questions as identified below have been answered in this study:

6.1 What Activities (Knowledge and Skills) Do Nurses Have To Practice In Dermatology In Canada?

The study results overall found that dermatology nurses in Canada are currently working at competent to proficient levels in most activities. The proficiency level was at a more novice level when the activity was more technical and required more training and specialization. Training is not currently or consistently provided. Further education could be provided through nursing colleges as well as in programs of continuous learning. Collaboration could be gained with the nursing colleges as well as with organizations such as the Registered Nurses Association of Ontario (RNAO). Certification within this specially could also be created through the CNA which has no programs currently available in dermatology. There is also no national Canadian Dermatology nursing association to unite the Canadian nurses. There are the three Chapters (western, central and eastern) each that are a chapter of the US Dermatology Nurses Association. A more unified national approach with Canadian goals and objectives would be of great value to drive the specialty forward, raise awareness and lobby for areas of similar interest such as educational and developmental opportunities.

6.2 What Activities (Knowledge And Skills) Do Nurses Desire To Be Proficient At To Function More Effectively In Their Role In Dermatology. How Does This Compare With The Knowledge, Skills And Proficiency That Dermatologists Think Nurses Should Have?

Consistent with the literature review, tele-dermatology, skin cancer screening, and prescribing treatments were identified as areas where the dermatology nurse's role could be optimized. Additionally, wound care was identified as an activity where the nurses would like to have increased knowledge and skill. Tailoring educational initiatives in these areas would benefit nurses as well as the patients who are increasing seeking treatment.

The Dermatologists surveyed desire that nurses are working at competent to proficient levels in all activities. Their responses did not vary significantly from those of the nurses. The responses recognized that lack of training is in issue along with a lack of funding mechanism to support dermatology nurses 'work.

6.3 Additional Recommendations

Recommendations for nurse optimization should consist of nursing practice, education and research. Government needs to be able to financially and structurally support an increased role for dermatology nurses, including identifying a funding mechanism for the nurses to be employed. A competency framework/guidelines/ practice standards can be drawn upon as best practices from other countries (e.g. UK) or specialties (e.g. NPs) to define and clarify the role and expectations. Additional frameworks such as the CIHC Competency Framework can be referenced to help with integration of the optimized activities within the Canadian healthcare setting. Having a well-defined and understood role to avoid any role ambiguity or turf protection (role clarification) and strong leadership and organisational support amongst all team members and establishing governance models is crucial.

With many decisions on healthcare funding having political ties, having lobby groups and strong voices from the dermatology nurse community help to push the agenda, policy and advocate for an optimized role and presence would be crucial. The Canadian Skin Patient Alliance, a national non-profit organization dedicated to advocate, educate and support patients with skin diseases, conditions and traumas would be a valuable partner. They provide education to patients however are also involved in advocacy and lobby to represent the patient voice. The data from this study will be shared with this organisation in the hopes that it provides value information and facts which are needed to argue for more funding and governance in this specialty area. The International Skin Care Nursing Group recognises the growing demand and need for nurses in the field of dermatology as well. Their mission is to represent dermatology nursing worldwide, advancing the profession and influencing health policies. While it seems much of their activity has been in developing countries, their partnership and alliance could help strengthen the justification for optimizing the nurse role in Canada.

Since so little has been done in Canada, there are endless opportunities to be explored in dermatology nursing. Some ideas for future research include: interviewing government officials or organizations on their thoughts and/or concerns with expanding the dermatologist nursing role and providing them with greater education; role clarification with Dermatologists (e.g. diagnosis of condition verses screening and follow-up, examining the need and role of a Nurse Practitioner/Advanced Practice Nurse, interviewing patients on their perceptions and experiences with optimized dermatology nursing activities, job satisfaction,/retention and turnover of nurse dermatologist, additional surveys with nurses to dive deeper into their desired activities and potential implications. Looking at the cost-effectiveness of an expanded nursing role would be valuable to quantify any potential savings to the health care system.

While barriers were examined in this publication, it would also be helpful to learn if there are any facilitators or enablers that the nurses feel would help advance their role. Future research could also focus on family healthcare teams which is part of primary care to see if nurses within these teams could be better equipment to manage dermatological conditions. Reliability testing could also be implemented in appropriate study methodologies.

With wait times on the rise, a shortage of dermatology healthcare professionals, greater demands for dermatological services, an aging population, and limited access all threatening the ability of patients to receive the medical care they need for skin problems or diseases, action must be taken (CSPA, 2012). Enhancing the role of nurses working in dermatology in Canada may help address this problem. Providing dermatology nurses with the education and training to excel initially and continually throughout their career is vital in optimizing their role. The results of this study provide preliminary data and background however more research and focus on this area is required to raise awareness, make a change in the nursing role and ultimately make a meaningful impact on patient access and care.

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Appendix A – Nurse Questionnaire

Nurse Demographics

Please answer the following questions about yourself and your background:

1. Indicate your sex: *male/female*
2. Your age category:

   20-30

   31-40

   41-50

   51-60

   61-70

   71+

3. How many years have you been practicing as a nurse in dermatology?

   Less than 1 year
   1-5 years
   6-10 years
   11-15 years
   16-20 years
   More than 20 years

4. What is the **HIGHEST LEVEL** of education you have achieved in **nursing**? Check only one.

   Diploma
   Baccalaureate
   Masters
   Doctorate

5. Do you primarily work in a community or in a hospital setting? *community/hospital?*

   a. If hospital – is it a teaching hospital? *yes/no*

6. Are you based in an urban or rural area? *urban/rural*

7. Have you obtained the dermatology nursing certificate from the US Dermatology Nurses Association? y*es/no*

8. Breakdown of time spent within the clinic conducting cosmetic, research and medical functions:

    % cosmetic

    % research,

    % medical

9. Within medical dermatology do you specialize within a certain area? *yes/no*

    a. *If yes: Moh's surgery/skin cancer*
    Light therapy
    Wound care
    *Other:*_____

Advanced Education

10. Should there be **advanced formal dermatology education** included within nursing school programs in Canada? *yes/no.*
    If yes any
    suggestion(s):_____
    _____

11. What is the method by which you receive most of your education currently?
    a. Hospital rounds
    b. Industry run programs
    c. Industry sales representatives
    d. Dermatology newspapers (e.g. Dermatology Times)
    e. Other:_____

12. How often do the dermatologist(s) you work with support and encourage you (could be financially or other) to further your education and advance your knowledge and skills?

    1=Never, 2=Rarely, 3-Sometimes, 4=Often, 5=Always

Other

13. In your opinion, do patients have to **wait** too long to seek the dermatology care that they need?

    yes/no/undecided

14. Do you feel nurses in dermatology in Canada are **recognized** for their contribution?

    yes/no/undecided

Dermatology Nursing Skills

For this next section, you will be asked about your **current** ability on a series of functions. This will provide us with a good picture of what activities dermatology nurses are currently involved in and at what proficiency level.

The second part of this section will ask you about the same activities but identify your **desired** level of functioning if given the opportunity, the education, the resources, etc. Before beginning, please read the following descriptions below f each of the proficiency levels.

The evaluation framework below is adapted from the Canadian Association of Nurses in Oncology Practice Standards (2006)[2] which was an adaptation from Haag-Heitman & Kramer (1998)[3], which is based on Benner's (1984)[4] "novice to expert" and Dreyfus'[5] (1986) model of skill acquisition is used for the assessment.

Novice

- Beginner with no experience
- You seek assistance in making clinical decisions
- You have minimal skills or practice in this area

Advanced Beginner

- You have limited exposure to clinical situations
- You are able to identify normal findings
- You are guided by what you need to do rather than by patient responses

Competent

- You have had varied exposure to many situations

- You are able to identify normal and abnormal findings
- You have an awareness of patient and family view points
- You are able to manage complex situations
- You are able to prioritize

Proficient

6 You have had extensive exposure in most situations
7 You are able to prioritize in response to changing situations
8 You are able to interpret the patient and family experience from a wider perspective

Expert

- You have had extensive exposure with deep understanding of the situations
- You are able to rapidly and consistency identify actual and potential assessment changes
- You are able to rapidly change priorities under all conditions
- You are able to keep personal values in perspective and therefore able to encourage and support patient and family choices

	Current Level					**Desired Level**				
Activity	Novice (0 experience)	Advanced Beginner	Competent	Proficient	Expert	Novice (0 experience)	Advanced Beginner	Competent	Proficient	Expert
CARING FOR THE PATIENT WITH A DERMATOLOGICAL CONDITION										
Telephone triage and patient counseling										
Assisting patients navigating through the Health Care System										
Developing a holistic treatment plan of care with the patient including awareness of emotional										

needs, psychological impact, cognitive and sensory impairment, customs and beliefs										
Monitoring symptoms and adverse events and the ability to make recommendations for treatment changes.										
Leading quality improvement initiatives										
PATIENT EDUCATION										
Educating patients on the skin condition/disease, identifying risk factors and co-morbidities and assessing how they may impact the individual										
Educating and counseling the patient in determining risks/ benefits of all treatment options, including complementary and behavioural therapies										
Educating and counseling patient on psychological/emotional distress, coping mechanisms.										
Ability to encourage empowerment and self-management. Educating on health promotion strategies and ability to develop, implement and evaluate strategies for health promotion with patients and the Community.										
THERAPEUTIC INTERVENTIONS										

Have a comprehensive knowledge and understanding of medications (first and second line) used to treat eczema, psoriasis, bullous skin disorders, severe drug eruptions, erythrodermic conditions, acute skin infections and infestations, cutaneous cancers and pre-cancerous lesions, acne, rosacea, leg ulcers and scalp conditions										
Using the hyfrecator (low-powered medical apparatus used in electrosurgery on conscious patients)										
Proficient delivery of treatment (eg. phototherapy, cryotherapy, intramuscular injections) according to medical directives										
Performing chemical/mechanical debridement of wounds										
Applying wound dressings, compression therapy.										
Administering intralesional steroid										
Performing an insertion/removing of a peripherally inserted central catheter (PICC) line										
Leg ulcer treatment and management										
Assisting with surgeries in Mohs (involves maintaining a clear surgical site,										

hemostasis and manipulating various surgical instruments)									
Using lasers									
Prescribing topical treatments									
Assessing treatment adherence									
DERMATOLOGICAL ASSESSMENT AND INVESTIGATION									
Bedside dopplers for measurement of ABI's									
Conducting assessments (e.g. (Psoriasis Area Severity Index) (PASI)or other standardized scales)									
Nurse-led clinics (having patient appointments and working independently to assess patients)									
Perform skin examinations and identification (e.g. benign vs. malignant lesions)									
Teledermatology with rural areas									
Diagnostic testing/specimen collection (e.g. KOH (potassium hydroxide), throat swabs)									
Obtaining and recording a complete medical history that includes current problems, health status, psychosocial status									
Performing skin biopsies									
UNDERPINNING KNOWLEDGE									
Knowledge of anatomy, physiology, and immunology of the skin and its									

appendages (eg. hair, nails, sweat glands and the sebaceous glands) and how it is impacted by skin disorders									
Interdisciplinary/interprofessional teaching									
PSYCHOLOGICAL IMPACT OF LIVING WITH A DERMATOLOGICAL CONDITION									
Having the knowledge, deep understanding and ability to reco psychosocial issues which impact dermatology patients and ability to incorporate into the plan of care									

Barriers to optimizing the nurse's role within dermatology

For the following questions, please indicate how much you feel each of the items is a barrier to optimizing the nurses' role within dermatology:

	Not a barrier	Somewhat a barrier	Moderate barrier	Extreme barrier
Lack of high quality educational programs in dermatology for nurses	1	2	3	4
Lack of a Canadian dermatology nursing association	1	2	3	4
Lack of CNA certification in dermatology	1	2	3	4
Lack of medical directives	1	2	3	4
Resistance from dermatologists (role conflict, financial loss, etc.)	1	2	3	4
Lack of nurse billing codes for community nurses	1	2	3	4
Resistance from health care administrators associations/ agencies	1	2	3	4
Other: please specify_____	1	2	3	4

Do you have any comments or experiences as a dermatology nurse that you would like to share?

_____

_____

Thank you very much for your time in completing this questionnaire!

Appendix B – Dermatologist Questionnaire

Demographics

Please answer the following questions about yourself and your background:

15. Indicate your gender: *male/female*

2) Your age category:

    20-30

    31-40

    41-50

    51-60

    61-70

    71+

3) How many years have you been practicing as a dermatologist?

    Less than 1 year
    1-5 years
    6-10 years
    11-15 years
    16-20 years
    More than 20 years

4) Do you primarily work in a community or in a hospital setting? *community/hospital?*

    a. If hospital – is it a teaching hospital? *yes/no*

5) Are you based in an urban or rural area? *urban/rural*

6) Breakdown of time spent within the clinic conducting cosmetic, research and medical functions:

    % cosmetic

% research

% medical

7) Have you ever hired a nurse? *yes/no*

If yes – were you able to retain them in you practice? yes/no

8) Do you work with nurses currently? *yes/no*

If no move to question #9.

8a) If yes, in which of the following settings do you work with nurses (check all that apply):

☐ *Community hospital*

☐ *Teaching hospital*

☐ *Clinic in the community*

☐ *Other:_____*

8b) Do nurses work mostly in medical dermatology, with cosmetics or in research?

☐ *Medical*

☐ *Cosmetic*

☐ *Research*

☐ *Other: _____*

Please skip question #9 and go to Dermatology Nursing Skills section.

---

9) If you don't work with nurses currently, why not? (*Check all that apply*):

☐ Lack of funding mechanism for dermatology nurses

☐ Not in need of their services

☐ Not confident in their abilities

☐ Previous bad experience

☐ They aren't trained or experienced enough with dermatological specific conditions

☐ Other: _____

10) Do you have any comments or experiences with dermatology nurses that you would like to share?

_____

_____

Thank you very much for your time in completing this questionnaire!

Dermatology Nursing Skills

This section will ask you as a Dermatologist, what is the **desired** level of functioning you feel nurses could have if given the opportunities, the education, the resources, etc. to optimize their role. Before beginning, please read the following descriptions below each of the proficiency levels.

The evaluation framework below is adapted from the Canadian Association of Nurses in Oncology Practice Standards (2006)[2] which was an adaptation from Haag-Heitman & Kramer (1998)[3], which is based on Benner's (1984)[4] "novice to expert" and Dreyfus'[5] (1986) model of skill acquisition is used for the assessment.

Novice

- Beginner with no experience
- They seek assistance in making clinical decisions
- Have minimal skills or practice in this area

Advanced Beginner

- Have limited exposure to clinical situations
- Are able to identify normal findings
- Are guided by what they need to do rather than by patient responses

Competent

- Have had varied exposure to many situations
- Are able to identify normal and abnormal findings
- Have an awareness of patient and family view points
- Are able to manage complex situations
- Are able to prioritize

Proficient

9 Have had extensive exposure in most situations
10 Are able to prioritize in response to changing situations
11 Are able to interpret the patient and family experience from a wider perspective

Expert

- Have had extensive exposure with deep understanding of the situations
- Are able to rapidly and consistently identify actual and potential assessment changes
- Are able to rapidly change priorities under all conditions
- Are able to keep personal values in perspective and therefore able to encourage and support patient and family choices

	Desired Level for Nurses to be Functioning				
Activity	Novice (0 experience)	Advanced Beginner	Competent	Proficient	Expert
CARING FOR THE PATIENT WITH A DERMATOLOGICAL CONDITION					
Telephone triage and patient counseling					
Assisting patients navigating through the Health Care System					
Developing a holistic treatment plan of care with the patient including					

awareness of emotional needs, psychological impact, cognitive and sensory impairment, customs and beliefs					
Monitoring symptoms and adverse events and the ability to make recommendations for treatment changes.					
Leading quality improvement initiatives					
PATIENT EDUCATION					
Educating patients on the skin condition/disease, identifying risk factors and co-morbidities and assessing how they may impact the individual					
Educating and counseling the patient in determining risks/ benefits of all treatment options, including complementary and behavioural therapies					
Educating and counseling patient on psychological/emotional distress, coping mechanisms.					
Ability to encourage empowerment and self-management. Educating on health promotion strategies and ability to develop, implement and evaluate strategies for health promotion with patients and the community.					
THERAPEUTIC INTERVENTIONS					
Have a comprehensive knowledge and understanding of medications (first and second line) used to treat eczema, psoriasis, bullous skin disorders, severe drug eruptions, erythrodermic					

conditions, acute skin infections and infestations, cutaneous cancers and pre-cancerous lesions, acne, rosacea, leg ulcers and scalp conditions					
Using the hyfrecator (low-powered medical apparatus used in electrosurgery on conscious patients)					
Proficient delivery of treatment (e.g. phototherapy, cryotherapy, intramuscular injections) according to medical directives					
Performing chemical/mechanical debridement of wounds					
Applying wound dressings, compression therapy.					
Administering intralesional steroid					
Performing an insertion/removing of a peripherally inserted central catheter (PICC) line					
Leg ulcer treatment and management					
Assisting with surgeries in Mohs (involves maintaining a clear surgical site, hemostasis and manipulating various surgical instruments)					
Using lasers					
Prescribing topical treatments					
Assessing treatment adherence					
DERMATOLOGICAL ASSESSMENT AND INVESTIGATION					
Bedside dopplers for measurement of ABI's					
Conducting assessments (e.g. (Psoriasis Area Severity Index) (PASI)or other standardized scales)					

Nurse-led clinics (having patient appointments and working independently to assess patients)					
Perform skin examinations and identification (e.g. benign vs. malignant lesions)					
Teledermatology with rural areas					
Diagnostic testing/specimen collection (e.g. KOH (potassium hydroxide), throat swabs)					
Obtaining and recording a complete medical history that includes current problems, health status, psychosocial status					
Performing skin biopsies					
UNDERPINNING KNOWLEDGE					
Knowledge of anatomy, physiology, and immunology of the skin and its appendages (e.g. hair, nails, sweat glands and the sebaceous glands) and how it is impacted by skin disorders					
Interdisciplinary/interprofessional teaching					
PSYCHOLOGICAL IMPACT OF LIVING WITH A DERMATOLOGICAL CONDITION					
Having the knowledge, deep understanding and ability to recognise psychosocial issues which impact dermatology patients and the ability to incorporate into the plan of care					

Thank you very much for your time in completing this questionnaire!

Appendix C – Ethics Approval

UNIVERSITY OF ONTARIO INSTITUTE OF TECHNOLOGY

RESEARCH ETHICS BOARD
OFFICE OF RESEARCH SERVICES

Date: June 20th, 2014

To: Kimberley Robin Andrew (Graduate PI), Manon Lemonde (Supervisor)

From: Bill Goodman, REB Chair

REB File #: 13-116

Project Title: Identification and optimization of clinical role functions within dermatology nursing in Canada

DECISION: APPROVED

EXPIRY: June 20th, 2015

The University of Ontario, Institute of Technology Research Ethics Board (REB) has reviewed and approved the above research proposal. This application has been reviewed to ensure compliance with the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2) and the UOIT Research Ethics Policy and Procedures.

Please note that the (REB) requires that you adhere to the protocol as last reviewed and approved by the REB.

Always quote your REB file number on all future correspondence.

Please familiarize yourself with the following forms as they may become of use to you.

- **Change Request Form**: any changes or modifications (i.e. adding a Co-PI or a change in methodology) must be approved by the REB through the completion of a change request form before implemented.
- **Adverse or unexpected Events Form**: events must be reported to the REB within 72 hours after the event occurred with an indication of how these events affect (in the view of the Principal Investigator) the safety of the participants and the continuation of the protocol. (I.e. un-anticipated or un-mitigated physical, social or psychological harm to a participant).
- **Research Project Completion Form**: must be completed when the research study has completed.
- **Renewal Request Form**: any project that exceeds the original approval period must receive approval by the REB through the completion of a Renewal Request Form before the expiry date has passed.

All Forms can be found at http://research.uoit.ca/faculty/policies-procedures-forms.php.

University of Ontario, Institute of Technology
2000 Simcoe Street North, Oshawa ON, L1H 7K4
PHONE: (905) 721-8668, ext. 3693

Appendix D – Ethics Renewal

UNIVERSITY OF ONTARIO INSTITUTE OF TECHNOLOGY

RESEARCH ETHICS BOARD
OFFICE OF RESEARCH SERVICES

Date: July 16, 2015

To: Kimberly Robin Andrew (PI), Manon Lemonde (Supervisor)

From: Elisa Beverley, Ethics & Compliance Officer (Acting)

REB File #: 13-116

Project Title: Identification and optimization of clinical role functions within dermatology nursing in Canada

DECISION: RENEWAL REQUEST APPROVED

CURRENT EXPIRY: June 1, 2016

NOTE: Notwithstanding this approval, you are required to obtain/submit, to UOIT's Research Ethics Board, any relevant approvals/permissions required, prior to commencement of this project.

The University of Ontario, Institute of Technology Research Ethics Board (REB) has reviewed and approved the above research proposal. This application has been reviewed to ensure compliance with the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2 (2014)) and the UOIT Research Ethics Policy and Procedures.

Please note that the (REB) requires that you adhere to the protocol as last reviewed and approved by the REB.

Always quote your REB file number on all future correspondence.

CONTINUING REVIEW REQUIREMENTS:

- **Renewal Request Form:** All approved projects are subject to an annual renewal process. Projects must be renewed or closed by the expiry date indicated above ("Current Expiry"). **Projects that are not renewed within 30 days of the expiry date will be automatically suspended by the REB; and projects that are not renewed within 60 days of the expiry date will be automatically closed by the REB.** Once your file has been formally closed, a new submission will be required to open a new file.

- **Change Request Form:** any changes or modifications (i.e. adding a Co-PI or a change in methodology) must be approved by the REB through the completion of a change request form before implemented.

- **Adverse or unexpected Events Form:** events must be reported to the REB within 72 hours after the event occurred with an indication of how these events affect (in the view of the Principal Investigator) the safety of the participants and the continuation of the protocol. (I.e. un-anticipated or un-mitigated physical, social or psychological harm to a participant).

- **Research Project Completion Form:** must be completed when the research study has completed.

All Forms can be found at http://research.uoit.ca/faculty/policies-procedures-forms.php.

University of Ontario, Institute of Technology
2000 Simcoe Street North, Oshawa ON, L1H 7K4
PHONE: (905) 721-8668, ext. 3693
Version: Jan. 2015

Appendix E– Nurse Invitation and Consent Form

With dermatologist wait times and costs on the rise, a shortage of healthcare professionals, greater demands for services, an aging population, and limited access all threaten the ability of Canadian patients to receive the dermatological care they need. Nurses have an important role in the prevention and delivery of health care services.

The purpose of this study is to understand the characteristics of dermatology nurses in Canada as well as to identify their current and desired clinical role functions. Other objectives are to identify opportunities for further education and development. Barriers to optimising the nurse's role within dermatology will also be explored.

There are no right or wrong answers to any of the questions. Different hospital and clinics promote different nursing activities.

Research Team

- **Robin Andrew**, MHS candidate, Faculty of Health Sciences, University of Ontario Institute of Technology

- **Manon Lemonde,** RN, PhD., Associate Professor, Faculty of Health Sciences, University of Ontario Institute of Technology

Privacy and Confidentiality

The Research Ethics Board at the University of Ontario Institute of Technology (UOIT) has reviewed and approved this study (REB File # 13-116*).* Your participation in this study is purely voluntary and as such, you may choose not to answer any item you wish and skip to

the next question. You may also withdraw from the questionnaire at any time simply by closing the browser window or clicking on the "exit survey" link. However, once data is submitted, it can no longer be withdrawn due to the anonymity of the questionnaire. By participating in this survey, you are not waiving any of your legal rights.

Nobody will know whether you have participated or not and your results will be kept anonymous. Your results will be reported in summary form so that no individuals can be identified. No data will be stored or reported which will link your responses to your contact information.

The data will be stored in a locked file on the Principal Investigator's password-protected computer during the study. Data will be destroyed after seven years (May 2021) by erasing the electronic files.

Study Method

The study is conducted via an online questionnaire using MachForm. The questionnaire will take approximately 10-12 minutes to complete. The study results will be summarised and submitted to a scientific journal for publication.

If you have any questions regarding this research you may contact:

Robin Andrew
kimberly.andrew@uoit.ca
Phone: 416-452-8447

If you have any questions regarding your rights as a participant, please contact the Ethics and Compliance Officer at UOIT:

The Ethics and Compliance Officer

University of Ontario Institute of Technology

E-mail: compliance@uoit.ca

Phone: 905-721-8668 ext. 3693

To print this consent form hit CTRL plus P

By clicking on the link to the questionnaire you consent to participate in this study:

http://uoit.ca/forms/online/view.php?id=63490

Thank you for participating!

Appendix F – Dermatologist Invitation and Consent Form

With dermatologist wait times and costs on the rise, a shortage of healthcare professionals, greater demands for services, an aging population, and limited access all threaten the ability of Canadian patients to receive the dermatological care they need. Nurses have an important role in the prevention and delivery of health care services.

The purpose of this study is to understand the characteristics of dermatology nurses in Canada as well as to identify their current and desired clinical role functions. Other objectives are to identify opportunities for further education and development. Barriers to optimising the nurse's role within dermatology will also be explored.

There are no right or wrong answers to any of the questions. Different hospital and clinics promote different nursing activities.

Research Team

- **Robin Andrew**, MHS candidate, Faculty of Health Sciences, University of Ontario Institute of Technology

- **Manon Lemonde,** RN, PhD., Associate Professor, Faculty of Health Sciences, University of Ontario Institute of Technology

Privacy and Confidentiality

The Research Ethics Board at the University of Ontario Institute of Technology (UOIT) has reviewed and approved this study (REB File # 13-116). Your participation in this study is purely voluntary and as such, you may choose not to answer any item you wish and skip to the next question. You may also withdraw from the questionnaire at any time simply by closing the browser window or clicking on the "exit survey" link. However, once data is

submitted, it can no longer be withdrawn due to the anonymity of the questionnaire. By participating in this survey, you are not waiving any of your legal rights.

Nobody will know whether you have participated or not and your results will be kept anonymous. Your results will be reported in summary form so that no individuals can be identified. No data will be stored or reported which will link your responses to your contact information.

The data will be stored in a locked file on the Principal Investigator's password-protected computer during the study. Data will be destroyed after seven years (May 2021) by erasing the electronic files.

Study Method

The study is conducted via an online questionnaire using MachForm. The questionnaire will take approximately 5-10 minutes to complete. The study results will be summarised and submitted to a scientific journal for publication.

If you have any questions regarding this research you may contact:

Robin Andrew
kimberly.andrew@uoit.ca
Phone: 416-452-8447

If you have any questions regarding your rights as a participant, please contact the Ethics and Compliance Officer at UOIT:

The Ethics and Compliance Officer

University of Ontario Institute of Technology

E-mail: compliance@uoit.ca

Phone: 905-721-8668 ext. 3693

To print this consent form hit CTRL plus P

By clicking on the link to the questionnaire you consent to participate in this study:

http://uoit.ca/forms/online/view.php?id=191901

Thank you for participating!

Appendix G: Nurse Educational Experiences, Opportunities and Views on Wait Times and Nurse Recognition

Educational Experiences, Opportunities and Views	
Question	**Response**
Should there be advanced formal dermatology education included within nursing school programs in Canada?	
Yes	26/37 (70.3%)
No	9/37 (24.3%)
If yes, any suggestions?	Assessment of skin cancers and diseases and their related treatments. Core medial dermatology course Dermatology education should be offered as a separate module within nursing programs. This should be a structured course syllabus offered, similarly to the UK where most of my Dermatology experience has been. Canada needs to look at programs offered in the UK so Dermatology nursing can evolve and become more recognized as a specialist and key nursing role. In particular for those practicing in a more rural area where Dermatologists are few and far between. Dermatology is generally discussed in nursing programs. Not a great deal of emphasis goes in skin conditions unless in an overall assessment of patients in the hospital. If programs do not have the space to integrate a specific dermatology course within the 4 year program, then they should have a course available after degree to take for those in need of it. I believe that it is really important as a nurse to know the basis of dermatology, whether you work in a hospital, nursing home, in the community, you will see a lot of patient with dermatological issues. An easy way to get some knowledge quickly would be to do a "stage" for 1 to 2 weeks in dermatology. I think a course would be sufficient. When I went to nursing school I did a maternity course, a mental health course. Nothing remotely related to derm

	It should be an option if someone wishes to do this. Maybe as an added certificate that can be obtained post grad Nurse practionner certificates Recognition by the College of Nurses of Ontario There should be a dermatology nursing program in all Colleges and University Under the physical assessment part of education there should be a more extensive course or for those nurses wishing advanced training in dermatology there should be an elective they can choose in the curriculum Yes a basics in dermatology would be helpful Basic skin care, developmental stages photo damage and aging wound process and healing dermatitis (so many forms - hand washing, eczema, contact, irritant) skin of colour Complete patient skin examinations Currently, there is no formal training in Dermatology in nursing school; this is what the students tell me. You learn a little about the skin in Anatomy and Physiology. Formal education may bring more attention to the nurse's role in dermatology. Have it as one of the options like psych nursing or pediatrics but specializing in the last year as dermatology Yes & no, there is so many aspects of Dermatology that you are constantly learning and things are constantly evolving. Formal training I agree with when one uses machines like lasers and light therapies just to certify that they are being used correctly. Yes into further increasing your education in the dermatology field. Psoriasis, Psoriatic Arthritis, Atopic Dermatitis, Onychomycosis, Rosacea, Acne

What is the method by which you receive most of your education currently? Hospital rounds Industry run programs Industry sales representatives Dermatology newspapers (e.g. Dermatology Times) Other:	 4/37 (10.8%) 13/37 (35.1%) 3/ 37 (8.1 %) 3/ 37 (8.1 %) 7/37 (18.9%) Dermatologist training 2/37 (5.4%) Involvement with research 2/37 (5.4%) Internet 1/37 (2.7%) Attend meetings 6/37 (16.2%) Conference (e.g. USA DNA) 1/37 (2.7%) Self-learning
How often do the dermatologist(s) you work with support and encourage you (could be financially or other) to further your education and advance your knowledge and skills? 1=Never 2=Rarely 3-Sometimes 4=Often 5=Always No data	 0 7/37 (18.9%) 7/37 (18.9%) 13/37 (35.1%) 7/37 (18.9%) 3/37 (8.1%)
In your opinion, do patients have to wait too long to seek the dermatology care that they need? Yes No Undecided No data	 28/37 (75.7%) 3/37 (8.1%) 4/37 (10.8%) 2/37 (5.4%)
Do you feel nurses in dermatology in Canada are recognized for their contribution? Yes No Undecided	 2/37 (5.4%) 26/37 (70.3%) 6/37 (16.2%) 3/37 (8.1%)

Appendix H: Nurse Reported Current Level of Functioning

	Current Level of Functioning					
Activity	**No Data**	**Novice**	**Advanced Beginner**	**Competent**	**Proficient**	**Expert**
CARING FOR THE PATIENT WITH A DERMATOLOGICAL CONDITION						
Telephone triage and patient counseling	2/37 (5.4%)	1/37 (2.7%)	2/37 (5.4%)	6/37 (16.2%)	17/37 (45.9%)	9/37 (24.3%)
Assisting patients navigating through the Health Care System	2/37 (5.4%)	1/37 (2.7%)	4/37 (10.8%)	13/37 (35.1%)	13/37 (35.1%)	4/37 (10.8%)
Developing a holistic treatment plan of care with the patient including awareness of emotional needs, psychological impact, cognitive and sensory impairment, customs and beliefs	2/37 (5.4%)	1/37 (2.7%)	3/37 (8.1%)	9/37 (24.3%)	14/37 (37.8%)	8/37 (21.6%)
Monitoring symptoms and adverse events and the ability to make recommendations for treatment changes.	2/37 (5.4%)	1/37 (2.7%)	1/37 (2.7%)	10/37 (27.0%)	15/37 (40.5%)	8/37 (21.6%)
Leading quality improvement initiatives	2/37 (5.4%)	2/37 (5.4%)	2/37 (5.4%)	12/37 (32.4%)	14/37 (37.8%)	5/37 (13.5%)
PATIENT EDUCATION						
Educating patients on the skin condition/disease, identifying risk factors and co-morbidities and assessing how they may impact the individual	2/37 (5.4%)	1/37 (2.7%)	3/37 (8.1%)	9/37 (24.3%)	16/37 (43.2%)	6/37 (16.2%)
Educating and counseling the patient in determining risks/ benefits of all treatment options, including complementary and behavioural therapies	2/37 (5.4%)		4/37 (10.8%)	10/37 (27.0%)	18/37 (48.6%)	3/37 (8.1%)
Educating and counseling patient on psychological/emotional distress, coping mechanisms.	3/37 (8.1%)	2/37 (5.4%)	1/37 (2.7%)	13/37 (35.1%)	13/37 (35.1%)	5/37 (13.5%)
Ability to encourage empowerment and self-management. Educating on health promotion strategies and ability to develop, implement and evaluate strategies for health	2/37 (5.4%)		5/37 (13.5%)	15/37 (40.5%)	9/37 (24.3%)	6/37 (16.2%)

promotion with patients and the Community.						
THERAPEUTIC INTERVENTIONS						
Have a comprehensive knowledge and understanding of medications (first and second line) used to treat eczema, psoriasis, bullous skin disorders, severe drug eruptions, erythrodermic conditions, acute skin infections and infestations, cutaneous cancers and pre-cancerous lesions, acne, rosacea, leg ulcers and scalp conditions	2/37 (5.4%)	2/37 (5.4%)	8/37 (21.6%)	11/37 (29.7%)	13/37 (35.1%)	1/37 (2.7%)
Using the hyfrecator (low-powered medical apparatus used in electrosurgery on conscious patients)	2/37 (5.4%)	21/37 (56.8%)	2/37 (5.4%)	6/37 (16.2%)	5/37 (13.5%)	1/37 (2.7%)
Proficient delivery of treatment (eg. phototherapy, cryotherapy, intramuscular injections) according to medical directives	3/37 (8.1%)	3/37 (8.1%)	3/37 (8.1%)	8/37 (21.6%)	9/37 (24.3%)	11/37 (29.7%)
Performing chemical/mechanical debridement of wounds	3/37 (8.1%)	23/37 (62.2%)	7/37 (18.9%)	4/37 (10.8%)		
Applying wound dressings, compression therapy.	2/37 (5.4%)	4/37 (10.8%)	2/37 (5.4%)	9/37 (24.3%)	14/37 (37.8%)	6/37 (16.2%)
Administering intralesional steroid	3/37 (8.1%)	17/37 (45.9%)	4/37 (10.8%)	4/37 (10.8%)	2/37 (5.4%)	7/37 (18.9%)
Performing an insertion/removing of a peripherally inserted central catheter (PICC) line	3/37 (8.1%)	25/37 (67.6%)	4/37 (10.8%)	4/37 (10.8%)	1/37 (2.7%)	
Leg ulcer treatment and management	2/37 (5.4%)	8/37 (21.6%)	6/37 (16.2%)	11/37 (29.7%)	5/37 (13.5%)	5/37 (13.5%)
Assisting with surgeries in Mohs (involves maintaining a clear surgical site, hemostasis and manipulating various surgical instruments)	4/37 (10.8%)	18/37 (48.6%)	3/37 (8.1%)	3/37 (8.1%)	5/37 (13.5%)	4/37 (10.8%)
Using lasers	3/37 (8.1%)	28/37 (75.7%)	1/37 (2.7%)	3/37 (8.1%)	1/37 (2.7%)	1/37 (2.7%)
Prescribing topical treatments	3/37 (8.1%)	14/37 (37.8%)	8/37 (21.6%)	7/37 (18.9%)	4/37 (10.8%)	1/37 (2.7%)

Assessing treatment adherence	2/37 (5.4%)	1/37 (2.7%)	4/37 (10.8%)	12/37 (32.4%)	12/37 (32.4%)	6/37 (16.2%)
DERMATOLOGICAL ASSESSMENT AND INVESTIGATION						
Bedside dopplers for measurement of ABI's	2/37 (5.4%)	22/37 (59.5%)	2/37 (5.4%)	6/37 (16.2%)	3/37 (8.1%)	2/37 (5.4%)
Conducting assessments (e.g. (Psoriasis Area Severity Index) (PASI)or other standardized scales)	3/37 (8.1%)	6/37 (16.2%)	4/37 (10.8%)	4/37 (10.8%)	12/37 (32.4%)	8/37 (21.6%)
Nurse-led clinics (having patient appointments and working independently to assess patients)	3/37 (8.1%)	6/37 (16.2%)	4/37 (10.8%)	9/37 (24.3%)	11/37 (29.7%)	4/37 (10.8%)
Perform skin examinations and identification (e.g. benign vs. malignant lesions)	3/37 (8.1%)	6/37 (16.2%)	9/37 (24.3%)	9/37 (24.3%)	9/37 (24.3%)	1/37 (2.7%)
Teledermatology with rural areas	2/37 (5.4%)	29/37 (78.4%)	4/37 (10.8%)		1/37 (2.7%)	1/37 (2.7%)
Diagnostic testing/specimen collection (e.g. KOH (potassium hydroxide), throat swabs)	3/37 (8.1%)	8/37 (21.6%)	7/37 (18.9%)	7/37 (18.9%)	5/37 (13.5%)	7/37 (18.9%)
Obtaining and recording a complete medical history that includes current problems, health status, psychosocial status	3/37 (8.1%)		4/37 (10.8%)	8/37 (21.6%)	14/37 (37.8%)	8/37 (21.6%)
Performing skin biopsies	3/37 (8.1%)	22/37 (59.5h%)	4/37 (10.8%)	1/37 (2.7%)	5/37 (13.5%)	2/37 (5.4%)
UNDERPINNING KNOWLEDGE						
Knowledge of anatomy, physiology, and immunology of the skin and its appendages (eg. hair, nails, sweat glands and the sebaceous glands) and how it is impacted by skin disorders	2/37 (5.4%)	1/37 (2.7%)	6/37 (16.2%)	17/37 (45.9%)	11/37 (29.7%)	
Interdisciplinary/interprofessional teaching	2/37 (5.4%)	4/37 (10.8%)	7/37 (18.9%)	13/37 (35.1%)	11/37 (29.7%)	
PSYCHOLOGICAL IMPACT OF LIVING WITH A DERMATOLOGICAL CONDITION						
Having the knowledge, deep understanding and ability to recognise psychosocial issues which impact dermatology patients and the ability to incorporate into the plan of care	3/37 (8.1%)	2/37 (5.4%)	2/37 (5.4%)	12/37 (32.4%)	15/37 (40.5%)	3/37 (8.1%)

Appendix I – Nurse Desired Level of Functioning

	Nurse Desired Level of Functioning					
Activity	**No Data**	**Novice**	**Advanced Beginner**	**Competent**	**Proficient**	**Expert**
CARING FOR THE PATIENT WITH A DERMATOLOGICAL CONDITION						
Telephone triage and patient counseling	3/37 (8.1%)			1/37 (2.7%)	15/37 (40.5%)	18/37 (48.6%)
Assisting patients navigating through the Health Care System	2/37 (5.4%)			2/37 (5.4%)	13/37 (35.1%)	20/37 (54.1%)
Developing a holistic treatment plan of care with the patient including awareness of emotional needs, psychological impact, cognitive and sensory impairment, customs and beliefs	2/37 (5.4%)			2/37 (5.4%)	13/37 (35.1%)	20/37 (54.1%)
Monitoring symptoms and adverse events and the ability to make recommendations for treatment changes.	2/37 (5.4%)				13/37 (35.1%)	22/37 (59.5%)
Leading quality improvement initiatives	2/37 (5.4%)			2/37 (5.4%)	14/37 (37.8%)	19/37 (51.4%)
PATIENT EDUCATION						
Educating patients on the skin condition/disease, identifying risk factors and co-morbidities and assessing how they may impact the individual	2/37 (5.4%)			3/37 (8.1%)	11/37 (29.7%)	21/37 (56.8%)
Educating and counseling the patient in determining risks/ benefits of all treatment options, including complementary and behavioural therapies	2/37 (5.4%)			3/37 (8.1%)	11/37 (29.7%)	21/37 (56.8%)
Educating and counseling patient on psychological/emotional distress, coping mechanisms.	3/37 (8.1%)			3/37 (8.1%)	13/37 (35.1%)	18/37 (48.6%)
Ability to encourage empowerment and self-management. Educating on health promotion strategies and ability to develop, implement and evaluate strategies for health	2/37 (5.4%)			4/37 (10.8%)	12/37 (32.4%)	19/37 (51.4%)

promotion with patients and the Community.						
THERAPEUTIC INTERVENTIONS						
Have a comprehensive knowledge and understanding of medications (first and second line) used to treat eczema, psoriasis, bullous skin disorders, severe drug eruptions, erythrodermic conditions, acute skin infections and infestations, cutaneous cancers and pre-cancerous lesions, acne, rosacea, leg ulcers and scalp conditions	3/37 (8.1%)		1/37 (2.7%)	4/37 (10.8%)	11/37 (29.7%)	18/37 (48.6%)
Using the hyfrecator (low-powered medical apparatus used in electrosurgery on conscious patients)	2/37 (5.4%)	7/37 (18.9%)	2/37 (5.4%)	8/37 (21.6%)	10/37 (27.0%)	8/37 (21.6%)
Proficient delivery of treatment (eg. phototherapy, cryotherapy, intramuscular injections) according to medical directives	4/37 (10.8%)		1/37 (2.7%)	4/37 (10.8%)	9/37 (24.3%)	19/37 (51.4%)
Performing chemical/mechanical debridement of wounds	2/37 (5.4%)	4/37 (10.8%)	4/37 (10.8%)	5/37 (13.5%)	11/37 (29.7%)	11/37 (29.7%)
Applying wound dressings, compression therapy.	3/37 (8.1%)	2/37 (5.4%)	2/37 (5.4%)	2/37 (5.4%)	14/37 (37.8%)	14/37 (37.8%)
Administering intralesional steroid	6/37 (16.2%)	3/37 (8.1%)	1/37 (2.7%)	5/37 (13.5%)	10/37 (27.0%)	12/37 (32.4%)
Performing an insertion/removing of a peripherally inserted central catheter (PICC) line	4/37 (10.8%)	12/37 (32.4%)	6/37 (16.2%)	4/37 (10.8%)	4/37 (10.8%)	7/37 (18.9%)
Leg ulcer treatment and management	4/37 (10.8%)	4/37 (10.8%)	1/37 (2.7%)	5/37 (13.5%)	11/37 (29.7%)	12/37 (32.4%)
Assisting with surgeries in Mohs (involves maintaining a clear surgical site, hemostasis and manipulating various surgical instruments)	4/37 (10.8%)	6/37 (16.2%)	2/37 (5.4%)	7/37 (18.9%)	9/37 (24.3%)	9/37 (24.3%)
Using lasers	3/37 (8.1%)	10/37 (27.0%)	2/37 (5.4%)	6/37 (16.2%)	5/37 (13.5%)	11/37 (29.7%)

Prescribing topical treatments	4/37 (10.8 %)	5/37 (13.5%)		9/37 (24.3%)	7/37 (18.9%)	12/37 (32.4%)
Assessing treatment adherence	4/37 (10.8 %)			3/37 (8.1%)	13/37 (35.1%)	17/37 (45.9%)
DERMATOLOGICAL ASSESSMENT AND INVESTIGATION						
Bedside dopplers for measurement of ABI's	3/37 (8.1%)	6/37 (16.2%)	1/37 (2.7%)	8/37 (21.6%)	4/37 (10.8%)	15/37 (40.5%)
Conducting assessments (e.g. (Psoriasis Area Severity Index) (PASI)or other standardized scales)	3/37 (8.1%)			6/37 (16.2%)	7/37 (18.9%)	21/37 (56.8%)
Nurse-led clinics (having patient appointments and working independently to assess patients)	3/37 (8.1%)			5/37 (13.5%)	9/37 (24.3%)	20/37 (54.1%)
Perform skin examinations and identification (e.g. benign vs. malignant lesions)	3/37 (8.1%)			6/37 (16.2%)	10/37 (27.0%)	18/37 (48.6%)
Teledermatology with rural areas	3/37 (8.1%)	6/37 (16.2%)	5/37 (13.5%)	9/37 (24.3%)	4/37 (10.8%)	10/37 (27.0%)
Diagnostic testing/specimen collection (e.g. KOH (potassium hydroxide), throat swabs)	3/37 (8.1%)	3/37 (8.1%)		5/37 (13.5%)	10/37 (27.0%)	16/37 (43.2%)
Obtaining and recording a complete medical history that includes current problems, health status, psychosocial status	4/37 (10.8 %)			4/37 (10.8%)	9/37 (24.3%)	20/37 (54.1%)
Performing skin biopsies	4/37 (10.8 %)	8/37 (21.6%)	1/37 (2.7%)	6/37 (16.2%)	4/37 (10.8%)	14/37 (37.8%)
UNDERPINNING KNOWLEDGE						
Knowledge of anatomy, physiology, and immunology of the skin and its appendages (eg. hair, nails, sweat glands and the sebaceous glands) and how it is impacted by skin disorders	4/37 (10.8 %)			4/37 (10.8%)	12/37 (32.4%)	17/37 (45.9%)
Interdisciplinary/interprofessional teaching	3/37 (8.1%)			6/37 (16.2%)	14/37 (37.8%)	14/37 (37.8%)
PSYCHOLOGICAL IMPACT OF LIVING WITH A DERMATOLOGICAL CONDITION						

Having the knowledge, deep understanding and ability to recognise psychosocial issues which impact dermatology patients and the ability to incorporate into the plan of care	4/37 (10.8 %)			3/37 (8.1%)	13/37 (35.1%)	17/37 (45.9%)

Appendix J- Nurses Comments to Barriers to Optimising the Nurses Role

Other: please specify	Dermatologists in the community do not see the value of a nurse because they say they are too costly. They employ nurses to do procedures that make a lot of money such as research and cosmetic procedures. No formal training, poor respect from dermatologists, dermatologists feel threatened by our knowledge- lack of recognition for being certified college of nurses hospital policy various educational and professional abilities of nurses nurses not wanting to stretch their abilities Due to it being an educational teaching hospital most are done by medical students and residents, so the nurses are not able for the most part to take part in or do the procedures. Private clinics are allowed to do biopsies whereas the hospitals have standards where you may only do so many things , not all things.hierachy in order for hospitals to meet budget they are removing the Registered nurse in the clinics replacing with the RPN

Appendix K – Desired vs. Current Nurse Responses to Level of Functioning

Desired vs. Current Nurse Responses to Level of Functioning										
Activity	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**	**4**	**No Data**	**Average Difference Score**
CARING FOR THE PATIENT WITH A DERMATOLOGICAL CONDITION										
Telephone triage and patient counseling				18/37 (48.6 %)	12/37 (32.4 %)	2/37 (5.4 %)	2/37 (5.4 %)		3/37 (8.1 %)	0.6 (0.85)
Assisting patients navigating through the Health Care System				9/37 (24.3 %)	16/37 (43.2 %)	8/37 (21.6 %)	2/37 (5.4 %)		2/37 (5.4 %)	1.1 (0.85)
Developing a holistic treatment plan of care with the patient including awareness of emotional needs, psychological impact, cognitive and sensory impairment, customs and beliefs				12/37 (32.4 %)	19/37 (51.4 %)	3/37 (8.1 %)	1/37 (2.7 %)		2/37 (5.4 %)	0.8 (0.72)
Monitoring symptoms and adverse events and the ability to make recommendations for treatment changes.				12/37 (32.4 %)	19/37 (51.4 %)	3/37 (8.1 %)		1/37 (2.7 %)	2/37 (5.4 %)	0.8 (0.82)
Leading quality improvement initiatives				11/37 (29.7 %)	17/37 (45.9 %)	5/37 (13.5 %)	1/37 (2.7 %)	1/37 (2.7 %)	2/37 (5.4 %)	1.0 (0.92)
PATIENT EDUCATION										

Educating patients on the skin condition/disease, identifying risk factors and co-morbidities and assessing how they may impact the individual				12/37 (32.4 %)	19/37 (51.4 %)	2/37 (5.4 %)	1/37 (2.7 %)	1/37 (2.7 %)	2/37 (5.4 %)	0.9 (0.88)
Educating and counseling the patient in determining risks/ benefits of all treatment options, including complementary and behavioural therapies				10/37 (27.0 %)	20/37 (54.1 %)	2/37 (5.4 %)	3/37 (8.1 %)		2/37 (5.4 %)	0.9 (0.84)
Educating and counseling patient on psychological/emotiona l distress, coping mechanisms.				9/37 (24.3 %)	19/37 (51.4 %)	4/37 (10.8 %)		1/37 (2.7 %)	4/37 (10.8 %)	0.9 (0.83)
Ability to encourage empowerment and self-management. Educating on health promotion strategies and ability to develop, implement and evaluate strategies for health promotion with patients and the Community.				10/37 (27.0 %)	18/37 (48.6 %)	5/37 (13.5 %)	2/37 (5.4 %)		2/37 (5.4 %)	1.0 (0.82)
THERAPEUTIC INTERVENTIONS										
Have a comprehensive knowledge and understanding of			1/37 (2.7 %)	5/37 (13.5 %)	17/37 (45.9 %)	6/37 (16.2 %)	4/37 (10.8 %)	1/37 (2.7 %)	3/37 (8.1 %)	1.3 (1.06)

medications (first and second line) used to treat eczema, psoriasis, bullous skin disorders, severe drug eruptions, erythrodermic conditions, acute skin infections and infestations, cutaneous cancers and pre-cancerous lesions, acne, rosacea, leg ulcers and scalp conditions										
Using the hyfrecator (low-powered medical apparatus used in electrosurgery on conscious patients)			2/37 (5.4 %)	12/37 (32.4 %)	5/37 (13.5 %)	9/37 (24.3 %)	2/37 (5.4 %)	5/37 (13.5 %)	2/37 (5.4 %)	1.3 (1.51)
Proficient delivery of treatment (eg. phototherapy, cryotherapy, intramuscular injections) according to medical directives	1/37 (2.7 %)			14/37 (37.8 %)	9/37 (24.3 %)	4/37 (10.8 %)	4/37 (10.8 %)		5/37 (13.5 %)	0.8 (1.26)
Performing chemical/mechanical debridement of wounds				4/37 (10.8 %)	7/37 (18.9 %)	9/37 (24.3 %)	8/37 (21.6 %)	6/37 (16.2 %)	3/37 (8.1 %)	2.1 (1.28)
Applying wound dressings, compression therapy.			3/37 (8.1 %)	14/37 (37.8 %)	12/37 (32.4 %)	4/37 (10.8 %)	1/37 (2.7 %)		3/37 (8.1 %)	0.6 (0.92)

Administering intralesional steroid			2/37 (5.4 %)	11/37 (29.7 %)	2/37 (5.4 %)	9/37 (24.3 %)	3/37 (8.1 %)	4/37 (10.8 %)	6/37 (16.2 %)	1.4 (1.54)
Performing an insertion/removing of a peripherally inserted central catheter (PICC) line				14/37 (37.8 %)	7/37 (18.9 %)	7/37 (18.9 %)	2/37 (5.4 %)	3/37 (8.1 %)	4/37 (10.8 %)	1.2 (1.31)
Leg ulcer treatment and management				14/37 (37.8 %)	10/37 (27.0 %)	4/37 (10.8 %)	4/37 (10.8 %)	1/37 (2.7 %)	4/37 (10.8 %)	1.0 (1.16)
Assisting with surgeries in Mohs (involves maintaining a clear surgical site, hemostasis and manipulating various surgical instruments)			2/37 (5.4 %)	12/37 (32.4 %)	5/37 (13.5 %)	9/37 (24.3 %)	1/37 (2.7 %)	3/37 (8.1 %)	5/37 (13.5 %)	1.1 (1.39)
Using lasers			1/37 (2.7 %)	11/37 (29.7 %)	3/37 (8.1 %)	8/37 (21.6 %)	3/37 (8.1 %)	8/37 (21.6 %)	3/37 (8.1 %)	1.7 (1.64)
Prescribing topical treatments				8/37 (21.6 %)	10/37 (27.0 %)	8/37 (21.6 %)	4/37 (10.8 %)	3/37 (8.1 %)	4/37 (10.8 %)	1.5 (1.25)
Assessing treatment adherence			1/37 (2.7 %)	12/37 (32.4 %)	14/37 (37.8 %)	2/37 (5.4 %)	3/37 (8.1 %)	1/37 (2.7 %)	4/37 (10.8 %)	0.9 (1.10)
DERMATOLOGICAL ASSESSMENT AND INVESTIGATION										
Bedside dopplers for measurement of ABI's			1/37 (2.7 %)	10/37 (27.0 %)	4/37 (10.8 %)	9/37 (24.3 %)	3/37 (8.1 %)	7/37 (18.9 %)	3/37 (8.1 %)	1.7 (1.57)
Conducting assessments (e.g. (Psoriasis Area Severity Index)		1/37 (2.7 %)		11/37 (29.7 %)	9/37 (24.3 %)	7/37 (18.9 %)	4/37 (10.8 %)	1/37 (2.7 %)	4/37 (10.8 %)	1.1 (1.27)

(PASI)or other standardized scales)										
Nurse-led clinics (having patient appointments and working independently to assess patients)			1/37 (2.7 %)	10/37 (27.0 %)	7/37 (18.9 %)	8/37 (21.6 %)	3/37 (8.1 %)	4/37 (10.8 %)	4/37 (10.8 %)	1.4 (1.41)
Perform skin examinations and identification (e.g. benign vs. malignant lesions)				4/37 (10.8 %)	14/37 (37.8 %)	5/37 (13.5 %)	7/37 (18.9 %)	3/37 (8.1 %)	4/37 (10.8 %)	1.7 (1.21)
Teledermatology with rural areas				7/37 (18.9 %)	8/37 (21.6 %)	9/37 (24.3 %)	2/37 (5.4 %)	8/37 (21.6 %)	3/37 (8.1 %)	1.9 (1.45)
Diagnostic testing/specimen collection (e.g. KOH (potassium hydroxide), throat swabs)				12/37 (32.4 %)	10/37 (27.0 %)	5/37 (13.5 %)	4/37 (10.8 %)	2/37 (5.4 %)	4/37 (10.8 %)	1.2 (1.24)
Obtaining and recording a complete medical history that includes current problems, health status, psychosocial status				14/37 (37.8 %)	13/37 (35.1 %)	3/37 (8.1 %)	2/37 (5.4 %)		5/37 (13.5 %)	0.8 (0.87)
Performing skin biopsies				14/37 (37.8 %)	4/37 (10.8 %)	4/37 (10.8 %)	4/37 (10.8 %)	7/37 (18.9 %)	4/37 (10.8 %)	1.6 (1.64)
UNDERPINNING KNOWLEDGE										
Knowledge of anatomy, physiology, and immunology of the skin				4/37 (10.8 %)	20/37 (54.1 %)	6/37 (16.2 %)	3/37 (8.1 %)		4/37 (10.8 %)	1.2 (0.79)

and its appendages (eg. hair, nails, sweat glands and the sebaceous glands) and how it is impacted by skin disorders										
Interdisciplinary/interprofessional teaching				5/37 (13.5 %)	14/37 (37.8 %)	14/37 (37.8 %)		1/37 (2.7 %)	3/37 (8.1 %)	1.4 (0.85)
PSYCHOLOGICAL IMPACT OF LIVING WITH A DERMATOLOGICAL CONDITION										
Having the knowledge, deep understanding and ability to recognise psychosocial issues which impact dermatology patients and the ability to incorporate into the plan of care				8/37 (21.6 %)	19/37 (51.4 %)	4/37 (10.8 %)	2/37 (5.4 %)		4/37 (10.8 %)	1.0 (0.79)

Appendix L -Desired minus Current Nurse Responses to Level of Functioning Broken Down by Practice at Community Clinic or Hospital

Desired minus Current Nurse Responses to Level of Functioning Broken Down by Practice at Community Clinic or Hospital			
Activity	**Primary Work Setting**		**Difference in Score**
	Don't work in a hospital	**Teaching Hospital**	
CARING FOR THE PATIENT WITH A DERMATOLOGICAL CONDITION			
Telephone triage and patient counseling	N=14 0.6 (0.74) 0.5 [0.0 - 2.0]	N=17 0.7 (0.99) 0.0 [0.0 - 3.0]	-0.1
Assisting patients navigating through the Health Care System	N=14 1.4 (0.74) 1.0 [0.0 - 3.0]	N=18 0.9 (0.94) 1.0 [0.0 - 3.0]	0.5
Developing a holistic treatment plan of care with the patient including awareness of emotional needs, psychological impact, cognitive and sensory impairment, customs and beliefs	N=14 0.9 (0.62) 1.0 [0.0 - 2.0]	N=18 0.7 (0.83) 1.0 [0.0 - 3.0]	0.2
Monitoring symptoms and adverse events and the ability to make recommendations for treatment changes.	N=14 0.9 (0.62) 1.0 [0.0 - 2.0]	N=18 0.8 (1.00) 1.0 [0.0 - 4.0]	0.1
Leading quality improvement initiatives	N=14 1.1 (0.83) 1.0 [0.0 - 3.0]	N=18 0.9 (1.06) 1.0 [0.0 - 4.0]	0.2
PATIENT EDUCATION			
Educating patients on the skin condition/disease, identifying risk factors and co-morbidities and	N=14 0.9 (0.62) 1.0 [0.0 - 2.0]	N=18 0.8 (1.11) 0.5 [0.0 - 4.0]	0.1

assessing how they may impact the individual			
Educating and counseling the patient in determining risks/ benefits of all treatment options, including complementary and behavioural therapies	N=14 0.9 (0.53) 1.0 [0.0 - 2.0]	N=18 1.0 (1.08) 1.0 [0.0 - 3.0]	-0.1
Educating and counseling patient on psychological/emotional distress, coping mechanisms.	N=14 0.9 (0.62) 1.0 [0.0 - 2.0]	N=17 0.9 (1.03) 1.0 [0.0 - 4.0]	0
Ability to encourage empowerment and self-management. Educating on health promotion strategies and ability to develop, implement and evaluate strategies for health promotion with patients and the Community.	N=14 1.1 (0.77) 1.0 [0.0 - 3.0]	N=18 0.8 (0.86) 1.0 [0.0 - 3.0]	0.3
THERAPEUTIC INTERVENTIONS			
Have a comprehensive knowledge and understanding of medications (first and second line) used to treat eczema, psoriasis, bullous skin disorders, severe drug eruptions, erythrodermic conditions, acute skin infections and infestations, cutaneous cancers and pre-cancerous lesions, acne, rosacea, leg ulcers and scalp conditions	N=14 1.3 (1.20) 1.0 [-1.0 - 3.0]	N=17 1.4 (1.00) 1.0 [0.0 - 4.0]	-0.1
Using the hyfrecator (low-powered medical apparatus used	N=14 1.4 (1.55) 1.5 [-1.0 - 4.0]	N=18 1.4 (1.54) 1.0 [0.0 - 4.0]	0

in electrosurgery on conscious patients)			
Proficient delivery of treatment (eg. phototherapy, cryotherapy, intramuscular injections) according to medical directives	N=14 0.9 (1.44) 1.0 [-3.0 - 3.0]	N=16 0.8 (1.18) 0.0 [0.0 - 3.0]	0.1
Performing chemical/mechanical debridement of wounds	N=14 2.3 (1.20) 2.0 [1.0 - 4.0]	N=17 2.0 (1.46) 2.0 [0.0 - 4.0]	0.3
Applying wound dressings, compression therapy.	N=13 0.5 (1.13) 0.0 [-1.0 - 3.0]	N=18 0.7 (0.69) 1.0 [0.0 - 2.0]	-0.2
Administering intralesional steroid	N=13 0.9 (1.55) 0.0 [-1.0 - 4.0]	N=15 2.0 (1.36) 2.0 [0.0 - 4.0]	-1.1
Performing an insertion/removing of a peripherally inserted central catheter (PICC) line	N=14 1.1 (1.14) 1.0 [0.0 - 4.0]	N=16 1.3 (1.53) 0.5 [0.0 - 4.0]	-0.2
Leg ulcer treatment and management	N=13 1.2 (1.21) 1.0 [0.0 - 3.0]	N=17 1.1 (1.20) 1.0 [0.0 - 4.0]	0.1
Assisting with surgeries in Mohs (involves maintaining a clear surgical site, hemostasis and manipulating various surgical instruments)	N=14 1.5 (1.45) 1.5 [0.0 - 4.0]	N=15 0.8 (1.26) 0.0 [-1.0 - 4.0]	0.7
Using lasers	N=14 1.9 (1.46) 2.0 [0.0 - 4.0]	N=17 1.6 (1.94) 0.0 [-1.0 - 4.0]	0.3
Prescribing topical treatments	N=13 1.7 (1.11) 2.0 [0.0 - 4.0]	N=17 1.4 (1.46) 1.0 [0.0 - 4.0]	0.3

Assessing treatment adherence	N=14 1.1 (1.21) 1.0 [-1.0 - 4.0]	N=16 0.9 (1.06) 1.0 [0.0 - 3.0]	0.2
DERMATOLOGICAL ASSESSMENT AND INVESTIGATION			
Bedside dopplers for measurement of ABI's	N=14 2.0 (1.57) 2.0 [-1.0 - 4.0]	N=17 1.4 (1.58) 1.0 [0.0 - 4.0]	0.6
Conducting assessments (e.g. (Psoriasis Area Severity Index) (PASI)or other standardized scales)	N=14 1.2 (1.37) 1.0 [-2.0 - 3.0]	N=16 1.0 (1.26) 0.5 [0.0 - 4.0]	0.2
Nurse-led clinics (having patient appointments and working independently to assess patients)	N=13 1.8 (1.68) 2.0 [-1.0 - 4.0]	N=17 1.2 (1.24) 1.0 [0.0 - 4.0]	0.6
Perform skin examinations and identification (e.g. benign vs. malignant lesions)	N=13 1.8 (1.30) 1.0 [0.0 - 4.0]	N=17 1.9 (1.17) 2.0 [0.0 - 4.0]	-0.1
Teledermatology with rural areas	N=14 1.9 (1.44) 2.0 [0.0 - 4.0]	N=17 1.7 (1.53) 1.0 [0.0 - 4.0]	0.2
Diagnostic testing/specimen collection (e.g. KOH (potassium hydroxide), throat swabs)	N=14 1.6 (1.22) 1.0 [0.0 - 4.0]	N=16 0.9 (1.29) 0.0 [0.0 - 4.0]	0.7
Obtaining and recording a complete medical history that includes current problems, health status, psychosocial status	N=14 0.9 (0.83) 1.0 [0.0 - 3.0]	N=15 0.8 (0.94) 1.0 [0.0 - 3.0]	0.1
Performing skin biopsies	N=14 1.0 (1.47) 0.0 [0.0 - 4.0]	N=16 2.3 (1.65) 3.0 [0.0 - 4.0]	-1.3
UNDERPINNING KNOWLEDGE			
Knowledge of anatomy, physiology, and immunology of the skin and its appendages (eg.	N=13 1.1 (0.49) 1.0 [0.0 - 2.0]	N=17 1.5 (0.94) 1.0 [0.0 - 3.0]	-0.4

hair, nails, sweat glands and the sebaceous glands) and how it is impacted by skin disorders			
Interdisciplinary/interprofessional teaching	N=14 1.4 (0.65) 1.5 [0.0 - 2.0]	N=17 1.4 (1.00) 1.0 [0.0 - 4.0]	0
PSYCHOLOGICAL IMPACT OF LIVING WITH A DERMATOLOGICAL CONDITION			
Having the knowledge, deep understanding and ability to recognise psychosocial issues which impact dermatology patients and the ability to incorporate into the plan of care	N=14 1.0 (0.78) 1.0 [0.0 - 3.0]	N=16 1.0 (0.82) 1.0 [0.0 - 3.0]	0

Appendix M - General Comments from Dermatology Nurses

Do you have any comments or experiences as a dermatology nurse that you would like to share?
➢ I definitely would love to have more support and funding in further my education as a dermatology nurse. ➢ I love derm. There is definitely room for nurses to take on more responsibility in caring for patients, doing assessments and at some point writing scripts (when the college allows all nurses to write scripts for renewals). The way doctors are paid for service is a definite barrier to increasing the work of nurses. ➢ doctors in community do not see the value of nurses. not worthy unless bringing in a lot of money for research and cosmetic procedures. ➢ With the long term nature of many skin diseases good case management to increase good patient outcomes. ➢ I would love to have a certificate as a nurse in dermatology, but I find that having to go in the US to get that certification is too much trouble. ➢ My derm education started in nursing school working on inpatent derm ward, then after graduation working on that same ward, then continuing to specialize in derm nursing throughout 41 year nursing career. ➢ Obviously we are all specialized in our own areas and expert in those areas whereas novices in areas we do not practice ➢ The way doctors are funded impedes what work the nurses are allowed to do. Half of the patients coming in could be seen by the nurse saving the system a lot of money. ➢ Industry reps are very good resources for learning .they encourage nurses to learn and be a big activate part of the dermatology community. ➢ In a smaller city dermatology nursing is really learning as you work As there is no formal type of education available. ➢ I would like to add a comment/correction in regards to the section above. We actually do have a Canadian Dermatology Nurses Association! ➢ Many nurses ask how they can be more involved or get education for being a dermatology nurse, should be more advanced practice nurses running basic care clinics so patients have more access ➢ NP's in the states can run independent clinics and can bill - Canada is way behind in this area ➢ Is a great profession with many areas of specialty ➢ Should be mentor programs for nurses ➢ Should be able to attend higher levels of talks such as at the CDNA- we know a lot and should be recognized more

Appendix N - Demographics of Dermatologist Respondents

Demographics of Dermatologist Respondents N=19	
Sex:	11 Males (57.9%) 8 Females (42.1%)
Age: 31-40	1/19 (5.3%)
41-50	4/19 (21.1%)
51-60	5/19 (26.3%)
61-70	5/19 (26.3%)
71+	4/19 (21.1%)
# years practicing as a Dermatologist:	
6-10 years	4/19 (21.1%)
11-15 years	1/19 (5.3%)
16-20 years	0
20+ years	14/19 (73.7%)
Primarily work in community or hospital setting:	
Community	15/19 (78.9%)
Hospital	4/19 (21%)
If hospital, Teaching Hospital?	2/19 (10.5%) yes
Urban or Rural Practice:	
Rural	4/19 (21.1%)
Urban	14/19 (73.7%)
Missing data	1/19 (5.3%)
Breakdown of time spent within clinic:	
Percentage in dermatology RESEARCH:	N=17 (4.1%)
Percentage conducting COSMETIC dermatology:	N=17 (18.5%)
	N=17 (76.5%)

Percentage conducting MEDICAL dermatology:	

Appendix O- Comments Provided by Dermatologists on Their Experiences With Dermatology Nurses

Comments or experiences to share:

- Cost of having a nurse in private practice is really only justifiable if they do cosmetic work to generate income.
- Excellent working with nurses. Make practice more efficient.
- I have had 2 in my 25 years of practice. They increased the throughput of my practice considerably, took many things such as dealing with day to day phone question from patients off my shoulders. In addition they were clever ,good fun and great companions
- A totally unnecessary expensive waste of money hire.
- Excellent for patient care, office flow and reduced involvement with a variety of medical undertakings
- Required intense training

Appendix P-Dermatologist Desired Level for Nurses to be Functioning

	Dermatologist Desired Level for Nurses to be Functioning					
Activity	**No Data**	**Novice**	**Advanced Beginner**	**Competent**	**Proficient**	**Expert**
CARING FOR THE PATIENT WITH A DERMATOLOGICAL CONDITION						
Telephone triage and patient counseling	8/19 (42.1%)			6/19 (31.6%)		5/19 (26.3%)
Assisting patients navigating through the Health Care System	8/19 (42.1%)		1/19 (5.3%)	3/19 (15.8%)	3/19 (15.8%)	4/19 (21.1%)
Developing a holistic treatment plan of care with the patient including awareness of emotional needs, psychological impact, cognitive and sensory impairment, customs and beliefs	8/19 (42.1%)		1/19 (5.3%)	3/19 (15.8%)	3/19 (15.8%)	4/19 (21.1%)
Monitoring symptoms and adverse events and the ability to make recommendations for treatment changes.	8/19 (42.1%)			1/19 (5.3%)	4/19 (21.1%)	6/19 (31.6%)
Leading quality improvement initiatives	9/19 (47.4%)			4/19 (21.1%)	2/19 (10.5%)	4/19 (21.1%)
PATIENT EDUCATION						
Educating patients on the skin condition/disease, identifying risk factors and co-morbidities and assessing how they may impact the individual	8/19 (42.1%)			3/19 (15.8%)	3/19 (15.8%)	5/19 (26.3%)
Educating and counseling the patient in determining risks/ benefits of all treatment options, including complementary and behavioural therapies	8/19 (42.1%)		1/19 (5.3%)	2/19 (10.5%)	3/19 (15.8%)	5/19 (26.3%)
Educating and counseling patient on psychological/emotional distress, coping mechanisms.	8/19 (42.1%)			5/19 (26.3%)	1/19 (5.3%)	5/19 (26.3%)
Ability to encourage empowerment and self-management. Educating	8/19 (42.1%)			4/19 (21.1%)	2/19 (10.5%)	5/19 (26.3%)

on health promotion strategies and ability to develop, implement and evaluate strategies for health promotion with patients and the Community.						
THERAPEUTIC INTERVENTIONS						
Have a comprehensive knowledge and understanding of medications (first and second line) used to treat eczema, psoriasis, bullous skin disorders, severe drug eruptions, erythrodermic conditions, acute skin infections and infestations, cutaneous cancers and pre-cancerous lesions, acne, rosacea, leg ulcers and scalp conditions	8/19 (42.1%)			2/19 (10.5%)	2/19 (10.5%)	7/19 (36.8%)
Using the hyfrecator (low-powered medical apparatus used in electrosurgery on conscious patients)	9/19 (47.4%)	1/19 (5.3%)	1/19 (5.3%)	2/19 (10.5%)	1/19 (5.3%)	5/19 (26.3%)
Proficient delivery of treatment (eg. phototherapy, cryotherapy, intramuscular injections) according to medical directives	8/19 (42.1%)		1/19 (5.3%)	1/19 (5.3%)	5/19 (26.3%)	4/19 (21.1%)
Performing chemical/mechanical debridement of wounds	8/19 (42.1%)	3/19 (15.8%)		1/19 (5.3%)	1/19 (5.3%)	6/19 (31.6%)
Applying wound dressings, compression therapy.	8/19 (42.1%)			3/19 (15.8%)	6/19 (31.6%)	2/19 (10.5%)
Administering intralesional steroid	8/19 (42.1%)	1/19 (5.3%)	1/19 (5.3%)	2/19 (10.5%)	3/19 (15.8%)	4/19 (21.1%)
Performing an insertion/removing of a peripherally inserted central catheter (PICC) line	9/19 (47.4%)	3/19 (15.8%)			2/19 (10.5%)	5/19 (26.3%)
Leg ulcer treatment and management	10/19 (52.6%)		1/19 (5.3%)	1/19 (5.3%)	5/19 (26.3%)	2/19 (10.5%)
Assisting with surgeries in Mohs (involves maintaining a clear surgical site, hemostasis and manipulating various surgical instruments)	9/19 (47.4%)			3/19 (15.8%)	3/19 (15.8%)	4/19 (21.1%)

Using lasers	9/19 (47.4%)	2/19 (10.5%)			4/19 (21.1%)	4/19 (21.1%)
Prescribing topical treatments	9/19 (47.4%)	2/19 (10.5%)	1/19 (5.3%)			7/19 (36.8%)
Assessing treatment adherence	9/19 (47.4%)		1/19 (5.3%)	4/19 (21.1%)	2/19 (10.5%)	3/19 (15.8%)
DERMATOLOGICAL ASSESSMENT AND INVESTIGATION						
Bedside dopplers for measurement of ABI's	10/19 (52.6%)	1/19 (5.3%)		2/19 (10.5%)	2/19 (10.5%)	4/19 (21.1%)
Conducting assessments (e.g. (Psoriasis Area Severity Index) (PASI)or other standardized scales)	9/19 (47.4%)	1/19 (5.3%)		1/19 (5.3%)	3/19 (15.8%)	5/19 (26.3%)
Nurse-led clinics (having patient appointments and working independently to assess patients)	9/19 (47.4%)	1/19 (5.3%)		1/19 (5.3%)	1/19 (5.3%)	7/19 (36.8%)
Perform skin examinations and identification (e.g. benign vs. malignant lesions)	9/19 (47.4%)	1/19 (5.3%)		1/19 (5.3%)	1/19 (5.3%)	7/19 (36.8%)
Teledermatology with rural areas	9/19 (47.4%)	2/19 (10.5%)	1/19 (5.3%)	1/19 (5.3%)		6/19 (31.6%)
Diagnostic testing/specimen collection (e.g. KOH (potassium hydroxide), throat swabs)	9/19 (47.4%)			2/19 (10.5%)	3/19 (15.8%)	5/19 (26.3%)
Obtaining and recording a complete medical history that includes current problems, health status, psychosocial status	9/19 (47.4%)			2/19 (10.5%)	1/19 (5.3%)	7/19 (36.8%)
Performing skin biopsies	9/19 (47.4%)	1/19 (5.3%)		1/19 (5.3%)	2/19 (10.5%)	6/19 (31.6%)
UNDERPINNING KNOWLEDGE						
Knowledge of anatomy, physiology, and immunology of the skin and its appendages (eg. hair, nails, sweat glands and the sebaceous glands) and how it is impacted by skin disorders	8/19 (42.1%)		1/19 (5.3%)	1/19 (5.3%)	3/19 (15.8%)	6/19 (31.6%)
Interdisciplinary/interprofessional teaching	8/19 (42.1%)		1/19 (5.3%)	4/19 (21.1%)	1/19 (5.3%)	5/19 (26.3%)
PSYCHOLOGICAL IMPACT OF LIVING WITH A DERMATOLOGICAL CONDITION						

Having the knowledge, deep understanding and ability to recognise psychosocial issues which impact dermatology patients and the ability to incorporate into the plan of care	9/19 (47.4%)			3/19 (15.8%)	2/19 (10.5%)	5/19 (26.3%)

Appendix Q- Comparison of Dermatologist and Nurse Responses to Current Level of Functioning

Comparison of Dermatologist and Nurse Responses to Current Level of Functioning			
Question	**Dermatologist**	**Nurse**	**Difference = Drmt – Nurse (95% C.I.)**
CARING FOR THE PATIENT WITH A DERMATOLOGICAL CONDITION			
Telephone triage and patient counseling	N=11 3.9 (1.04) 3.0 [3.0 - 5.0]	N=34 4.5 (0.56) 5.0 [3.0 - 5.0]	-0.6 [-1.3 - 0.1]
Assisting patients navigating through the Health Care System	N=11 3.9 (1.04) 4.0 [2.0 - 5.0]	N=35 4.5 (0.61) 5.0 [3.0 - 5.0]	-0.6 [-1.3 - 0.1]
Developing a holistic treatment plan of care with the patient including awareness of emotional needs, psychological impact, cognitive and sensory impairment, customs and beliefs	N=11 3.9 (1.04) 4.0 [2.0 - 5.0]	N=35 4.5 (0.61) 5.0 [3.0 - 5.0]	-0.6 [-1.3 - 0.1]
Monitoring symptoms and adverse events and the ability to make recommendations for treatment changes.	N=11 4.5 (0.69) 5.0 [3.0 - 5.0]	N=35 4.6 (0.49) 5.0 [4.0 - 5.0]	-0.2 [-0.7 - 0.3]
Leading quality improvement initiatives	N=10 4.0 (0.94) 4.0 [3.0 - 5.0]	N=35 4.5 (0.61) 5.0 [3.0 - 5.0]	-0.5 [-1.2 - 0.2]
PATIENT EDUCATION			
Educating patients on the skin condition/disease, identifying risk factors and co-morbidities and assessing how they may impact the individual	N=11 4.2 (0.87) 4.0 [3.0 - 5.0]	N=35 4.5 (0.66) 5.0 [3.0 - 5.0]	-0.3 [-0.9 - 0.3]
Educating and counseling the patient in determining risks/ benefits of all treatment	N=11 4.1 (1.04) 4.0 [2.0 - 5.0]	N=35 4.5 (0.66) 5.0 [3.0 - 5.0]	-0.4 [-1.1 - 0.3]

options, including complementary and behavioural therapies			
Educating and counseling patient on psychological/emotional distress, coping mechanisms.	N=11 4.0 (1.00) 4.0 [3.0 - 5.0]	N=34 4.4 (0.66) 5.0 [3.0 - 5.0]	-0.4 [-1.1 - 0.3]
Ability to encourage empowerment and self-management. Educating on health promotion strategies and ability to develop, implement and evaluate strategies for health promotion with patients and the Community.	N=11 4.1 (0.94) 4.0 [3.0 - 5.0]	N=35 4.4 (0.70) 5.0 [3.0 - 5.0]	-0.3 [-1.0 - 0.3]
THERAPEUTIC INTERVENTIONS			
Have a comprehensive knowledge and understanding of medications (first and second line) used to treat eczema, psoriasis, bullous skin disorders, severe drug eruptions, erythrodermic conditions, acute skin infections and infestations, cutaneous cancers and pre-cancerous lesions, acne, rosacea, leg ulcers and scalp conditions	N=11 4.5 (0.82) 5.0 [3.0 - 5.0]	N=34 4.4 (0.81) 5.0 [2.0 - 5.0]	0.1 [-0.5 - 0.7]
Using the hyfrecator (low-powered medical apparatus used in electrosurgery on conscious patients)	N=10 3.8 (1.48) 4.5 [1.0 - 5.0]	N=35 3.3 (1.43) 4.0 [1.0 - 5.0]	0.5 [-0.6 - 1.6]
Proficient delivery of treatment (eg. phototherapy, cryotherapy, intramuscular injections) according to medical directives	N=11 4.1 (0.94) 4.0 [2.0 - 5.0]	N=33 4.4 (0.83) 5.0 [2.0 - 5.0]	-0.3 [-1.0 - 0.4]
Performing chemical/mechanical debridement of wounds	N=11 3.6 (1.80) 5.0 [1.0 - 5.0]	N=35 3.6 (1.35) 4.0 [1.0 - 5.0]	0.0 [-1.2 - 1.3]

Applying wound dressings, compression therapy.	N=11 3.9 (0.70) 4.0 [3.0 - 5.0]	N=34 4.1 (1.13) 4.0 [1.0 - 5.0]	-0.1 [-0.7 - 0.4]
Administering intralesional steroid	N=11 3.7 (1.35) 4.0 [1.0 - 5.0]	N=31 3.9 (1.26) 4.0 [1.0 - 5.0]	-0.1 [-1.1 - 0.8]
Performing an insertion/removing of a peripherally inserted central catheter (PICC) line	N=10 3.6 (1.84) 4.5 [1.0 - 5.0]	N=33 2.6 (1.60) 2.0 [1.0 - 5.0]	1.0 [-0.4 - 2.4]
Leg ulcer treatment and management	N=9 3.9 (0.93) 4.0 [2.0 - 5.0]	N=33 3.8 (1.32) 4.0 [1.0 - 5.0]	0.1 [-0.7 - 0.9]
Assisting with surgeries in Mohs (involves maintaining a clear surgical site, hemostasis and manipulating various surgical instruments)	N=10 4.1 (0.88) 4.0 [3.0 - 5.0]	N=33 3.4 (1.43) 4.0 [1.0 - 5.0]	0.7 [-0.1 - 1.5]
Using lasers	N=10 3.8 (1.55) 4.0 [1.0 - 5.0]	N=34 3.1 (1.65) 3.0 [1.0 - 5.0]	0.7 [-0.5 - 1.9]
Prescribing topical treatments	N=10 3.9 (1.79) 5.0 [1.0 - 5.0]	N=33 3.6 (1.39) 4.0 [1.0 - 5.0]	0.3 [-1.1 - 1.6]
Assessing treatment adherence	N=10 3.7 (1.06) 3.5 [2.0 - 5.0]	N=33 4.4 (0.66) 5.0 [3.0 - 5.0]	-0.7 [-1.5 - 0.1]
DERMATOLOGICAL ASSESSMENT AND INVESTIGATION			
Bedside dopplers for measurement of ABI’s	N=9 3.9 (1.36) 4.0 [1.0 - 5.0]	N=34 3.6 (1.52) 4.0 [1.0 - 5.0]	0.3 [-0.9 - 1.4]
Conducting assessments (e.g. (Psoriasis Area Severity Index) (PASI)or other standardized scales)	N=10 4.1 (1.29) 4.5 [1.0 - 5.0]	N=34 4.4 (0.79) 5.0 [3.0 - 5.0]	-0.3 [-1.3 - 0.6]
Nurse-led clinics (having patient appointments and working independently to assess patients)	N=10 4.3 (1.34) 5.0 [1.0 - 5.0]	N=34 4.4 (0.75) 5.0 [3.0 - 5.0]	-0.1 [-1.1 - 0.8]
Perform skin examinations and identification (e.g. benign vs. malignant lesions)	N=10 4.3 (1.34) 5.0 [1.0 - 5.0]	N=34 4.4 (0.77) 5.0 [3.0 - 5.0]	-0.1 [-1.0 - 0.9]

Teledermatology with rural areas	N=10 3.7 (1.77) 5.0 [1.0 - 5.0]	N=34 3.2 (1.47) 3.0 [1.0 - 5.0]	0.5 [-0.8 - 1.8]
Diagnostic testing/specimen collection (e.g. KOH (potassium hydroxide), throat swabs)	N=10 4.3 (0.82) 4.5 [3.0 - 5.0]	N=34 4.1 (1.20) 4.0 [1.0 - 5.0]	0.2 [-0.4 - 0.9]
Obtaining and recording a complete medical history that includes current problems, health status, psychosocial status	N=10 4.5 (0.85) 5.0 [3.0 - 5.0]	N=33 4.5 (0.71) 5.0 [3.0 - 5.0]	0.0 [-0.6 - 0.7]
Performing skin biopsies	N=10 4.2 (1.32) 5.0 [1.0 - 5.0]	N=33 3.5 (1.64) 4.0 [1.0 - 5.0]	0.7 [-0.3 - 1.8]
UNDERPINNING KNOWLEDGE			
Knowledge of anatomy, physiology, and immunology of the skin and its appendages (eg. hair, nails, sweat glands and the sebaceous glands) and how it is impacted by skin disorders	N=11 4.3 (1.01) 5.0 [2.0 - 5.0]	N=33 4.4 (0.70) 5.0 [3.0 - 5.0]	-0.1 [-0.8 - 0.6]
Interdisciplinary/interprofessional teaching	N=11 3.9 (1.14) 4.0 [2.0 - 5.0]	N=34 4.2 (0.74) 4.0 [3.0 - 5.0]	-0.3 [-1.1 - 0.5]
PSYCHOLOGICAL IMPACT OF LIVING WITH A DERMATOLOGICAL CONDITION			
Having the knowledge, deep understanding and ability to recognise psychosocial issues which impact dermatology patients and the ability to incorporate into the plan of care	N=10 4.2 (0.92) 4.5 [3.0 - 5.0]	N=33 4.4 (0.66) 5.0 [3.0 - 5.0]	-0.2 [-0.9 - 0.5]