

**A Qualitative Assessment of the Practice Experiences of Certified Diabetes Educator
Pharmacists in Saskatchewan**

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By

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ABSTRACT

Background: Pharmacists are a rapidly growing segment of certified diabetes educators (CDEs) in Canada; however, little is known about their practice experiences.

Objective: This study aimed to describe the practice experiences of CDE pharmacists and the impact of the CDE designation.

Methods: A qualitative research approach was used. A purposive sample of 14 CDE pharmacists in Saskatchewan was selected to obtain data by means of in-depth semi-structured interviews. Data were analysed using thematic analysis and NVivo10 software.

Findings: Four themes emerged from the data: (1) CDE pharmacists engage in a multitude of diabetes-related activities, (2) becoming a CDE has been beneficial, (3) certain challenges still exist when trying to provide diabetes-related education, and (4) strategies were proposed to try and overcome these challenges. CDE pharmacists are engaging in both broad and focused diabetes management, such as insulin starts and adjustments. Pharmacists are satisfied that the CDE designation has helped achieve some of their goals and have benefited from improved relationships with other health care professionals. Although some solutions were offered, CDE pharmacists still face challenges in putting their knowledge to full use with respect to devoting time to diabetes management and remuneration for providing diabetes services.

Conclusions: CDE pharmacists in Saskatchewan report enhanced diabetes-related activities prior to becoming a CDE and that designation has had a positive impact on them and perhaps their patients. This information could prove useful to employers and payers as the number of CDE pharmacists continues to increase. However, more information is necessary to describe CDE pharmacist practice experiences across Canada.

DEDICATION

This work is dedicated to my extended family and friends. To my wife Rawyiah and my daughters, Leen and Solaf, for their unwavering love, support, and encouraging me in everything I do. Also, to my sisters and brothers for their endless support, and my parents Sarah and Mohammed who believed in what I am doing and told me they were proud of me.

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CHAPTER ONE

INTRODUCTION

1.1. Introduction

Diabetes represents one of the greatest health crises of the 21st century. The number of people with diabetes has risen dramatically over the past 20 years and estimates continue to underestimate the true prevalence of the disease.¹ Approximately three million Canadians and 285 million people worldwide are living with diabetes.² This number has increased for a variety of reasons, including an aging population, urbanization, increased obesity, and decreased physical activity.³ Increased immigration to Canada has magnified the diabetes rates, as approximately 80% of immigrants coming to Canada come from areas where diabetes is especially prevalent.² Up to 3.7 million Canadians are expected to have been diagnosed with diabetes by 2020.¹ Increased prevalence rates translate into increased pressure on an already strapped health care system.⁴ Certified diabetes educators (CDEs) can play an increasingly significant role in the management of diabetic patients given their expertise. Correspondingly, pharmacists are choosing to become CDEs at rates exceeding other health care professionals.⁵ It is not clear in the literature, however, what impact becoming a CDE has had on those pharmacists who have chosen to become certified. This study utilized a qualitative descriptive method to explore the practice experiences of CDE pharmacists in the province of Saskatchewan. The purpose of this study was to elucidate what diabetes-related activities CDE pharmacists are engaged in, what the impact of becoming a CDE is, and what challenges (and corresponding solutions) CDE pharmacists face when they engage in diabetes management.

1.2. Research Aims and Objectives

Scant research exists on the roles of CDE pharmacists in diabetes care management and the benefits of CDE designation. There is also little research on the successes and challenges of CDE pharmacists in providing diabetes care management. Therefore, this study was designed to identify the practice experiences of CDE pharmacists in the province of Saskatchewan. The specific objectives of this study were to:

1. obtain a description of the work activities of pharmacists as CDEs;
2. understand the impact that the CDE credential has had on pharmacists; and
3. explore successes and challenges encountered by CDE pharmacists in delivering diabetes-specific care and potential strategies that CDE pharmacists can use to overcome such challenges.

The study involved a qualitative descriptive design, which was used to understand the CDE pharmacists' experiences and attitudes in diabetes care management so as to comprehend the significance of the experience.

1.3. Research Questions

The study was guided by four overarching questions:

- In what diabetes-related activities do CDE pharmacists engage?
- What impact has the CDE designation had on pharmacists' job activities?
- What challenges do CDE pharmacists experience in diabetes management?
- What strategies do CDE pharmacists use to resolve these challenges?

1.4. Significance of the Study

This study is expected to make a significant contribution to the body of knowledge related to diabetes care management and CDE pharmacists in Canada. The significance of this study is that

it provides insights into CDE pharmacists' perspectives on diabetes-related activities, the impact of their CDE designation, the challenges they face in diabetes care management, as well as the solutions they suggest to overcome these challenges. The findings of the reported study can be used by pharmacists, pharmacy managers, and store owners to find active solutions to help optimize the skills and knowledge of CDE pharmacists. Exploring the challenges reported by CDE pharmacists may also be of interest to healthcare payers and provincial governments to develop new pharmacist reimbursement models to improve the delivery of care for diabetic patients while reining in healthcare costs.

1.5. Researcher's Position

My interest in the topic of the roles of CDE pharmacists in delivering diabetes-related activities has developed over the years. I worked as a hospital pharmacist at a hospital in Saudi Arabia (home country), where many patients with diabetes were encountered. I worked with other healthcare providers to educate patients with diabetes and help them deal with their disease. I believe that pharmacists can play a significant role on the healthcare team to improve the quality of life for diabetic patients. However, in Canada, as with Saudi Arabia which appears to have one of the highest rates of diabetes in the world, it is evident that there are many obstacles preventing pharmacists from utilizing their skills in diabetes management.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

This chapter will review the literature relating to certified diabetes educator (CDE) pharmacists' experiences with diabetes care services. To examine the literature surrounding CDE pharmacists' experiences and perceptions in everyday practice, four major areas of the literature are reviewed. The first section of this literature review focuses on the importance of diabetes education, the second summarizes studies that report on the extended roles of pharmacists and other healthcare professionals in diabetes management, and the third narrows the report to specialized diabetes training and the impact of advanced diabetes practices on pharmacists. The final section reviews studies that represent challenges preventing pharmacists from providing education or clinical services beyond their dispensing role.

2.2. Pathophysiology

Diabetes Mellitus (DM) is a metabolic disorder characterised by high levels of glucose in the blood due to the body not producing or properly using insulin.⁶ Glucose is the simplest form of sugar and is essential for providing energy for cells to function and grow. Glucose travels through the bloodstream to all of the organs and muscles in the body, where it is used as fuel so that the organs can continue to function properly.⁷ The major function of insulin is to drive glucose out of the bloodstream and into the cells.⁸

There are several types of diabetes mellitus. Type 1 and Type 2 DM are the two most common forms of this chronic condition and represent about 10% and 90%, respectively, of the total diabetic population.⁹

Type 1 diabetes results from a failure to produce insulin. It is most often diagnosed in people under the age of 20 and is thought to be the result of an autoimmune disorder. There are no known modifiable risk factors for Type 1 diabetes; this type of diabetes is not preventable at the present time.^{7,8}

Type 2 DM results from insulin resistance and insulin deficiency. Although Type 2 DM has historically been diagnosed only in older people, patients younger than 20 years of age are now being diagnosed with Type 2 diabetes more frequently, as its development has been linked to the increasing prevalence of obesity and physical inactivity among children.¹⁰

A third type of diabetes, gestational diabetes, is a temporary disorder that happens during pregnancy. It influences about 2% to 4% of all pregnancies and involves an increased risk of developing diabetes for both mother and baby.¹⁰

2.3. Long Term Health and Financial Impacts of Diabetes

Chronic hyperglycemia is associated with significant long-term consequences, particularly damage to various organs such as the kidneys, eyes, nerves, heart, and blood vessels.¹¹ Diabetes is a major risk factor for the development of neuropathy, which often leads to lower limb amputations, and diabetic retinopathy, which is the leading cause of blindness in diabetic patients of working age.¹² Diabetes is also a major risk factor for chronic kidney disease (CKD); CKD associated with diabetes is the leading cause of kidney failure in North America.¹³ Over time, diabetes can also lead to cardiovascular disease, and people with diabetes are up to four times more likely to die from heart disease and stroke than the general population.¹⁴ Life expectancy for patients with Type 1 diabetes may be reduced by 15 years and for patients with Type 2 diabetes may be reduced by 5 to 10 years.²

In addition to the downstream complications stemming from the disease, diabetes places a large economic burden on both affected individuals and the healthcare system in general. Patients with diabetes experience medical costs that are two to three times greater than those without diabetes. An individual with diabetes can encounter direct costs for drug and supplies ranging from \$1,000 to \$15,000 a year.² Diabetes is estimated to cost the Canadian healthcare system \$16.9 billion a year by 2020;² worldwide, it will cost the global healthcare system \$490 billion by 2030.¹⁵

The goal of diabetes treatment is to maintain blood glucose levels as close to normal as safely possible. Controlling blood pressure and cholesterol levels is also necessary to reduce the complications associated with diabetes. Treatment depends on the type of diabetes and can include lifestyle modifications and/or medications, including insulin.⁸ A healthy diet, regular physical activity, monitoring blood glucose levels, and taking medications are basic factors in effective diabetes care. Thus, self-management of diabetes is an essential part of the overall care.¹⁶ This includes behavioural modifications best achieved through combined care and education.¹⁷ Studies have supported the belief that diabetes self-management education interventions are powerful in enhancing knowledge, performance, and metabolic control among people with Type 2 diabetes.^{18,19,20}

Given the prevalence of diabetes and its effects on the healthcare system, an intense focus has emerged regarding “controlling” diabetes so as to relieve some of the strain. Tomeky found that diabetes-related complications can be prevented if patients make lifestyle changes and tightly control their glucose levels.²¹ Two landmark trials—the United Kingdom Prospective Diabetes Study (UKPDS) and the Diabetes Control and Complication Trial (DCCT)—have demonstrated that maintaining blood glucose levels close to the normal range slows the onset and progression

of chronic complications caused by diabetes.²² Furthermore, improved glycemic control of Type 2 DM is associated with improved quality of life and health as well as economic benefits.²³ In addition, studies have demonstrated that intensive blood glucose control in patients with diabetes can reduce the costs of dealing with diabetic complications, result in decreased hospital stays, and cost the healthcare system less money.²³⁻²⁷

2.4. Diabetes Patient Education

For more than 40 years, diabetes education has been a recognized cornerstone of diabetes care.²⁸ Education contributes to improved self-care of diabetes and thus enhanced glycemic control in diabetics. Without suitable education, it is difficult for patients to develop an appropriate treatment strategy to help them navigate such a complex chronic medical condition.^{29,30} The American Association of Diabetes Educators (AADE) defines diabetes education (DE) as “a collaborative process through which people with or at risk for diabetes gain the knowledge and skills needed to modify behavior and successfully self-manage the disease and its related conditions”.³¹ The purpose of diabetes education is to support the efforts of patients with diabetes to understand the nature of their condition and its management and to stick to self-care training and make necessary modifications in their health behaviours.^{26,28,32}

The importance of diabetes education and its positive impacts are well recognized in the literature.^{33,34} For example, education in the form of oral and written information improves the quality of life for diabetic patients versus the general population.^{26,35} In 2009 and 2011, the AADE published results of studies that found a statistical correlation between diabetes education and lower healthcare costs as well as an association with improved health outcomes for people living with diabetes.^{32,36} Individuals who received diabetes education from a CDE were more likely to receive care consistent with medical guidelines and were more likely to comply with

their prescribed drug regimens.³⁶ In addition to producing real health benefits, diabetes education helps patients deal with the stress of living with a complex and difficult-to-control condition.³² Although ongoing education is vital to understanding and managing diabetes, diabetes care and education are not always accessible for all diabetic patients. One survey indicated that people with diabetes receive too little education and too little support.³⁷ The Canadian Diabetes Association (CDA) has estimated that 30% of patients with Type 1 diabetes and 70% of patients with Type 2 diabetes do not receive appropriate diabetes self-care education.³⁸ Campbell noted that fewer than 2% of diabetic patients receive good care, and only about one third receive diabetes self-care management. Furthermore, people with diabetes receive less attention from physicians, who are more active in dealing with acute diseases than chronic conditions.³³ Primary care providers (PCPs) may deliver advice on risk decline rather than teach diabetes self-management; consequently, patients may only obtain information about diabetes care without obtaining the education and skills training they need to successfully control their condition.^{39,40} Gucciardi and colleagues surveyed ninety nine primary care physicians in southern Ontario and found that fewer than half of them followed the CDA recommendations to refer patients to Diabetes Self-Management Education (DSME).⁴¹

Given the lack of overall education for those with diabetes, the increasing prevalence of the disease, and the fact that pharmacists are highly accessible healthcare professionals⁴² and diabetics see them more frequently than any other healthcare providers (HCPs),⁴³ an opportunity exists for pharmacists to play a larger role in diabetes management.

2.5. Pharmacist Roles in Managing Type 2 Diabetes

The overall care of diabetic patients is primarily led by a family physician.⁴⁴ If diabetes is poorly controlled or if insulin is required, these patients may be referred to a specialist or diabetes

educator.⁴⁵ However, pharmacists are the most accessible health care providers to many diabetic patients in the community.⁴⁶ In fact, patients with diabetes see their pharmacist seven times as often as they do their family physician.⁴⁷ Hence, an enormous opportunity exists for pharmacists to become more involved in diabetes education and management.

Due to the recent expansion of available prescription medications to manage hyperglycemia, pharmacists, by default, have become more involved in treatment decisions for diabetic patients.⁴⁸ In addition to traditional counselling on prescription medications, pharmacists increasingly play a significant role in health promotion by handling and monitoring therapeutic plans and allowing patients to actively manage their health.^{33,49,46} Recently, pharmacists have taken more responsibility for clinical outcomes of patients with diabetes.⁵⁰ They can work with patients and other healthcare members in delivering diabetes care management that includes providing services such as designing and monitoring therapeutic plans to help diabetic patients make beneficial modifications.^{29,51,52}

Providing education is one of a pharmacist's key roles. Because of their easy access to diabetic patients, pharmacists can answer queries and address concerns about diabetes management.³³ Guirguis et al. added that community pharmacists are ideally positioned to educate patients who are unable to attend diabetes education clinics.³⁸ They provide diabetes care services in a number of patient care settings, including healthcare centres, community pharmacies, and inpatient and outpatient facilities, among others.⁵³ Rosenthal et al. reported that community pharmacists provide services for Ontarians living with diabetes that include training on the use and disposal of diabetic supplies, education and advice on medication adjustments, and discussion of the impact of lifestyle modifications.⁵⁴ Studies have indicated that pharmacists routinely provide services to diabetic patients with respect to self-management.^{33,55-60} Some of these services

include educating patients about their condition, teaching them how to monitor their blood glucose levels, evaluating drug therapy regimens, monitoring for problems with feet and eyesight, and referring patients to physicians when necessary.

2.6. Pharmacists' Impact on Diabetes Care Outcomes

Several studies have evaluated the impact of pharmacists' involvement in diabetes care.

Pharmacists in clinical studies have repeatedly demonstrated the ability to improve diabetic outcomes, such as hemoglobin A1c.⁶¹⁻⁶³ This may result in the ability to reduce long-term costs and complications,^{51,54,64,65} and pharmacist counselling can also reduce the frequency of physician visits and hospital admissions in those with diabetes.⁶⁶ Furthermore, pharmacists working as educators in collaboration with other HCPs can contribute to enhanced patient outcomes,⁵⁷ and pharmacists can meaningfully increase appropriate prescribing in aging people with diabetes.⁶³

Krass and colleagues found that community pharmacists can improve adherence to treatment plans in people with diabetes, decrease accessibility issues, and suggest drug therapy modifications to enhance outcomes.⁶⁷ What is not known, however, is the typical involvement of pharmacists with diabetic patients outside of a clinical study and in everyday practice.

Pharmacists have demonstrated the ability to affect clinical outcomes, and perhaps the CDE designation is a tool to help empower pharmacists to achieve some of these outcomes in everyday practice.

2.7. Other Healthcare Professionals' Roles in Diabetes Patient Education

Effective chronic disease interventions usually rely on multidisciplinary teams that may include physicians, pharmacists, nurses, dietitians, and others as required.⁶⁸ According to the CDA, diabetes healthcare teams that provide comprehensive, collaborative care enhance the commitment and participation of diabetic patients.¹⁰ These core team memberships ensure that

the basic requirements of diabetes management are met.⁶⁹ These requirements include nutrition, medication, self-monitoring, and self-management advice.⁷⁰

Primary care physicians (PCPs) can play a pivotal role in the care and education of people with diabetes by advising on healthy diets, providing accurate information, referring patients as necessary, and facilitating lifestyle modification.^{70,71} According to the US Department of Health and Human Services (USDHHS), approximately 90% of diabetes care in the US is provided by PCPs.⁷² Van den Arend and colleagues reported three significant aspects of diabetes management for primary care providers: knowing the latest developments and quality standards about diabetes management so as to provide the appropriate therapy for individuals with diabetes, being alert to the first signals of complications (monitoring the disease), and defining timely and necessary referral patterns to appropriate specialists.⁷³

A nurse is another important member of a diabetes healthcare team. Although physicians are responsible for the overall medical management of patients and are the primary providers for acute medical problems, nurses can provide the day-to-day education related to the diabetes regimen.²⁹ In the landmark DCCT, people with diabetes spent more than 80% of their time during follow-up visits with non-physician healthcare providers, and they spent about 60% of their time with nurses.⁷⁰ Diabetes education has traditionally been provided by nurses and dietitians.^{74,75,76} Nurses can provide patients' diabetes education, help them accomplish their treatment goals, and provide ongoing connection between diabetic patients and the wider diabetes management team.⁷⁶ Studies pointed out that the responsibilities of nurses in diabetes management include providing diabetes education, helping in the choice of insulin therapy,

adjusting insulin dosages, teaching patients problem-solving skills, and developing educational and motivational strategies to promote patients' independent self-management.^{70,77}

Behavioural scientists (psychologists, social workers, psychiatrists, or other mental health professionals) play a vital role on the team by exploring challenges and issues related to diabetes self-management, providing support in setting treatment goals, and assisting individuals to implement the management skills needed for an intensive diabetes regimen. Behavioural scientists also provide counselling services related to adjusting to living with a chronic illness and stress management skills necessary to deal with a chronic illness.^{68,70,78-80}

2.8. Impact of Diabetes Certificate Programs on Pharmacists and Other HCPs

Despite the evidence supporting pharmacists' involvement in diabetes management, pharmacists may not feel as if they have the skills or confidence to provide diabetes education.^{81,82} Perhaps this is because the diabetes educator is a fairly new role and a function traditionally performed by nurses and dietitians.²⁹ Both Schapansky and Younis et al. demonstrated that pharmacists believe they need specialized training to provide diabetes care services.^{83,84} These findings were supported by Douglas et al.,⁸² who noted that although pharmacists are providing pharmaceutical services for patients with diabetes, there is a need for extra training and education to improve these services. Several studies have examined the impact of certification on pharmacists and the impact certification has had in the pharmacists' work environment. Plake et al. found that diabetes certificate programs such as the CDE and certified diabetes manager (CDM) have a positive effect on pharmacists' provision of diabetes care services to patients.⁸¹ Furthermore, pharmacists without diabetes-specific training may not be able to affect patients' attitude in a positive manner.¹⁵⁶ Attainment of the CDE credential leads to increased recognition and collaboration with other HCPs, personal and job satisfaction, increased respect from patients, and

improved knowledge and skills.⁸⁶⁻⁸⁹ The CDE designation may also lead to monetary benefits.⁹⁰ Simpson et al. noted that pharmacists with diabetes-specific training (i.e. CDE) consistently reported a more positive attitude towards diabetes management and a belief in the importance of education and provided more activities related to diabetes practice.⁵⁵ Ryan and colleagues found that pharmacy graduates who finished a diabetes concentration reported a higher level of self-confidence in their skill to deliver diabetes education and diabetes-related activities to individuals with diabetes than graduates who did not finish an intensive program in diabetes.⁹¹ The literature supports a positive impact of certification on various pharmacist-related measures. In Canada, there are many credential programs which give pharmacists an opportunity to receive a higher level of professional training in different therapeutic areas in order to further enhance their knowledge and skills. Such examples are the CDE, Certified Asthma Educator (CAE), and Certified Geriatric Pharmacist (CGP). However, there have been no published studies looking solely at their experiences in providing advance chronic disease management.

2.9. Specialized Diabetes Training Certificate Program

Due to the increasing prevalence of diabetes and the evidence that specialized training and skills in diabetes management are needed, many pharmacists have attempted to improve their education in advanced diabetes education.⁸¹ Trewet and Welch pointed out that involvement in education and training programs can assist pharmacists in acquiring knowledge and recognition for advanced diabetes readiness.⁸⁸

2.9.1. Certified Diabetes Educator (CDE)

An increasingly popular method for healthcare professionals to show they have specialized knowledge in diabetes education is to become a certified diabetes educator. A CDE is defined as “a health professional, committed to excellence in diabetes education, who has a sound

knowledge base in diabetes care management and education processes, as well as good communication skills”.⁹² CDEs apply in-depth knowledge and skills in the biological and social sciences, communication, counselling, and education to provide self-management education/self-management training.⁹²

By 1991, diabetes educators in Canada could become certified and prove their knowledge in diabetes education. The Canadian Diabetes Educator Certification Board (CDECB) is the Canadian body responsible for granting the CDE certification. The CDECB was established in 1996 in recognition of the need to achieve a certain standard of knowledge and skills to become certified in diabetes management.⁹³ Healthcare providers must meet certain requirements before applying for the CDE designation. For instance, to obtain the CDE designation, an HCP must be a registered healthcare professional with one of the Canadian regulatory bodies and have completed a minimum of 800 hours of direct diabetic patient care.⁹² Although relatively new in Canada, the National Certification Board for Diabetes Educators (NCBDE) was established in 1986 in the United States as an independent organisation to assist in diabetes management by offering certification as a diabetes educator for healthcare professionals involved in educating diabetic patients about managing their condition.^{52,94}

The National Association of Pharmacy Regulatory Authorities (NAPRA) has estimated that 36,147 licensed pharmacists work in Canada as of 2013.⁹⁵ Of these, only 321 as of 2011 are CDEs, representing 1% of all pharmacists and 14% of the total number of CDEs in Canada (estimated to number approximately 2300).⁹⁶ Although pharmacists who are CDEs still represent only a small fraction of the actual number of pharmacists (and HCPs who are CDEs), trends indicate that pharmacists are the fastest growing segment of CDEs among all healthcare professionals.⁵

In the United States, pharmacists who seek to improve their knowledge and training in diabetes management have a variety of options to do so. In addition to becoming a CDE, pharmacists in the United States can become a board certified-advanced diabetes manager (BC-ADM). This credential is administered through the American Nurses Credentialing Center (ANCC) and the AACE.⁹⁷ It is available to nurses, pharmacists, and dietitians holding advanced degrees. This credential differs from the CDE in that it is “more expansive, encompassing not only patient education, but also a broader patient care role, clinical management, and other professional/leadership activities”.⁵⁹ Lastly, pharmacists in the United States may become a Certified Disease Manager (CDM). The CDM is only offered to pharmacists and is sponsored and developed by the National Association of Boards of Pharmacy (NABP) and organised by the National Institute for Standards in Pharmacy Credentialing (NISPC).⁹⁸

2.10. The Role of Certified Diabetes Educators

Becoming a CDE is not unique to any one HCP in that it includes multiple HCPs with specialized training in diabetes care.^{99,100} Cypress and colleagues noted that the traditional responsibilities of the diabetes educator include patient education and the application of behavioural plans to enhance adherence to recommended therapeutic regimens.¹⁰⁰ Patient education is typically skills oriented, focusing on matters such as insulin injection, glucose monitoring, and diet planning.¹⁰¹ Behavioural approaches may include behavioural changes, goal setting, positive reinforcement, and stress management.¹⁰²

However, the scope of practice of the diabetes educator has expanded from that of educator to a more comprehensive role surrounding management and counselling of individuals with diabetes.^{103,104} Zrebiec showed that as a member of the diabetes healthcare team, the CDE can accept responsibility for all aspects of the patient-education process. This includes assessment,

teaching, and follow-up and takes into account any specific needs presented by the individual patient.¹⁰⁴

In 1999, the AADE published the scope of practice, standards of practice, and standards of professional performance for diabetes educators.¹⁰⁵ It illustrated that the primary responsibilities of CDEs involve education and medical management. Education includes teaching general diabetes information, emergency information, blood glucose monitoring, foot care, injecting insulin, and a variety of other educational activities.¹⁰⁵ Medical management includes all duties normally described (from start to finish) when taking responsibility for an individual patient.^{70,102,106}

According to the AADE, CDEs can play an essential role in helping patients achieve therapeutic and lifestyle goals outlined by the AADE7 Self-Care Behaviors™. The seven self-care behaviours include:

1. Healthy eating: learning to make healthy food choices by paying attention to nutritional content and portion sizes;
2. Being active: recognizing the importance of physical activity and making a plan to be active;
3. Monitoring: learning to check, record, and understand blood glucose levels and other numbers important to patients' diabetes self-care;
4. Taking medication: remembering to take medications as prescribed and understanding how they affect diabetes management;
5. Problem solving: gaining skills to identify problems or obstacles to patients' self-care behaviours and learning how to solve them;

6. Reducing risks: understanding the potential complications and taking steps to prevent them; and
7. Healthy coping: developing healthy ways of dealing with difficult times in patients' diabetes management.¹⁰⁶

2.11. Challenges in Diabetes Management

Healthcare professionals understand well the importance of providing patients with support for chronic diabetes management; however, they are often unable to deliver the education and lifestyle modification strategies necessary to manage their patients' diabetes.⁴⁵ Numerous barriers and issues hinder them from providing quality care for their patients with chronic disease.¹⁰⁷

Kahn et al. mentioned that many CDEs do not provide diabetes self-management education to diabetic patients due to the many barriers related to patient issues and teaching challenges.¹⁰⁸

Ruby et al. admitted that CDE registered nurses do not teach their elderly clients about physical activity and other issues related to diabetes management due to a lack of recourse, lack of knowledge in exercise prescription, and ageism.⁹⁰ A survey by Pinhas-Hamiel and Zeitler identified a number of areas perceived by physicians to be important challenges to successful treatment of diabetes in adolescent patients, including increased demands on their time and lack of knowledge and expertise to properly support and manage patients.¹⁰⁹ Community pharmacists providing care to patients with diabetes encounter challenges related to lack of time, insufficient human resources, lack of therapeutic knowledge, lack of funding, and lack of confidence.⁵⁸

The challenges in diabetes self-management are not limited to health care professionals, but also include patient barriers, such as language, socioeconomic status, culture, education, patient interest, insurance/medication assistance programs, access to care, waiting time, and willingness to attend meetings.^{41,107,110-112} This evidence suggests little difference from what is reported in

everyday practice, as the most common barriers and issues for implementing any new program or practice change in pharmacy are lack of time, lack of reimbursement, lack of private counselling area, lack of patient health record, poor communication between pharmacists and other HCPs, lack of motivation, lack of pharmacy support staff, lack of knowledge, and patients related issues.^{109,110,113-117} What is specifically unknown is whether CDE pharmacists in Canada encounter these same challenges or whether the designation has been a useful tool in overcoming some of the challenges pharmacists face.

2.12. Summary

Although CDE pharmacists may play a seemingly important role in helping diabetic patients manage their diabetes, it is unknown to what extent they are using their CDE designation to help facilitate learning and better health outcomes. A search of relevant literature revealed no such description of the day-to-day activities of pharmacist CDEs. It is important to know what CDE pharmacists are doing, as the literature is rife with evidence of challenges for pharmacists in providing education or clinical services (diabetes-related or otherwise) beyond their dispensing roles.^{59,103,110,118} This literature comes primarily from the United States, which functions with an entirely different healthcare system and has a much different work environment than what is observed in Canada, so it is unknown whether these observations will still be apparent in a group of Canadian CDE pharmacists. Becoming a CDE requires an investment by the practitioner as well as the employer, who often provides support to obtain the designation and, hence, may want a return on the investment. Therefore, this study attempts to identify what diabetes-related activities CDE pharmacists engage in, how the CDE designation has or has not affected their daily activities, and any challenges CDE pharmacists encounter in applying their knowledge within their current practice environment and strategies.

CHAPTER THREE

RESEARCH METHODOLOGY AND METHODS

3.1. Introduction

This chapter provides a detailed description of the qualitative research design used to answer the research questions and the rationale for choosing a qualitative descriptive approach.

This chapter also discusses the design employed in the study, outlining the sample population including the inclusion and exclusion criteria, the research setting, and the participant recruitment strategy. Ethical considerations are defined to confirm adherence to ethical standards. This is followed with the method of data collection and the process of data analysis. The chapter concludes with strategies that were used to confirm trustworthiness and methodological rigor.

3.2. Research Design

To answer the research questions, a qualitative research method of investigation was used. Qualitative research is a term used to define research that is focused mainly on people's experiences through the discovery of attitudes, views, principles, and experiences.¹¹⁹ Offredy and Vickers stated that qualitative studies are designed to better understand and gain insights into people's experiences, behaviours, concerns, value systems, motivations, aspirations, cultures, and/or lifestyles.¹²⁰ Such studies are the most appropriate method for answering our identified research questions as qualitative studies have been encouraged in areas of study where the voice of the group has been unexplored.^{121,122} Rossman and Rallies reported that the main feature of qualitative design is that the study is conducted within a realistic setting to pursue aspects within the social world.¹²² Hancock mentioned that qualitative research is exploratory research that can help to answer 'what', 'why', and 'how' questions.¹²³

According to Key, qualitative research has benefits over quantitative research because it creates richer and more comprehensive information, provides a complete understanding of the whole situation, and observes the participants in their natural settings.¹²⁴ Qualitative study is also developing in design, meaning that it does not have predetermined findings, which provides the investigator the chance to concentrate on the process as well as the findings.¹²⁵ The developing design is a useful feature of qualitative research because it is non-static and offers the flexibility to dig further into the topic to excavate the most data possible to clarify the deeper details of the incident.¹²²

Bogdan and colleagues mentioned that qualitative researchers are more interested in the quality of specific activity rather than how often it occurs or how it should otherwise be measured. The researchers used the cognitive methods of induction, assumption, reflection, and motivation to describe, analyse, and interpret.¹²⁶

Within qualitative research, four different approaches exist, all of which share the common objective of understanding a specific event from the viewpoints of participants' experiences.^{127,128} These approaches include ethnography, case studies, phenomenology, and grounded theory; each carries its own separate methodological framework.¹²⁰ A qualitative descriptive analysis is deemed to be the most appropriate approach for learning about the experiences of people and groups from their own opinions. A quantitative approach was considered; however, a qualitative approach would seem to provide richer data initially, from which information could be used to inform future work by perhaps using a quantitative approach with a larger sample.

3.3. A Qualitative Descriptive Approach

Three prominent qualitative research approaches were considered prior to choosing a qualitative descriptive approach: phenomenology, ethnography, and grounded theory. Although these

qualitative approaches are better recognized, the qualitative descriptive approach is becoming increasingly popular. The goal of qualitative description is not deep description (ethnography), theory extension (grounded theory), or clarification of the meanings of experience (phenomenology).¹²⁹ Phenomenological studies seek to describe the lived experience and core of an event.¹³⁰ Ethnographies build accounts of culture by utilizing observational methods to study how participants make sense of their world.¹³¹ Grounded theory studies aim to create theory from data and highlight the processes of data collection and analysis.^{131,120,130} Summarizing CDE pharmacists' experiences of providing diabetes management did not align totally with any of these three traditions. For example, an ethnographic approach would preferably have included an observational element, while a grounded theory study would have required that a theory be formed. While aspects of each of these approaches are taken up in the data analysis, this study cannot be classified neatly within any one of these approaches.

The qualitative descriptive approach provided a name and framework to guide this study. This approach seeks to describe the critical findings in a rigorous way that is free from alteration and bias, and the facts of the incident are presented utilizing everyday language.¹³² According to Houser, investigators use a descriptive qualitative approach to define an event of interest and discover this event through identification of common themes. The investigators then explore the potential meaning in these themes.¹²⁸

The qualitative descriptive method allows the opportunity to collect detailed descriptions about the CDE pharmacists' experiences, which research to date has learned little about. With this method, the investigator works hard to stay close to the surface of the participants' responses and incidents.¹³³ The major factor in a qualitative descriptive approach is learning from the participants.¹³⁴

Sandelowski reported that qualitative descriptive studies may be less interpretative than phenomenological or grounded theory as the researcher offers the facts in everyday language rather than meaningful philosophical structures.¹³³ This does not mean that the qualitative descriptive method lacks the volume and detail to disclose the meanings that individuals attach to specific incidents and experiences. Sandelowski stated that qualitative description is the approach of choice when a straight description of an event is wanted. This means that the researcher does not move away from the original documents. Sandelowski further asserted that qualitative descriptive approaches offer a unique, valuable, and comprehensive summary of people's experiences as they happen in everyday life. This approach gives the beginner researcher the freedom to discover and define events without being forced by a specific qualitative approach's niche. Therefore, the qualitative descriptive approach seemed to be the most suitable method for this study.

3.4. Research Paradigm

Mertens defined paradigm as "a way of looking at the world".¹³⁰ According to Creswell, the qualitative paradigm is a subjective method to discover the difficult and complete world, rather than an objective method.¹³⁵ People cannot be studied using models created for the physical sciences because people are qualitatively different from natural incidents. The interpretative paradigm reinforces the principles that reality is constructed by subjective awareness and guesses cannot be made. Investigators who agree with this paradigm are interested in the social building of meaning. Individuals have free will, aims, goals, and meanings so individuals should be examined as active agents.^{135,136} Lincoln and Guba stated that the interpretivism (constructivism) paradigm is a workable paradigm for the study of human interaction.¹³⁷ Hence, the constructivist

qualitative paradigm is the most appropriate for this study According to Offredy and Vickers, the qualitative paradigm framework is made up of ontology, epistemology, and methodology.¹²⁰

3.4.1. Ontological Assumptions

According to Lincoln and Guba, the basic ontological assumptions of interpretivism are responses to the question “what is the nature of reality?”¹³⁷ The ontological assumption of constructivism is that the researcher tries to understand real phenomena in the real-world and uses words or phrases provided by study participants to interpret these phenomena.¹²⁰ In the current study, the researcher assumed that certain realities (i.e., difficulties and barriers faced by CDE pharmacists in providing assistance to diabetic patients) exist that may affect CDE pharmacists’ performance in diabetes management. Knowledge would rely on CDE pharmacists’ perceptions and opinions. The researcher assumed that any solution to CDE pharmacists’ challenges could be attributed to diabetes support intervention. The current study was expected to demonstrate the reality of the problem.

3.4.2. Epistemological Assumptions

Epistemology is “a way of understanding and explaining how we know what we know”.¹³⁸ The epistemological assumptions of interpretivism focus on the relationship between the researcher and participants under investigation.¹³⁰ Offredy and Vickers reported that conducting the investigation in a natural setting for the participants can lead to a comprehensive perspective of the participants’ routine.¹²⁰ The current study attempted to answer the research questions by interviewing CDE pharmacists in an environment chosen by the participant. In this way, the information gathered could be sourced to others who face such problems frequently and would use the exact phrases and words of CDE pharmacists.

3.4.3. Methodological Assumptions

The basic methodological assumption of interpretivism in qualitative research involves “the strategy, plan of action, process or design lying behind the choice and use of particular methods and linking the choice and use of the methods to the desired outcomes”.¹²⁰ This study employed specific methodological strategies, including data collection and data analysis, to explore the experiences of CDE pharmacists in delivering diabetes care management. The examination was conducted in a natural setting and used inductive logic (e.g. multiple data analysis, audiotaping, purposive sample, and interview guide) to provide a detailed description of the context of the study.¹³⁰

3.5. Research Assumptions

It is critical that the researcher recognizes biases, assumptions, and preconceptions related to the research study. Polit and Beck defined assumption as “a basic principle that is accepted as being based on logic or reason but without proof or verification”.¹³⁹ The assumptions and predeterminations apparent below were based on the researcher’s own practices in the field of patient education. However, it is important to recognize that these assumptions and preconceptions might also be experienced by CDE pharmacists.

The following assumptions were made in relation to this study. First, certain challenges exist that hinder pharmacists from effectively utilizing their training in diabetes management. Second, pharmacists have a positive attitude towards educating patients with diabetes to help them manage their conditions. Third, pharmacists are unsure of how to incorporate clinical services in diabetes management into their existing work. Fourth, specialized pharmacists are more knowledgeable in diabetes education than generalist pharmacists. Finally, data collected from individual interviews reflected honest views and opinions of participants.

3.6. Sampling Strategies

A sample is a subsection of a population from which information can be collected.¹⁴⁰ Sampling processes usually are intended to yield an array of participants. Variety enhances the probability of recognizing a range of experiences around interview subjects, providing better validity for the themes developed from the data.¹²⁰

For the purpose of this study, a purposive sampling method was utilized. This method of sampling is a non-probability method that involves the selection of certain individuals whom the researcher hopes to include in the study, and participants were selected based on certain characteristics of interest.¹²⁰ According to Howell and Prevenier, purposive sampling is frequently used in qualitative studies; in fact, the investigator must purposefully choose participants that offer data rich in personal information in line with the aims of the research.¹⁴¹

Therefore, this method of selection was ideal for this research as the participants were experts in their practice setting and data delivered by them would facilitate the understanding needed to answer the research questions. Qualitative research does not explore variables, but rather actions and incidents that are educational and detailed consistent with the study.¹³⁰ The sample size in qualitative descriptive research is decided based on themes or frequent designs of meaning (ideas, thoughts, feelings) emerging from the data.¹⁴² Therefore, small sample sizes are necessary due to the large size of data that are created and collected from individuals involved in the study.^{143,144} Morse et al. reported that 8 to 12 participants are an acceptable sample size to allow for detailed description of participants' experience.¹⁴⁵ Hill et al. recommended using 8 to 15 interview respondents when more than one interview is conducted per respondent or when the group of respondents is mostly homogenous.¹⁴⁶ The target population in this study was CDE pharmacists who have experience in delivering diabetes-related services.

Information about this study and its purpose was emailed to all licensed pharmacists in Saskatchewan for whom the Saskatchewan College of Pharmacists (SCP) had an email address. SCP also faxed it to all pharmacies in Saskatchewan (Appendix A). Those CDE pharmacists who responded and indicated their willingness to participate were emailed a participant information sheet with an attached consent form (Appendix B). A mutually agreed-upon time, date, and place were determined for the interview. In appreciation for their time, \$40 gift cards were offered for participation in this study. A total of 14 CDE pharmacists agreed to participate, which was sufficient to interpret themes and ideas for this research. Although approval was granted for snowball sampling, this strategy was not necessary due to the large initial response and lack of new information from the scheduled interviews.

The setting for this study was the province of Saskatchewan. The province is widely dispersed over 6,900 square kilometres.¹⁴⁷ In 2010, 75,000 people living in the province had received a diagnosis of diabetes, and this number is expected to increase to 111,000 by 2020.¹⁴⁸ There were 1416 licenced pharmacists working in Saskatchewan in 2013;⁹⁵ however, there is no registry to tell us how many of these pharmacists are CDEs.

3.7. Ethical Considerations

The University of Saskatchewan's Behavioural Research Ethics Board granted full ethical approval for the research in May 2012. Recruitment and subsequent data collection did not begin until after the full ethics approval was obtained. During the recruitment process, potential CDE pharmacists were given the participant information sheet with an attached consent form. The information sheet informed the pharmacists that participation was voluntary. The sheet made it clear that participants could withdraw at any point during the study, could decline to answer the

questions without penalty of any sort, and that their information and their data would be destroyed. None of the participants withdrew from the study.

Privacy and confidentiality are the key aspects of protecting participants and such assurances are paramount to the ethical conduct of the researcher.¹⁴⁹ In this study, participants' confidentiality was a priority. To ensure the confidentiality of participants, each individual was assigned an identification code which was used on all documentation and transcripts relating to the participant. The identity of the participants was protected through use of the identification code (CDE 1 for participant one, CDE 2 for participant two, etc.) and by eliminating any identifying details from quotations, such as place of work and name of city or town. References to names of people in the quotations were also removed.

3.8. Data Collection

Individual, face-to-face, semi-structured interviews were chosen as the method to obtain information from participants. This type of interview offered a flexible tool and theme guide to help capture a wide range of data from all participants.¹⁵⁰ According to Offredy and Vickers, semi-structured interviews forge a path between the two other types of interviews (i.e., structured and unstructured).¹²⁰ Semi-structured interviews are conducted to allow for focused, conversational, two-way communication and can be used to give as well as receive information.¹⁵¹ The major benefits of using this method of data collection include the ability to develop rapport and gain participants' trust as well as develop an in-depth understanding of responses.¹²⁰ Many researchers prefer to use semi-structured interviews to allow participants the opportunity to express their opinions in their own words.¹⁴⁰ Face-to-face interviews are beneficial when the researcher is interested in obtaining more personal information from the respondent.¹²⁰

Studies have demonstrated that interviewees talked more during face-to-face interviews than telephone interviews.^{152,153}

Audio recording interviews are a common and useful method in qualitative research.¹⁵⁴ Thus, the interviews were audio recorded with the consent of all participants. Audio recording aids in providing a detailed account of the participants' responses and a verbatim transcript for analysis;¹⁵⁵ it also prevents the researcher from being biased due to inadequate notes or poor memory of the interview. The length of the interview varies by participant.¹²⁰ If responses need further clarification or elaboration, further interviewing will take place. In this study, one-time interviews were conducted.

According to Graneheim, interview guides allow researchers to gather similar kinds of information from all participants.¹⁵³ However, no validated interview guides existed to describe CDE pharmacists' experiences in diabetes care management. Therefore, this study included the creation of a specific semi-structured interview guide (Appendix D). The interview guide contained a list of open- and close-ended questions derived from the literature, published guidelines, and themes explored in previous research.^{55,56,58,59,81,82,102,106,111,115,117,156-163} These questions were balanced, unbiased, sensitive, and clear. Probing questions were also used to further clarify responses, thereby providing the required data while answering the research questions. The same interview guide was used with all respondents.

The one-time, in-depth semi-structured interview guide for the study consisted of five components: demographics, description of work activities, the benefits of CDE designation, challenges related to providing diabetes services, and, correspondingly, possible solutions. Each component included between four and eight questions with a number of probes. Demographic questions were developed to identify CDE pharmacists' characteristics, including age, gender,

number of years as a pharmacist, number of years as a CDE pharmacist, any other pharmacy-related credentials, and area of practice. The second component was developed to identify the work activities related to diabetes care practice. The third component was created to explore the value of the CDE credential. Further questions were developed to identify CDE pharmacists' perceptions of challenges in delivering diabetes care management. The last section of the interview guide contained questions to explore CDE pharmacists' opinions about suggestions for possible solutions to overcome these challenges. The semi-structured interview guide was reviewed by the academic supervisor and the advisory committee members to support face validity before commencement of data collection.

Hill and colleagues suggested that an interview guide that consists of 8 to 10 questions with probes is appropriate for completion within one hour.¹⁴⁶ They also recommended that at least one to two pilot interviews be conducted to verify questions. The interview guide was pilot tested by one CDE pharmacist with the main researcher. This pilot test took place after receiving ethics approval. The purpose of the pilot testing was to ensure that the developed questions would be congruent with the research objectives and to assure that the interview guide questions were clearly worded and drew an appropriate range of responses.¹⁶⁴ The procedure of pilot testing includes a small-scale test of the study processes and a review of the processes based on the pilot test outcomes.¹⁶⁵

The first interviewee indicated no concerns with the interview and that the interview questions made sense. As a result of the pilot testing, no modifications to the question content and language selection were made, and the interview data were included as part of the data analysis. All the interviews were conducted by the same researcher (Fahad Alzahrani). The interviews were recorded via a digital audio-tape and later transcribed for data analysis. Interviewer notes

were taken throughout the interviews to further stimulate an understanding of CDE pharmacists' practice experiences in diabetes care management and supplement the tape recordings. The researcher wrote reflective reports directly after each interview. The interviews were conducted over a four-month period (June 2012-September 2012). All interviews were conducted at a time and location of the CDE pharmacist's choice, including participants' places of work, homes, and neighborhood cafes. The interview process for each participant lasted approximately 35 minutes, ranging between 23 and 60 minutes.

In an effort to build the relationship between CDE pharmacist participants and the researcher, interviews began with general topics (e.g. weather, traffic, researcher life back home). Although the interview guide was used, respondents were encouraged to talk freely about their experiences, providing as much description as they liked. If needed, flexible conversation and chances to turn away from the guide were allowed; few prompts were required. Demographics were collected at the end of the interviews.

Post-interview actions included listening to each recorded interview to confirm audibility and fullness and to look for any gaps or follow-up queries that could be used if CDE pharmacists were re-contacted in the future.¹⁵⁰ In addition, notes were recorded in the reflection report about these opinions directly after the interview.

Once all interviews were completed, they were transcribed by an experienced transcriber at the University of Saskatchewan. Each interview was transcribed verbatim and double-checked against the recording for accuracy. In cases where direct citations may have compromised the privacy of participants, the transcripts were given back to the participants to read, edit, and make corrections if they wanted. Only slight additions or deletion of words were made to the final transcripts. This method is also known as a member check; it allows the participants to agree or

disagree with the information and to confirm the accuracy of their responses and/or of the interpretation given to them.¹⁶⁶

The point of saturation plays an important role in choosing the suitable number of participants in qualitative research. Data saturation is the point at which no new themes are emerging from the data.¹⁶⁷ Bowen and Glenn stated that saturation occurs when the researcher does not find any new information during interviews.¹⁶⁸ The fullness and volume of information in the data decide when saturation is obtained. Guest and colleagues found that saturation usually occurs within the first eight participants.¹⁶⁷

This qualitative study included 14 CDE pharmacists to maximize data obtained from respondents. Utilizing 14 CDE pharmacists in the research study ensured that data saturation occurred and that different data were collected. Although the data saturation in this study occurred after nine interviews, the remaining interviews were already scheduled when saturation was obtained and were thus included in the data analysis.

3.9. Data Analysis

Data analysis is conducted to assess, record, organise, categorise, and give meaning to data. The aim of data analysis is to correctly understand and draw out the data to define themes.¹³⁰ The data collected for analysis in this study were interviews, researcher notes, and demographic data.

Qualitative researchers must maintain a balance between the need to be concise and the need to preserve the data.¹³⁹ Parahoo reported that a significant aspect of qualitative data analysis is that data analysis is conducted simultaneously after data collection is completed.¹⁴⁰ As with all qualitative data, descriptive data analysis includes such processes as coding, categorising, and making sense of the essential meanings of the event.

All interviews were transcribed verbatim and entered in a computer with the use of NVivo 10 software (QSR International). Data analysis involved employing the software system to arrange for text term frequency and coordinating set relation percentage. The NVivo software simplified categorisation of the transcribed data based on nodes or themes.¹⁶⁹ According to Ozkan, NVivo is an extremely effective database as it enables researchers to deal with large data sets, perform complex searches, and organise material.¹⁷⁰ Once the researcher discovers themes, the software searches for repetition. Notes data were not coded but were used to help in the dissection and analysis sections.

One of the most common ways to analyse data from qualitative studies is thematic analysis, whose fundamental outcome includes meanings, relationships, and contexts found in the data.¹⁷¹ King and Horrocks defined thematic analysis as "... recurrent and distinctive features of participants' accounts, characterising particular perceptions and/or experiences, which the researcher sees as relevant to the research question".¹⁷² Braun and Clarke defined a theme as part of data that captures something significant related to the complete study, and this definition was used as the foundation for theme identification in this research.¹⁷³

There are two types of thematic analysis. First, the inductive method means that the data are coded as it seems appropriate to the researcher, without any pre-determined outline in which the data fit. Another type is the theoretical method, which is driven by the researcher's objectives, and themes tend to follow the interview question schedule.¹⁷³ A broadly inductive thematic analysis was applied in this research. The research aims and objectives were kept in mind during analysis, which allowed for the development of themes inside these aims. An inductive method means looking at investigative literature after the analysis, so there is no pre-determined mental outline for the researcher. On the other hand, a theoretical method includes searching the

literature before the analysis to frame the study. The theoretical method was utilized in this research.¹⁷³ There are several advantages to using the thematic analysis method that help researchers explain their results. These include flexibility, being well matched to large data groups, clarification of themes supported by data, appropriate for researching questions that go beyond people's experiences, and assists in developing categories from the data.^{171,173,174}

This study followed Braun and Clarke's guide for data analysis Table 1. This framework for thematic data analysis includes six phases.¹⁷³

Table 1. Phases of thematic analysis

Phase	Description of the process
1. Familiarising yourself with your data	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2. Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes	Checking work in the themes in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5. Defining and naming themes	Ongoing analysis to refine the specifics of each theme and the overall story the analysis tells; generating clear definitions and names for each theme.
6. Producing the report	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating the analysis back to the research questions and literature, producing a scholarly report of the analysis.

Adapted from Reference 175. Using Thematic Analysis in Psychology (2006, p. 35).

All interview transcripts were read multiple times to obtain a feeling for them. The open code was used to identify significant statements pertaining directly to the research aims and objectives. The codes and key quotations were then gathered into themes. These themes contained broad topics that were stressed in the interviews and highlighted the most frequently expressed experiences and opinions. The outcomes were integrated into a rich and comprehensive description of the practice experiences of CDE pharmacists. Theoretical thematic analysis of the data was accomplished through collaboration and long discussion with the academic supervisor (Dr. Kerry Mansell) and advisory committee members (Dr. Jeff Taylor and Dr. Jason Perepelkin). Discussion and review of interviews produced agreement on four major themes that were recognized in all interviews and determined to be relevant for this research. After that, the findings were reviewed and discussed with an external auditor who is experienced in qualitative research methods as well as a practicing healthcare professional. The auditor approved the coding, sub-themes, and themes created with minor suggestions.

3.10. Trustworthiness

According to Mertens, maintaining trustworthiness is important for ensuring the quality of findings and increasing the reader's confidence in the findings.¹³⁰ Lincoln and Guba maintained that, in qualitative research, four criteria exist for establishing trustworthiness: credibility, transferability, dependability, and confirmability.¹⁷⁵

3.10.1. Credibility

Credibility is defined as the extent to which data collecting, data analysis, and results are accurate and trustworthy.¹⁷⁶ Speziale and colleagues determined a number of activities that help establish the credibility of study results, such as member checking, triangulation, and prolonged engagement.¹²⁷ In this study, credibility was established by adopting member checking; in other

words, respondents were involved in verifying the transcribed interviews.¹⁷⁷ The participants received a copy of verbatim transcripts to verify the accuracy of the information and to ensure that the transcript accurately captured their intended response. Triangulation was also performed, whereby an audit of interview transcript coding was performed to clarify whether another auditor would come to the same findings and general research conclusion.¹⁷⁸ Prolonged engagement consisted of travel to the participants' residences and conversation prior to and after the interviews.

A peer debriefing committee was utilized to help in removing researcher bias. The peer debriefing committee comprised two individuals and the academic supervisor, all of whom were professors familiar with the type of research study conducted. The peer debriefing committee provided the researcher with feedback and suggestions on activities, thoughts, and behaviours to minimize researcher bias.

3.10.2. Transferability

Transferability is the extent to which the findings and context can be transferred to other situations or future studies.¹³⁰ However, the decision regarding transferability relies on the users of results and not on the researcher. To meet this criterion in the study, a full description of time, place, and participants' responses was provided, including appropriate quotations that accurately reflected the experiences of CDE pharmacists in diabetes care management. Also, demographic information from respondents was collected in terms of age, gender, education, and practice experiences, which assisted in providing a clearer picture of the study culture and can help readers in defining transferability.

3.10.3. Dependability

Dependability is related to the stability of the data and whether the results would be likely to be replicated in the same context with the same individuals over time.¹³⁰ In this study, clear explanations of the processes of the research, including methods, analyses, and interpretations, were provided under the academic supervisor's review. To this end, an audit trail was developed to improve the dependability of the study by tracking and recording all decisions such that an external auditor could examine them to assess whether the information collected is representative of the conclusion reached.¹²⁷ This study also was evaluated by one external reviewer to confirm its dependability. In addition, dependability was optimized by systematically following Braun and Clarke's process in analysis of the data.

3.10.4. Confirmability

Confirmability is related to the data representing the information participants provide.¹³⁰ It involves techniques used to limit bias in the research.¹⁷⁹ There should be no biases or subjectivity in the research; all data must stand for the respondents' voice.¹³⁹ To ensure confirmability in this study, respondent interviews were tape-recorded and transcribed word by word, with personal notes added. To further minimize bias, participants' responses were reported reflexively and objectively and the external reviewer was asked to audit and check the process of the research performed. The respondents were also provided an opportunity to express any concerns they had regarding the research.

CHAPTER FOUR

FINDINGS AND DISCUSSION

4.1. Introduction

This chapter focuses on the themes that emerged from participants' interviews which reinforce the experiences of certified diabetes educators (CDE) pharmacists in everyday practice. From the transcribed interviews, 755 significant statements were extracted reflecting the practice experiences of CDE pharmacists; 198 cluster themes were formed which further merged into four main themes. In the following section, the results will be discussed thematically with common experiences gathered into clusters.

Furthermore, the discussion in this chapter connects the description of experiences to the results and previous literature. Combining the results and their discussion into one chapter is usually preferable and more sensible because this structure is clearer and less repetitive.¹⁸⁰

4.2. Demographics Information

The demographics and characteristics of the 14 participants are described in Table 2.

TABLE 2. Demographics and characteristics of the participants (n=14)

Code	Gender	Age Range (Years)	Source of pharmacy degree	Area of practice	Years as pharmacist	Years as CDE	Work schedule	Practice location
CDE 1	Female	36-40	University of Saskatchewan	Community practice	10	7	Full time	Urban
CDE 2	Female	51-60	University of Saskatchewan	Community practice	38	12	Full time	Urban
CDE 3	Female	31- 35	Other Canadian University	Community practice	11	7	Full time	Urban
CDE 4	Female	41-45	University of Saskatchewan	Community practice	23	6	Part time	Rural

CDE 5	Female	51-60	University of Saskatchewan	Government	32	14	Part time	Urban
CDE 6	Female	51-60	University of Saskatchewan	Outpatient hospital	30	1	Full time	Urban
CDE 7	Female	46-50	University of Saskatchewan	Outpatient hospital	22	11	Part time	Rural
CDE 8	Female	31-35	University of Saskatchewan	Community practice	9	6	Full time	Rural
CDE 9	Female	51-60	University of Saskatchewan	Community practice	39	6	Full time	Rural
CDE 10	Female	31-35	University of Saskatchewan	Community practice	22	2	Full time	Rural
CDE 11	Female	36-40	University of Saskatchewan	Primary healthcare	17	3	Full time	Rural
CDE 12	Female	51-60	University of Saskatchewan	Community practice	30	4	Full time	Urban
CDE 13	Female	31-35	University of Saskatchewan	Community practice	10	5	Full time	Urban
CDE 14	Male	41-45	University of Saskatchewan	Community practice	8	3	Full time	Rural

A purposive sample of 14 CDE pharmacists working in Saskatchewan participated in the study. Of the participants, all were female except for one and the majority were younger than 50 years old. For 10 participants, the primary place of practice was a community pharmacy, followed by others working in a hospital pharmacy, primary care, and the government. Of those pharmacists who worked primarily in community pharmacies, four were also working in diabetes clinics outside the pharmacy. There was an equal mix of pharmacists practicing in rural and urban communities. Overall, the pharmacists had been licensed for an average of 24 years and their experience as a CDE ranged from 1 to 14 years with five CDE pharmacists practicing in this capacity between 6 and 10 years. Ten CDE pharmacists indicated that they worked 35 to 46 hours per week. Basic education in pharmacy was mostly at the baccalaureate level. Four of the CDE pharmacists held other credentials to increase their knowledge and skills; two were certified geriatric educators, one was a dietician, and one was a certified respiratory educator.

4.3. Interaction with Diabetic Patients

All the respondents indicated that diabetes education is considered a high priority in their work setting:

“It’s [diabetes education] a priority. That’s what I trained to become so obviously I have a very vested interest. And such a large percentage of the people we deal with have diabetes, I mean such a large percentage, that. Yea, of course. It’s a priority”. CDE 2

Participants estimated that anywhere between 15% and 75% of their work time is devoted to diabetes-related activities, including clinical activities, educating activities, or other pharmaceutical care functions. This varied with time depending on the practice setting and whether they practiced in urban or rural areas. The CDE pharmacists practicing in urban areas spent more time delivering diabetes-specific care. One CDE pharmacist who worked in an urban area (large community) reported:

“Probably 75% [percentage of her time devoted to diabetes-related activities] because I mean a specific role that’s exclusive to allow me to provide these services versus being in the pharmacy trying to incorporate them”. CDE 1

Another CDE pharmacist who worked in a rural area (small community) stated:

“Probably wouldn’t be much different than your average pharmacist [percentage of her time devoted to diabetes-related activities]. Maybe a little bit more, because I probably tend to take to most of the diabetes, you know, the new diabetics or any questions or issues that come up, so... probably ten percent, maybe”. CDE 8

The participants estimated that they interact with anywhere between 5 and 50 diabetic patients per week, depending on a variety of factors such as patient needs and time of year. This interaction between CDE pharmacists and patients with diabetes ranged from typical interactions such as dispensing medications to providing in-depth diabetes education. Two participants indicated their experience as follows:

“I have 35 regular patients that are either in touch with in person or by phone and we probably get a new start every week”. CDE 6

“So I’d say 25 [the number of diabetic patients that she interacts with] would be pretty standard and I would say for the majority of those people because those are people that you are meeting one on one with via an appointment then you provide extra services [any extra diabetes services beyond what she would tell someone at a typical interaction] for all of them”. CDE 2

CDE pharmacists indicated that they interact with patients of all ages, ranging from children to the elderly. However, the majority indicated no involvement with gestational diabetes in women.

4.4. Major Themes

Thematic analysis of the interview components generated four themes with 755 references to all four themes (Table 3). These themes provided the whole picture of practice experiences of Saskatchewan CDE pharmacists in everyday practice.

Table 3. Interviews themes

Themes	Sources	References
Work activities of CDE pharmacists	14	317
Benefits of CDE certification	14	255
Challenges in practice	14	135
Strategies to overcome challenges	14	48

Each theme represented an overarching subject that included several sub-themes which are shown in Table 4. Each theme and sub-theme will be described and discussed with excerpts from the participants’ interviews used to highlight and support each theme.

Table 4. Major themes and sub-themes

Themes	Sub-Themes
Work activities of CDE pharmacists	Diabetes education
	Follow-up and monitoring
	Recommendations and referrals
	Peer assistance and program development
Benefits of CDE certification	Personal and professional satisfaction
	Improved patient outcomes
	Collaboration, respect, and recognition
	Clinical knowledge and skills
Challenges in practice	Lack of pharmacist motivation
	Lack of awareness
	Resistance from other healthcare providers
	Infrastructure and resources
	Prescriptive authority
	Patient-related issues
Strategies to overcome challenges	Relationship building
	Time and reimbursement issues
	Increasing public awareness
	Enhancing patient motivation

4.4.1. Work Activities of CDE Pharmacists

All the CDE pharmacists interviewed described the diabetes-related activities that they provide in everyday practice. As critical members of healthcare, pharmacists have a major impact on diabetes care and education. They can be in a position to recognize patients with diabetes, offer information on their condition, and stimulate them to pursue appropriate medical care services.³³

Almost all the CDE pharmacists reported that they provide comprehensive diabetes services for

patients with diabetes, including diabetes education, patient follow-up and monitoring, and patient referral to other healthcare professionals as required.

4.4.1.1. Sub-Theme: Diabetes education

One of the most significant components of diabetes management is patient education so that people with diabetes have the essential information needed to manage and control their condition.¹⁵⁶ Diabetes education is important to overall health promotion and helps to prevent the onset of acute and chronic complications related to diabetes.²⁶ As expected, all the participants identified education about drug therapy as the most frequent activity; they believed that one of their primary responsibilities is helping patients with diabetes to be knowledgeable about each diabetic drug, including its action, indication, contraindications, adverse effects, toxicity, prescribed dosage, suitable timing, and regularity of taking. Counselling regarding medication includes oral diabetic agents as well as for insulin. One CDE pharmacist shared her personal experience:

“Because I think that’s where the biggest need is. If we are selling the product then we have to be prepared to tell the people how to use it, I think that is our responsibility. I don’t necessarily think that’s the nurse’s responsibility, I think it’s a pharmacist’s responsibility, it is a medication and we’re responsible for making sure that people know how to use that medication appropriately. I mean other health care professionals may disagree with me but I think that’s our responsibility”. CDE 2

The majority of CDE pharmacists stated that they provided not only information on diabetes and its medications, but also counselling on other chronic diseases and their related medications, such as hyperlipidemia and hypertension:

“And to counselling on to include the medications for their blood glucose control as well as lipid and blood pressure control or you know, depression, smoking cessation, whatever other issues may be going on in relation to their diabetes”. CDE 4

CDE pharmacists stated that counselling on medications was considered part of a pharmacist's practice; however, is not something that has to be performed specifically by a CDE:

“Yes [I provide information on diabetic medications], but any, either pharmacist would do that. It wouldn't just, if, we're both here, then I would do it. But if I'm not here, even though she's not a certified educator, she would still provide that information”. CDE 11

One of the most significant activities that CDE pharmacists reported providing was insulin starts and insulin dose adjustments. This included teaching the proper insulin injection technique, insulin's mechanism of action, and corresponding blood glucose patterns. Many participants reported that they spend a lot of time on insulin management and insulin starts. The following quotation illustrates the experience of insulin activities reported by one participant:

“Many times we'll [CDE pharmacists] identify someone who could benefit from insulin. We'll talk about it with the patient and then I'll offer to obtain a prescription for them to start insulin and then I'll fax the doctor and ask if I can have the prescription along with the authority to make adjustments to try to titrate them up and then we'll encourage the patient to go follow up with their physician and with me so their physician is kept in the loop. So I'll ask the patient to keep the physician updated with the changes that are being made”. CDE 1

One participant also reported providing information to patients with diabetes about self-injection techniques and insulin-related topics:

“The new insulin starts, they [patients] get a full training session. We'll usually have them pick up their prescription for insulin, bring it back and we'll spend an hour with them, showing them the injections, how, what to do with their insulin, I usually do a session on how the insulin works”. CDE 6

Another participant reported providing individual or small group insulin pump training and education to patients with diabetes:

“I do work with pump training, insulin pump starts so I currently do some independent training so I'll get referred a patient who's interested in a pump and I'll get them trained”. CDE 1

Providing counselling regarding insulin is not standard practice,⁵ and most pharmacists are not comfortable providing this sort of counselling in relation to insulin.⁸⁴

It is important to view diabetes in the context of its long-term sequelae and the hazards associated with chronic hyperglycemia. It is well recognized that diabetes-related complications can be prevented or delayed with strict adherence to medications and implementation of lifestyle changes.⁸ Almost all the participants interviewed provide counselling on diabetes-related complications (such as renal disease) and other related topics such as depression, hypoglycemia, and foot care:

“There are tons of other issues with metabolic disorder. Usually there’s lots of depression associated with diabetes, certainly lots of renal problems, peripheral vascular disease so you’re always looking at foot care and pedal pulses. It’s not just your blood sugars; it’s a whole host of things that you got to be concerned about”. CDE 2

Another CDE pharmacist reported providing in-depth information about acute and chronic complications in relation to diabetes:

“Talk a lot about complications as a result of diabetes, explaining a lot of the terms that they’ve, that people maybe have heard, haven’t heard”. CDE 14

When providing advice regarding lifestyle changes, pharmacists should focus on the key areas, including nutrition, physical activity, smoking, alcohol intake, and stress reduction.⁵⁰ All the participants indicated that they provide education to their diabetic patients on how to modify their lifestyle. Examples included providing advice on healthy eating, regular exercise, maintaining healthy weight, and the importance of smoking cessation if the patient smokes.

A proper diet is significant in the management in Type 2 diabetes and a vital component of Type 1 diabetes management.¹⁸¹ Regarding nutritional counselling, attention should be given to particular food content, especially carbohydrate content.¹⁸² All of the CDE pharmacists indicated

that they provide some degree of basic nutritional information on Canada's Food Guide, food groups, carbohydrate counting, reading food labels, serving sizes, developing a meal plan, and reading references related to nutrition, especially to newly diagnosed patients:

"We [diabetes team] do carbohydrate counting, when we do, we have some patients who are able to do carbohydrate counting, so we do some of that work with them. We do mostly initial food groups, portion sizes, counselling on how to spread their food throughout the day to match medication times, and really to get them kind of prepped up because our dietitian does a lot of meal planning. Where she'll literally tell them this is how many carbs you have to spend, where you plan to spend them and this is how many is in each group". CDE 6

This differs somewhat from previous literature, which indicates that a large percentage of pharmacists do not provide any sort of nutritional counselling.¹⁵⁶ If these pharmacist were not providing advanced nutritional information because of a lack of suitable training, such knowledge and skills might be improved.⁸⁵

In addition to nutrition, the other cornerstone of diabetes management is physical activity, which can help achieve weight loss and maintain a healthy body weight.¹⁶⁰ When asked if they provide counseling on the importance of physical activity, several of the participants indicated that they assisted and encouraged their patients to include activity in their daily routine and find small manageable ways that are appropriate for them to increase their activity levels. It seems that CDE pharmacists may be more engaged in talking about nutrition and more comfortable with nutrition than exercise:

"We [CDE pharmacists] encourage it [physical activity]. We don't, we'll sometimes ask them to, I mean, we're trying to get them to make an actual plan of how they are going to implement it into their life but we're not leading those, like I'm not, physically taking them for a walk or something like that". CDE 11

Another CDE pharmacist who worked primarily with the elderly indicated why they provided general information on exercise:

“Probably less [information about physical activity than nutrition] so because I know that, the majority of people that I speak to are seniors, elderly so they may have other conditions that really keep them from being as active as they’d like to so that’s probably the majority is a senior population”. CDE 9

Counselling on physical activity and exercise is rarely provided. CDE pharmacists may believe this activity to be the responsibility of other healthcare providers (HCPs):

“Physical activity because I’m obviously not an exercise therapist, I don’t know a lot about it myself. My physical activity, explanations are quite general”. CDE 2

Patients with diabetes are at high risk for developing cardiovascular disease. Since tobacco use is also a risk factor for cardiovascular disease, it is prudent for pharmacists to educate diabetics about the detrimental effects of smoking and the various strategies to quit smoking.¹⁶⁰ One participant stated that they counselled patients with diabetes regarding smoking cessation:

“Yea [providing information on smoking cessation], diabetes goes along with blood pressure and, and commune disease, smoking cessation, that type thing”. CDE 13

These findings are consistent with other research suggesting that pharmacists are well suited to provide patients who smoke with smoking cessation counselling.^{157,158,183}

With the availability of self-monitoring of blood glucose (SMBG) meters, it is easy for diabetics to check their blood glucose anywhere, anytime. Pharmacists can play an essential role in teaching patients about the use of SMBG meters and training them on the suitable use of said meters. All the participants interviewed indicated that they help their patients understand and interpret their SMBG results and provide blood glucose meter training. This is important, as a large percentage of meters sold in pharmacies are sold by non-pharmacist personnel, so pharmacy technicians often perform meter teaching; however, how to interpret the results is often the vital, missing component. Roscoe reported that all pharmacies provide blood glucose

meters and instructions on how to use them, but only those pharmacies that have an interest in diabetes have CDE pharmacists interpret results and help patients understand readings⁵:

“Teaching meter training to newly diagnosed patients as well as patients who are wanting a different type of meter and kind of going over the numbers, their targets, what the numbers mean, and how we can help them”. CDE 13

“We’ll screen, we interpret – we do AICNow screening...then we’ll look at their blood glucose logs or meters and we’ll help determine pattern management and solutions to the patterns we’re seeing so part of that is educating patients so that they can make their own interpretations and then providing meaningful solutions to that”. CDE 1

When asked about ordering and interpreting laboratory tests, responses from regarding participants’ involvement varied. A few CDE pharmacists reported that they had access to order laboratory tests. These pharmacists tended to be those who worked in some capacity in a primary care site:

“In that course of time, we’ll order appropriate lab work. So if I’m doing a phone follow up and I think the patient needs to have some lab work done, or we pick up even something else in the follow up, then that gets relayed to the nurse practitioner who will actually fill in their req. I don’t actually fill in the requisition”. CDE 6

Other CDE pharmacists stated that they did not have direct authority to order laboratory tests in the province of Saskatchewan, but instead would make recommendations to the physicians to do so:

“We have no direct authority to order lab tests but through the patient or through the physician, we would recommend from time to time, if there were some irregular blood work happening and if we needed to pinpoint an issue”. CDE 5

4.4.1.2. Work setting

The 14 participants emphasised that they deliver diabetes services in different settings, such as physician offices, hospitals, pharmacies, and patients’ homes. Most participants indicated that they provide diabetes education in a private counselling room so that confidentiality can be

maintained. This is congruent with best practices and provides a measure of privacy that is not always available in pharmacy settings.¹⁸⁴

“Mostly [diabetes education] in the pharmacy because we did have a private counselling area. A room with a door that closed and, so you know, it was to the ceiling, so it was very private”. CDE 5

“Majority of diabetes education is in the pharmacy, in the doctor’s office, I have done some home visits”. CDE 12

Diabetes education is not restricted to the pharmacy; however, one participant reported harnessing technology to communicate with patients:

“[I provided diabetes education] in the pharmacy or at the health centre or via technology, email and/or text”. CDE 11

Most CDE pharmacists indicated that they provide diabetes education away from the pharmacy (often outside normal working hours) in community settings such as local civic centres, schools, hospitals, churches, and mosques:

“I do the community screening or sometimes education where I’ll put on a talk about a specific area of diabetes and we’ll invite participants to attend...Any sort of group we’ll use local civic centres for a larger group to provide the service and in some services if I’m doing screening, I’ll be out in the community, so we’ll be at usually where the, for example, we went to a mosque last week in my city, and we did screening for the participants. We know it’s a higher risk group so we went and provided that service. Going to the Metis/Indian/Metis friendship centre, we’ll set up in their gym so sometimes it’s on location”. CDE 1

In addition to individual counselling, one participant also reported holding group sessions on specific diabetes-related topics:

“I do group sessions. They are mostly just general education, sessions on a specific topic. For example, we are going to be running one on foot care and neuropathy and talking about all the various things they can do with what they’re experiencing, how do they identify it, how are some ways to improve it, what are the prescription products that are available so that would be a session. We would just invite 20-30 people with diabetes so

they'll probably more likely to have neuropathy, maybe they've had diabetes for a long time, maybe they've been on insulin, maybe they have a prescription for Gabapentin from a while back so we'd look for any of those signs and then invite them to a group. So that's where we'd do a group session". CDE 1

The participants indicated that patients with diabetes did not need to make an appointment to see them; however, almost all CDE pharmacists encouraged their diabetic patients to book an appointment if they needed a more in-depth knowledge session in diabetes management:

"They have actually booked an appointment – I'm not seeing them over the counter and I'm not seeing them in pharmacy. I'm either in a physician's office and they've booked an appointment to see me or they booked an appointment to see me here, like you are here. So, that's obviously more intense. I don't know if you want to call it extra services but, yes, I guess it is extra services". CDE 2

4.4.1.3. Sub-Theme: Patient follow-up and monitoring

By monitoring patients' health progress, pharmacists can build relationships with their patients to help ensure good results of care and effective diabetes management.³³ Pharmacists are able to observe the progress of diabetic patients in their efforts to reach their health-related goals. The CDE pharmacists interviewed indicated that they do engage in follow-up and monitoring activities. In particular, participants noted that a great deal of follow-up is devoted to patients on insulin therapy. Most participants indicated that they usually follow up with their patients within the first one to two weeks of starting insulin or a new medication. The amount of follow-up also depends on the needs of the patient and the complexity of the patient's drug therapy issues:

"Well because we [CDE pharmacists] do a lot of insulin starts, a lot of insulin adjustments and these are usually followed up within 48 hours. Then I usually follow up again in about a week. There's lots of follow-up to insulin. Even, oral medications, I mean you don't follow up as intensely but you usually get to see the client again by their next A1C which is three months down the road for sure, if not sooner. So there's lots of follow up". CDE 2

4.4.1.4. Sub-Theme: Recommendations and referrals

If a CDE pharmacist sufficiently monitors individuals with diabetes, suitable referrals can be made to other members of the diabetes care team.¹⁰⁶ Campbell stated that referring patients to other specialist health providers is one of the principal roles of pharmacists.³³ Hartnell and colleagues reported that one important role of community pharmacists in the management of patients with diabetes is providing feedback to physicians and other HCPs about diabetes medication-related problems.⁵⁸ Congruent with other studies, I found that CDE pharmacists actively engage in providing recommendations to other HCPs and providing communiqués regarding their patient's health status.^{156,185} The majority of the CDE pharmacists interviewed indicated that they refer their patients to other healthcare professionals if they require further help with specific topics. Frequently listed examples of where consultation is required and sought was with dietitians, physical therapists, psychologists, and mental health professionals. This is unsurprising, as pharmacists are often not as comfortable dealing with the mental and psychological aspects associated with diabetes, as say, they are with hypertension:⁵⁵

“It's my responsibility if I think someone needs [the] dietitian's expertise that I refer to the dietitian. If I think they need the psychologist, then I refer to the psychologist, and it comes back the other way”. CDE 7

Another participant emphasised the importance of referral to a dietitian:

“I always really encourage patients to get a detailed dietitian consult because that is so critical for people with diabetes. Because they need an overall nutritional assessment which is certainly not our skill set as pharmacists”. CDE 1

One participant referred patients to physical therapists or fitness centres to encourage them to get more involved in physical activity programs:

“Physiotherapist clinic down the street. So, we will refer people to their exercise therapists, if needed. And we’ve also partnered with one of the local gyms so they’ll help take people on as well, you know, people who have never exercised. We tell them to do 150 minutes a week, they don’t usually know what that means”. CDE 8

In addition to making recommendations through the traditional route, one pharmacist reported having a collaborative practice agreement with a physician that allowed the pharmacist to initiate therapy, modify doses, and order laboratory tests (indirectly); however, these actions must be documented and communicated to the physician:

“I would either write a note to the physician or a note for the patient to take to their physician instructing them to request that some lab work be completed and that they bring the results back to me. So not per se ordering it because we have no direct authority to order lab tests but through the patient or through the physician, we would recommend from time to time, if there were some irregular blood work happening and if we needed to pinpoint an issue”. CDE 5

Similarly, another participant indicated having a ‘transfer of function’ with local physicians, which allowed the pharmacist to initiate certain prescriptions and make insulin dose adjustments:

“We do have a transfer of function with our local physicians to adjust insulin, to create prescriptions for blood glucose meters or testing supplies when there isn’t one for people. For example, First Nation people, or people with third-party plans often require a prescription for those things, so we do that. We have a transfer of function for all of those things”. CDE 4

On the other hand, many participants indicated that they also provide advice to other healthcare professionals and act as a resource for others, particularly when others are aware that they are CDEs.

“We also field a lot of phone calls from nurse practitioners that don’t practice right in our community but that are dealing with First Nations people in the area. So we would help them over the phone in a lot of cases”. CDE 4

Schroeter and colleagues also found that certified nurses with advanced qualifications and skills in a speciality practice area act as resources and mentors for other nurses.¹⁸⁶

4.4.1.5. Sub-Theme: Peer assistance and program development

A sub-theme emerged where several participants indicated that, as CDE pharmacists, they act as models for non-CDE pharmacists and provide assistance and advice as necessary. One CDE pharmacist indicated the importance of encouraging other pharmacists to become more involved in diabetes education. Another CDE pharmacist indicated that it was part of her job to create resources for pharmacists to help them with diabetes education.

One CDE pharmacist described the need to advocate for other pharmacists to take the CDE exam and to enhance their knowledge and skills in diabetes management:

“I spent some of my time doing education to pharmacists, trying to get other pharmacists more informed, more involved in diabetes education so sometimes education will be to a group of pharmacists to provide them with extra information that could help them expand their skills with diabetes management. I play a little bit of a mentorship role so I’ll help pharmacists that do want to become a CDE help get prepared for that”. CDE 1

In addition to the comments above, a few participants indicated that as part of their jobs they focus on developing programs related to diabetes education. These programs have been geared towards patients to increase awareness of diabetes, but also to the services that they can offer as a CDE. In essence, this can be seen as an activity related to health awareness as well as self-promotion as a mechanism to be become more involved in diabetes care and education:

“I spend quite a bit of time in program development so how can we develop a program that can be implemented so that we can attract more patients to obtaining this service”. CDE 1

The CDE pharmacists who were interviewed for this research supported an expanded role of pharmacist in diabetes care management. The diabetes services that were identified in this research were consistent with previous studies.^{33,53,55,58,82,156,160,187,105,91} In these studies, the many activities of pharmacists in managing individuals with diabetes include identifying undiagnosed

patients, providing diabetes education, referring patients to other HCPs, and monitoring diabetes management. The American Society of Health-System Pharmacists (ASHSP) has listed many of the activities identified through interviews, including providing information, education and counselling of patients with diabetes about diabetes therapy, and general diabetes services involved in providing of primary diabetes care.¹⁸⁸ The American Association of Diabetes Educators (AADE) published both the Scope of Practice for Diabetes Educators and the Standards of Practice for Diabetes Educators. Most of such services were mentioned by CDE pharmacists who participated in this research. Services include developing and providing comprehensive diabetes education, patient referrals to other HCPs, helping other HCPs in diabetes management, and follow-up patients with diabetes.^{106,105}

4.4.2. Benefits of CDE Certification

This theme describes how the CDE designation has affected the pharmacist both personally and professionally. For those pharmacists who hold the CDE designation, the benefits of CDE designation can include increased personal and professional satisfaction, improved relationships with other HCPs and patients, acting as a resource for others in diabetes management, and increased knowledge and skills.

4.4.2.1. Motivation for becoming a CDE

The first question asked of participants when trying to elucidate the benefits of becoming a CDE, was “Why did you decide to become a CDE?” Participants’ answers were fairly consistent, ranging from gaining recognition from other HCPs and growing demand through it being a requirement of the job. Almost all CDE pharmacists identified several reasons for pursuing the

CDE designation. For many participants, one of the major motivations for becoming a CDE was to have increased credibility with other health care professionals. One participant reported:

“We [CDE pharmacists] obtained our CDE designation to have better credibility with the local and the regional health care professionals that we were working with. This would include our local GPs, nurse practitioners, other physicians and pharmacists in the area”. CDE 4

From a holistic point of view, participants also reported that they pursued a CDE to improve patient outcomes and satisfaction:

“I think as pharmacists, we are a first-line resource, for patients, sometimes we see patients more often than physicians. And so, if we can provide information to the patients to empower them to manage their condition, then that’s great”. CDE 13

Participants also recognized and were motivated by the growing demand for diabetes care. This was pointed out particularly from CDEs who practiced in communities that had a large First Nations clientele. Many CDE pharmacists expressed that they obtained their CDE designation due to the epidemic of diabetes and shortage of CDEs to deal with it. One participant commented:

“I guess 5 years ago is when I first contemplated this and I was working in a region here where we have a large First Nations population. And I saw opportunities or missed opportunities I suppose, where, you know, a pharmacist could, with that designation would be able to do more for those patients”. CDE 9

Some participants also mentioned that they were strongly encouraged by their employers to obtain certification, with that encouragement being a major motivation. Some participants mentioned that the CDE designation is definitely looked upon favourably by their employers:

“Our pharmacy became involved in the community pharmacy outreach program and so one of the things that they would like is a pharmacist in that pharmacy is a CDE or has a CDE, whatever”. CDE 10

Not surprisingly in a competitive market, one CDE pharmacist indicated that pharmacists' motivation for becoming a CDE is to differentiate themselves from their peers.

“When I built my pharmacy, I wanted to create a different type of pharmacy than you see everywhere else, I want people who are very professional, who want to expand their profession so, yea, people who will go out and get certified for respiratory, or diabetes, or smoking cessation or women’s health or – just keep building, you know, I don’t want people who are 9-5 and lick, stick, pour, and check out”. CDE 14

Other studies found similar results regarding reasons for obtaining CDE designation, for both pharmacists and nurses. They include professional development, personal confidence, meeting requirements of the position, recognition by others, promotion, and salary increase.^{156,189,190} In this study, not one of the participants indicated that obtaining a CDE designation was related to increasing salary or receiving a promotion.

4.4.2.2. The importance of employer support

All the participants interviewed indicated that they received support from their employers in one form or another when seeking their CDE designation. This is not surprising, as a specialized skill set is mutually beneficial from a number of different vantage points. In particular, it may have beneficial financial effects on the pharmacy in which the pharmacist works:

“Because it also has financial implications to the store itself. Because if people are happy with the service we provide and they haven’t been a customer of the drug store, they often will then start coming to our drug store... Also, if people understand the importance of managing their diabetes well, they are going to be more compliant with their medications; that means they are going to be getting their refills more regularly”. CDE 4

The majority of participants interviewed received support from their employers in the form of reimbursement for testing fees and expenses, paid time off to complete the exam, and reimbursement for review courses:

“[Her company] also paid registration fees for writing the exam and buying studying materials as well as providing funding to attend national conference”. CDE 4

“Well, besides the financial support, they [the company] did give me some time especially to do some studying and, um, blocked me off so I could arrange the days and do things like that. So they gave me money and time for studying and then time in the store, paid time to work”. CDE 10

One CDE pharmacist indicated that CDE pharmacists chose not to seek support from their employer in pursuing their designation as they wanted to maintain autonomy over the process:

“I did [pay the cost of obtaining CDE certification]. Yea, and the rationale behind that it was my choice and that way I could use it [CDE designation] the way I wanted to... If I decided to work outside of my work environment in diabetes education, no one could say to me well, the Region paid for that, you can't be sort of using your designation in other ways”. CDE 7

These findings are consistent with previous literature indicating that nurses have support from their employers in seeking certification.¹⁹¹ Although achievement of the CDE designation did not lead to any monetary gains in terms of salary increases, the decision to become a CDE was at least cost-neutral for all participants interviewed except for the one who chose to pay for the examination herself. Furthermore, as described below in separate sub-themes, the benefits of becoming a CDE exist beyond monetary gains.

4.4.2.3. Sub-Theme: Personal and professional satisfaction

The literature suggests that becoming certified in a specific area of expertise can offer personal and professional satisfaction to the pharmacist.^{95,190-193} A certificate program improves pharmacists' confidence in the area of diabetes self-care training.¹⁹³ Similar positive findings have been reported for nurses as well.¹⁹² This study found similar results, with the majority of participants indicating increased confidence and personal and professional satisfaction after attaining their CDE designation:

“Well, one of my goals was to be able, self-sufficient shall we say, so that when a patient called me up or I called a patient up, I could confidently answer their question and know that if they were to phone another CDE that should be the answer that they receive. Which sounds kind of odd but basically I wanted to ensure that my patients were getting the best possible care that they could possibly get”. CDE 6

“But it [CDE designation] gives you the confidence to make the suggestions that you are going to make because you have the backing, you have the extra training. You have that, have that designation”. CDE 1

All 14 CDE pharmacists said they were happy with their decision to become a CDE. As one CDE participant commented:

“Yes, very happy [to become a CDE]. When we first moved to the area, I became a certified asthma educator but found that I rarely used this designation effectively. We didn’t have a lot of asthma/COPD people in the area, although it was an area of interest for me more and more, we were seeing patients with diabetes, especially in our First Nations people. Thus I became a CDE instead, and have used that designation every day in practice since then”. CDE 4

All the participants interviewed indicated that they plan to recertify when the time comes. This is fairly consistent with previous literature showing strong support for recertification.¹⁵⁶ This highlights the importance and benefits that pharmacists perceive from having the CDE designation.

This study indicated that the greatest benefit of the CDE designation to the participants comes from improved job satisfaction, enhanced professional assurance, and sense of workplace empowerment. All participants interviewed indicated that the CDE designation has helped them provide advanced diabetes-related activities and clinical services beyond their dispensing roles:

“Well, before it was just basically dispensing, counting, that’s pretty much about it. You’d counsel patients and that would be it. Now it’s more, I don’t want to say clinical but it encompasses a part of clinical activities and so I guess you’re more involved with patient care”. CDE 13

“Since I got my CDE, I now have more hours to devote towards specific hours that are meant towards that patient consult and I’ve been able to remove myself for that daily

traditional dispensing to allow that and had I not had my CDE, that opportunity probably would not have been there. So, it's completely changed the work I'm doing on a day-to-day basis". CDE 1

One participant indicated that as a result of attaining their CDE designation, they obtained the authority to check and review patients' health records in a manner in which they were unable to before:

"I have access to the doctor's electronic health record so I can go in and view their lab results, their AICs, their cholesterols, their mac ratios, so we can use that information at times too". CDE 11

It appears from all accounts that the pharmacists interviewed for this study are putting their CDE to use and finding ways to harness this designation to provide advanced clinical services. I am unaware of any previously published studies showing that pharmacists achieving certification in a particular practice area are capitalizing on their specialization and using it to provide advanced clinical services in everyday, normal practice.

4.4.2.4. Sub-Theme: Improved patient outcomes

It became evident through the participant interviews that another significant benefit of becoming a CDE is improving patient outcomes and patient satisfaction. Studies in nurses have found a correlation between nursing speciality certification and better patient outcomes, including lower inpatient mortality.^{194,195} Although there is strong evidence supporting pharmacist interventions in patient outcomes, the literature does not directly address the value of professional certification. This study did not answer the question of certification leading to improved patient outcomes, although it does provide insight into the perceived value these pharmacists place on becoming a CDE in achieving improvements. One participant stated:

“You are really able to make an impact in patient’s lives and people are so grateful. It’s [CDE designation] very fulfilling to feel that you have helped someone improve their management and outcome”. CDE 1

4.4.2.5. Sub-Theme: Collaboration, respect, and recognition

The benefit of becoming a CDE was further exemplified in participants’ views on how their relationships changed with other HCPs. Most of the participants interviewed said that becoming a CDE led to increased recognition by their colleagues, leading to an increased sense of credibility. Almost all the participants indicated that their relationships with other HCPs improved as a result of becoming a CDE. Those who did not indicate any improvements stated that it was because they already had very strong relationships with their colleagues; these tended to be pharmacists working in rural communities. One participant explained:

“I think it’s really helped provide a lot of buy-in from the other like, nurses, dietitians, when they have that CDE, it you’re more easily to collaborate with them. I think there is a certain type of partnership that is created, you’re the information you are giving is considered more trustworthy because you have the extra training to support it”. CDE 1

“I think it’s also helped improve the respect you get from the other health care professionals. So, now we have a little bit more of collaboration – working together versus often you are just, you know, isolated somewhat from some of those clinical management decisions”. CDE 1

Increased collaboration with other HCPs was reported by all of the study participants, except those few who suggested that they already had strong collaborations prior to becoming a CDE:

“We have one clinic day a month that is dietitian, pharmacist and nurse, meeting one on one with patients together. And that we’re providing, I mean, basic education”. CDE 11

“So, we basically, we have a referral network with the dietician with the exercise therapist, um, with the diabetes nurse educator in the Health Region. The physicians are really good to take recommendations as well, so we have a pretty open communication and kind of collaborate back and forth”. CDE 8

As a result of becoming a CDE, all participants reported that physicians and other health care professionals referred diabetic patients to them, particularly newly diagnosed patients and patients with poorly controlled diabetes:

“So and again, I was more recognized you know by other health care professionals so, you know, the physician knew there was somebody who was knowledgeable and certified, then they more comfortable in referring patients for their care and services to a CDE pharmacist”. CDE 5

These results were striking in that the overwhelming opinion held that the CDE designation led to the aforementioned improvements in their relationships with other HCPs. Previous research has also shown that certification by nurses and pharmacists (via Board Pharmaceutical Specialists) has led to increased acceptance and collaboration by other HCPs;^{196,197} however, nothing has been described with respect to CDEs. It is also not surprising that study participants experienced increased physician referrals as a result of becoming a CDE, as this has been previously reported in the literature as well.¹⁹⁸

As mentioned earlier, one participant reported that the CDE designation led to her ability to attain a collaborative prescribing agreement with a local physician. This provided her with the enhanced authority to prescribe medications. According to the Saskatchewan College of Pharmacists, being able to enter into level II collaborative prescribing agreements is demonstration that the pharmacist has additional training, such as being a CDE. In this level, pharmacists might prescribe drugs within the limits stated under such agreements. The doctor makes the diagnosis and the pharmacist has authority to prescribe drugs, monitor the patient’s response to the treatment and alter doses as approved in the agreement.¹⁹⁹

“Yes, and I think it’s also very important with the level two prescribing, I think it’s a great way to prove to physicians that you’re able to take over some of the prescribing of the diabetes- and cardiovascular-related medications, too. So, I think it’s a great tool in

Saskatchewan to give that level to prescribing ability in a relationship with a prescriber that's already established, physician, nurse practitioner, that kind of thing". CDE 4

Four of the 14 participants pointed out that the relationship with their patients improved as a result of CDE designation. In addition to improved collaboration and relationships with other HCPs, some study participants also indicated that the CDE designation helped them build a stronger relationship with their patients:

"It [CDE designation] does make you feel like you're helping them in the sense that you, you have that one on one and you know, you have that closer relationship to, than I find than the person who comes in for their standard medication, that you give quick counsel to... just better relationship with patients". CDE 3

"We also will have people seek us out here at the store for specialized diabetes emergencies because they know that, I'm speaking of patients now, we have a little bit of extra expertise so they will come to us directly and ask us for assistance". CDE 4

Previous studies have shown that pharmacists' specialty in asthma education led to improved relationships with patients;¹⁸⁵ however, no literature could be found suggesting this with respect to CDEs. Certainly, there are many reasons why some of the participants felt this phenomenon to occur, yet the exact cause or true reflection was not further explored.

4.4.2.6. Sub-Theme: Clinical knowledge and skills

Clinical knowledge and experience in diabetes education is what often distinguishes CDE and non-CDE pharmacists. Having the designation shows the pharmacist's commitment to life-long learning and continual knowledge improvement in the area of diabetes. Previous studies have shown that diabetes-centric programs lead to increased knowledge by pharmacists about diabetes education and diabetes-related activities.⁹¹ In this study, similar results were found in that almost all of the study participants indicated that becoming a CDE has helped them increase their

knowledge and skills in diabetes management. Several pharmacists indicated that with the increased knowledge and skills obtained, they often deal with more complicated diabetic cases:

“I work with a number of pharmacists so, generally, I’m not recruited to counsel their patients unless there is some specific issue that’s maybe more complicated than the other pharmacist wants to deal with”. CDE 10

As a result of becoming a CDE, some study participants reported an increased sense of responsibility and viewed themselves as having a mentorship role to other pharmacists. Their increased knowledge gave them a sense of confidence, as previously described, and a professional obligation to share their knowledge and expertise when needed. One participant described their feelings that being a CDE gave them a sense of purpose to encourage non-CDE pharmacists to pursue their designation:

“I spent some of my time doing education to pharmacists so trying to get other pharmacists more informed in diabetes education so sometimes education will be to a group of pharmacists to provide them with extra information that could help them expand their skills with diabetes management. I play a little bit of a mentorship role so I’ll help pharmacists that do want to become a CDE, help get prepared for that”. CDE 1

This participant appeared to have a definite sense of responsibility to act as a mentor to his/her peers who were not CDE pharmacists.

This study found that the CDE designation has had a positive impact on Saskatchewan CDE pharmacists with respect to their job duties, relationships with other health care professionals, job satisfaction, and delivery of information as it relates to diabetes management. These findings support previously published studies investigating the value of certification among pharmacists.^{106,156,156,189,190} In addition, several studies outside pharmacy have indicated the benefits of professional certification to other health care professionals.^{191,192,200,186} All of the participants indicated some sort of benefit to becoming a CDE, were happy with their decision to

do so, and would encourage anyone interested in becoming a CDE to pursue it as the beneficial effects have been numerous.

4.4.3. Challenges in Practice

The third part of the interview consisted of the participants being asked if they had encountered any challenges while trying to put their CDE designation to use. As expected, all the participants identified certain challenges in the workplace which they felt hindered them from putting their knowledge and skills in diabetes management to use. Six main challenges were identified in our study: lack of motivation, lack of awareness, infrastructure and resources, lack of prescriptive authority, resistance from other HCPs, and patient-specific issues. The challenges identified by many CDE pharmacists in our study are consistent with previous studies of pharmacy practice in general.^{113,157,183,201,202,203}

4.4.3.1. Sub-Theme: Lack of motivation

Lack of motivation on the participants' part was expressed as an inherently personal challenge when trying to provide diabetes education. Several CDE pharmacists indicated that they have difficulty altering the way in which they normally function in their workplace. One pharmacist indicated that they preferred dispensing rather than providing diabetes education, simply because it is easier:

“Motivation on my part is another thing, because I could probably do more if I think my biggest, actually my personal biggest barrier is that I’m very comfortable dispensing in there and there’s always a need for someone to be doing that, so it’s really easy to do that and it’s a little bit scary to do things that are new so it’s a little bit hard to transition and I think that I probably use the time thing as an excuse more than, um, it might be an equal, it might be a, actually it is a limitation and it’s a limitation for me. So, maybe more motivation would be, would be a, a positive thing for me or yea...starting to sound like therapy would be a good thing for me”. CDE 10

It is not surprising that a few pharmacists listed self-motivation as a challenge, as the literature is rife with such examples.^{162,203} However, this is somewhat contradictory to previous questions whereby all participants indicated they are more involved in diabetes management since becoming a CDE, and they all indicated they would like more time to be able to devote to providing diabetes services.

4.4.3.2. *Sub-Theme: Lack of awareness*

Study participants frequently reported lack of awareness as a challenge to delivering diabetes management services. This statement was made with respect to lack of awareness on both the patient's and HCP's part. Generally speaking, some study participants felt that people were both unaware that they were CDEs, as well as unaware of the services they could provide. One participant discussed her experience with regards to lack of awareness in the following terms:

“Basically is just getting our name out there. There are a few companies who are already established and who a lot of physicians’ offices and other health care professionals know, or they have their own nurse educator in their clinic. So, getting referrals to us is kind of an uphill battle. I think that’s the hugest or the largest issue”.
CDE 10

One study participant indicated that it was difficult to make contact with other HCPs, especially those who outside their geographical area:

“One of the biggest challenges is connecting with the health care professionals outside of our local community to and for them to see us as credible”. CDE 4

Lack of awareness has been previously described as a challenge for pharmacists when trying to implement a new service.²⁰⁴ Another study found that physicians know very little about other community services for patients with chronic conditions.²⁰⁵ Interestingly, among those pharmacists who indicated lack of awareness as a challenge, all of them indicated that they were

doing different things (such as calling physicians and handing out pamphlets) to try and promote their services. Furthermore, these participants practiced in a mix of rural and urban areas.

4.4.3.3. Sub-Theme: Resistance from other HCPs

In addition to some participants feeling that other HCPs were not aware of their CDE designation, some participants also felt that not all HCPs were receptive to them acting as a CDE. In fact, the majority of participants indicated that they encountered “turf protection” at one point or another, particularly from nurses:

“There’s a fair amount of turf war yet from nurses – turf protection. Turf protection from nurses. I’ve run into this in different areas. Different nurses and yea, they don’t really want you stepping into their territory and, which is quite interesting because I’m sure they tell their patients about drugs as well, but you know, isn’t that our area, so to speak, you know, but yea, yea, very much”. CDE 9

“I have a little more problem with the physicians in the outlying area just because they are not as familiar with what we can do. And they’re not salaried. So, if I’m meeting with patients and making recommendations on therapy, it’s a little more threatening to them...”. CDE 4

Resistance to pharmacists providing services beyond those traditionally performed is not new and has been previously described.^{116,162,206,107,187} However, the majority of participants interviewed did not indicate this as a problem. One could speculate this it is not a problem for most because they are CDEs as opposed to non-CDE pharmacists offering diabetes management services. The participants who described resistance from other HCPs as a challenge represented participants from a mix of urban and rural communities. Those who also described themselves as not having good relationships with other HCPs worked in different areas. They believed that working collaboratively with other HCPs was an important part of their role. Indeed, teamwork through an interdisciplinary method of patient care is developing as an important approach to improve a patient’s quality of life and enhance healthcare outcomes.²⁰⁷

4.4.3.4. Sub-Theme: Infrastructure and resources

A number of challenges were described under the sub-theme infrastructure and resources. All the study participants described at least one challenge under this subheading.

4.4.3.4.1. Time

Lack of time to deliver diabetes-related services was the challenge most commonly cited by Saskatchewan CDE pharmacists. The issue of “time” is not new, and the concerns of these study participants are congruent with previous literature^{58,103,187,208117}.

“Definitely time was one of the things, you know, if you, somebody came in an evening and there was no other pharmacist generally, you know and if they had a question, it was much more of a challenge to find the time to help them”. CDE 5

The participants interviewed were worried about not having the time to achieve the work required or to complete work to the level that was desired. Interestingly, some participants provided suggestions to overcome the issue of time, and a few were already implementing strategies to overcome this challenge; this is further described in the next section. It appears as if becoming a CDE has not solved the issue of having sufficient time to devote to providing the clinical services they want to provide for the majority of the pharmacists interviewed. However, it should be noted that two participants practicing in community pharmacy had job changes as a result of becoming a CDE whereby they were provided with dedicated hours outside the pharmacy to focus solely on diabetes management.

4.4.3.4.2. Lack of reimbursement for teaching

Many of the study participants indicated that a shortage in funding for them to provide diabetes education and services is a major challenge. In fact, for many participants, lack of funding was listed as their major challenge:

“My biggest challenge is the funding. You’re always looking for funding. Who’s going to pay for this [diabetes education], it’s the number one question we ask all the time. Who’s going to pay for this? So that is definitely a huge component”. CDE 2

“Well, there’s a lot of different reasons [for providing free services], particularly, nobody has ever in Canada, nobody has ever paid for these things before. Because the system is set up like that, so. It’s a public health care system funded by the government it’s very, a lot of people would probably not be too receptive, they wouldn’t really have an appetite for that. And partly I would feel way too guilty”. CDE 14

As expected, funding was listed as a challenge by those pharmacists working in community pharmacies in the private, rather than public, healthcare system. When study participants were asked if they ever charge the client money for diabetes management services, every single one of them said no. Although this was listed by some to be the major challenge to delivering diabetes management services, no one was comfortable asking their patients for money for such services.

One participant suggested that this should be a government-funded activity:

“Another big issue is then how do we then try and get reimbursed for this service –that’s a big barrier I feel that if I spend an hour with someone or a couple of hours to get them into target, we should be able to be reimbursed for service like other educators are. We shouldn’t have to rely on them getting strips with us. So, a challenge that I would like to see us overcome is having us being reimbursed for chronic care services like diabetes management from the government and not have to rely on script counts”. CDE 1

Lack of reimbursement is a common concern of pharmacists and is well documented in the literature.^{162,202,209,210} This remains an issue even for pharmacists with advanced practice certification.²¹¹ Interestingly, CDE pharmacists in the United States are billing and obtaining compensation for their diabetes-related activities.¹⁵⁶ This could be reflective of the different practice environment in the United States or perhaps due to the fact that CDEs have been present for many years now in the United States whereas CDE pharmacists in Canada are still a relatively new group.

4.4.3.4.3. Other Infrastructure Issues

A few other challenges were mentioned by some study participants, all of which were concerns for pharmacists in general, and not solely autonomous challenges for CDE pharmacists. For example, some study participants mentioned the lack of a private area to provide counselling and advice as a specific challenge. This is a particular challenge for those pharmacists wishing to provide more in-depth clinical services that require time, comfort, and privacy, and not all participants interviewed indicated that they have this luxury at the place of employment.

Some study participants described the lack of access to lab results as a challenge to them when trying to deliver optimal care. This is consistent with previous research which found that a lack of easily available electronic health information for patients was a challenge in providing good pharmaceutical care.¹¹⁷ This has since changed; as of the time of writing, some pharmacists in Saskatchewan now have access to lab results.

Similarly, many CDE pharmacists indicated that a lack of access to electronic health records posed a challenge. It is difficult to make decisions without a full health history, and tracking down this information takes time. Hence, there are really two challenges related to the lack of access to electronic health records:

“Another challenge is not having electronic health records. So, that’s a huge stumbling block in time. We don’t have electronic health records at the clinic here. Everything is by paper. Right now, we’re writing information in the chart, then we have to transfer it to our charts. There’s a lot of duplication...”. CDE 4

A few other participants indicated that a lack of adequate resources (such as pamphlets and handouts) made it difficult to provide information to some patients in some cases, and the information is not always readily available. This could be also related to time management, as one pharmacist stated:

“And you know, sometimes the literature and the handouts that you want to hand out don’t cover every subject. And so sometimes you’d have to make up your own in that case, which just isn’t done overnight”. CDE 3

Finally, inadequate staffing was cited as being problematic by many study participants.

Consistent with previous literature,²¹² they felt that staff shortages caused an increased workload and interfered with their ability to fully utilize their CDE:

“The first one is going to be every community pharmacist’s complaint, which would be time. Time and staffing”. CDE 10

Not only did the participants mention insufficient human resources, they also mentioned the complement of human resources. Some participants indicated that the number of certified diabetes educators as pharmacists was a problem, and the majority of those interviewed reported that more diabetes educators are needed to overcome workload and time constraints when dealing with diabetic patients:

“I know that with we have limited amount of CDEs and I’m not saying it should just be CDEs who should be providing this education but because we are a limited group of people, we should have all pharmacists at least being able to provide that minimum level of education so that our patients are not falling between the cracks”. CDE 9

In summary, it appears as if the infrastructure challenges known to exist in pharmacy practice are the same ones that our study participants face. These challenges were primarily those of community pharmacists, whereas those working in primary care or an institutional setting did not express as much concern.

4.4.3.5. Sub-Theme: Prescriptive authority

Many of the participants interviewed indicated that a lack of prescriptive authority hindered them from practicing to their full abilities. Although Saskatchewan pharmacists do have some limited ability to prescribe medications, lack of a level II prescribing collaborative agreement

specifically was frequently mentioned as a challenge to some participants. Many CDE pharmacists hoped that CDE designation could help them towards improved authority for the pharmacist to prescribe medications in collaborative environments:

“And probably the other, the other challenge I have is just streamlining care so when I get a referral from the physician to do an insulin start, that I have what I need to be able to do all the education for that patient to send them out the door so they know what they’re doing and they have everything they need because if the physician hasn’t really indicated because I don’t have that level 2 collaborative agreement established, I may be going back to the physician and saying, well, I’m going to start them on this insulin and can you call a prescription into the drug store and then the patient has to get supplies so it doesn’t really flow very well”. CDE 7

This is an interesting finding, as it indicates that these participants want more responsibility for the provision of patient care. This is in contrast to some previous literature which has shown that pharmacists are not accepting of increased responsibility.²¹³ In Alberta, pharmacists have had this enhanced prescribing authority since 2007, and to date the number of pharmacists who have employed it is lower than anticipated.²¹⁴ This could further indicate that the CDE designation has helped improve the confidence of our study participants in delivering diabetes- related activities.

4.4.3.6. Sub-Theme: Patient-related issues

The final theme that emerged when participants were asked about challenges in putting their CDE to use can best be described as patient-related issues. Patient interest, capacity, and sensitivities were the most common issues mentioned by the study pharmacists. Many participants mentioned that it was difficult to deliver diabetes care to patients when they are not motivated or interested in what you have to say. One participant stated:

“Sometimes what’s the limitation is how much you can get out of a patient. You know what their eating habits are, the exercise, you know sometimes they’ll bring their meter easily, sometimes they won’t. So definitely, that sometimes can be a challenge what you can get from the patient”. CDE 3

Lack of patient motivation is not a challenge unique to CDE pharmacists, as it is mentioned as a challenge numerous times in the literature.^{107,113,114,117,183,202} Similarly, patients' capacity to access pharmacists' services and implement their advice was listed as a challenge for some study participants. For example:

"A huge problem with our First Nation people is being able to access health care in general. Whether that be to get to a regular physician, to get to a regular pharmacy, to be able to show up for an appointment that you have scheduled, to get to any place that is providing help, because they have huge transportation issues, they have huge issues with social support. They have huge issues with alcohol and substance abuse, so being able to meet a patient where they're at and being actually able to help them on the First Nations [Reservation] is a real challenge in many, many ways". CDE 4

"For the most part, when you start talking about, when you start talking about nutrition and proper nutrition then a lot of people really can't afford, unfortunately, you know what I mean?" CDE 14

"Other challenges, you know in the last probably 10 years is a larger First Nation population so again finding ways to help them better culturally significant to them and appropriate those were always a bit of a barrier". CDE 5

"In my current job, I, I still, I miss the patient interaction and I'm, I just find that I'm not used, I'm not utilizing it [CDE designation] the way I'd like to. I mean ideally I'd like to find a way that you could get to the people who really need it, that type of education or your services". CDE 9

The above quotations indicate the challenges participants can face when it comes to socioeconomic issues and cultural competency. Some participants are aware of these issues in some of their clientele; hence, they know that certain information may not be helpful. The Aboriginal people of Saskatchewan constitute one of the large percentages of its population, and hence these issues may be more relevant to Saskatchewan than other parts of the country.

4.4.4. Strategies to Overcome Challenges

The final component of the interview consisted of participants describing strategies to overcome challenges in trying to deliver diabetes services and utilize the CDE designation to its full

capacity. After the interviews were completed, four sub-themes emerged: (1) relationship building, (2) time and reimbursement issues, (3) increasing public awareness, and (4) enhancing patients' motivation.

4.4.4.1. Sub-Theme: Relationship building

Some study participants identified communication with other HCPs as an overarching sub-theme, as indicated by their concerns with lack of awareness and sometime resistance. If other HCPs are not aware of the services CDE pharmacists can provide or are opposed to some aspect of it, obvious communication gaps exist. The majority of participants identified 'building relationships' and 'increasing collaboration' with other HCPs as a mechanism to increase their profile and gain momentum towards utilizing their CDE to its full capacity. One CDE pharmacists shared the importance of collaboration and team work:

"I would suggest really making that connection with your local physicians of your services, of what you can do, cause I've had opportunity where I have worked in a physician's clinic, on a project and you know, I just saw how well, that, that can work in terms of the relationship and, it was just really a good, team approach". CDE 1

"I think, just contact and conversation with the health care professionals that you are working with and being credible in what you say and getting that trusted relationship built with them". CDE 7

Although mentioned less frequently than HCP collaboration / relationship building, some participants also suggested enhancing connections and relationships with patients as a mechanism to make them more aware of what pharmacists can do for them, get them more motivated, and even advocate on their behalf:

"Contact the people that you are, contact your clients right now, that you are working with and let them know you are a certified diabetes educator and go from there". CDE 12

These are not ground-breaking observations, but are often difficult activities to engage in unless one has the self-confidence to provide the services advertised.

4.4.4.2. Sub-Theme: Time and reimbursement issues

Time was a consistent challenge among all participants, and hence many strategies were proposed to try and overcome this obstacle. Some participants indicated that they are already utilizing certain strategies, whereas others were vaguer and proposed general strategies that could help. For example, one participant reported using technology to make good use of time:

“The time, you just make it work, right, you just fit it in or they [patients] text you at home or you do things outside of normal hours”. CDE 11

Some participants indicated that they conduct education in groups rather than individually to make good use of their time:

“Also, the amount of time that you could spend with one individual is, that time, we don’t have that time. The luxury of that time. So I think that’s going to become even more important is the group, the group-focused type of sessions where you can maximize your time, the people learn from each other”. CDE 9

One participant reported booking appointments so as to schedule workflow to accommodate diabetic consults:

“We overcame that [time constraints] by booking appointments”. CDE 6

In terms of general strategies, participants suggested that the addition of more staff and a different reimbursement scheme would help alleviate some of the challenges that are particularly troublesome:

“I would change that we get paid for our diabetes services and that would make a huge impact on the level of hours we are given, the level, the amount, the time constraints that were placed on, it would have an effect, we would have more money to be able to

advertise the services, our programs would be more, we have more, opportunity to create more programs because we would have a way to reimburse it". CDE 1

"So, a challenge that I would like to see us overcome is having us being reimbursed for chronic care services like diabetes management from the government and not have to rely on script counts". CDE 1

The solutions offered regarding staffing and reimbursement are consistent with previous literature.^{202,212} Only one participant suggested that one mechanism for overcoming reimbursement issues is to charge the patients extra money for the services they receive. None of the participants interviewed actually do charge patients for their services, which is somewhat representative of general pharmacy practice. However, more and more pharmacists across Canada are beginning to charge for extra clinical services,²¹⁵ so perhaps this is more of a reflection of Saskatchewan practices. The majority of participants did not recognize or propose potential solutions to overcome their funding challenges:

"But I think unless they [diabetic patients] are willing to pay for the service then I will not spend all that time and energy with them. We are currently trying to implement a menu of services that we have and the cost for doing those services. I am sure in the not too distant future we will have to charge." CDE 2

"Well, I've never really overcome the funding—it's always a challenge. It's just always a challenge, always looking for funding; you are always looking for money, so I have not overcome that". CDE 2

4.4.4.3. Sub-Theme: Increasing public awareness

Lack of awareness was commonly reported as a challenge to the delivery of diabetes services and utilization of the CDE designation. Interestingly, when asked for any strategies to overcome their challenges, not one participant mentioned increasing his or her public profile. However, this may have been implied, as all participants mentioned that they are involved in trying to raise their profile and increase awareness that they are CDEs. Participants provided various examples of how they try to let people know they are CDEs and what CDEs can do. These efforts included

attending conferences, sending letters to and meeting with physicians and other HCPs, giving community lectures, store signage and posters, websites, business cards, and direct communication to patients:

“We have a couple of different types. An article in the newspaper, posted the certificate. I actually sent an email to all the professionals that I worked with to say, hey, I’ve got this designation now”. CDE 11

“It helps when you build a network with the pharmaceutical reps because they are in the doctor’s offices often and when they’re looking for a CDE, they do ask the pharmaceutical reps promoting those medications and that is a network too that I’ve used”. CDE 3

“It’s tough in the city, it’s, I’m very fortunate with my company that they’ll kind of provide us with a marketing materials like the posters, the business cards advertisements in newspapers”. CDE 12

4.4.4.4. Sub-Theme: Increasing patient motivation

One participant reported overcoming the lack of motivation on patients’ part by using different counseling strategies. This CDE emphasised that knowing each patient and building rapport with them is important:

“You can tell a patient to take their medication until you’re blue in the face but if you don’t talk to the patient and see what’s important to them, and see how you can, it’s called motivational interviewing, and it, basically it tries to help the patient see what they want to achieve, and kind of go from there”. CDE 13

4.5. Summary of the findings

The aim of this research has been to provide descriptive information on the practice experiences of CDE pharmacists in Saskatchewan who deliver diabetes-related activities and clinical services to patients with diabetes. The findings were discussed by incorporating quotations from participants’ interviews to confirm the outcomes. The four major themes have provided an

understanding of CDE pharmacists' experiences in delivering diabetes-related activities and answered the four guiding research questions.

The first research question was, '**In what diabetes-related activities do CDE pharmacists engage?**' The data elicited through the CDE pharmacist interviews revealed that CDE pharmacists in Saskatchewan are engaged in providing a variety of diabetes care services that include education, follow-up, and pharmacologic management. Many CDE pharmacists are involved in insulin starts and training whereas this is not a common duty performed by general pharmacists. Several CDE pharmacists reported that they provide diabetes care services in different places, including patients' homes. The range of diabetes-related activities performed by these CDE pharmacists was in accordance with that recommended by national organizations and best practice indicators. This is beyond the services that most non-CDE pharmacists provide, and it appears that becoming a CDE has facilitated higher involvement in diabetes management.

The second research question was, '**What impact has a CDE designation had on pharmacists' job activities?**' It is apparent that becoming a CDE is an overwhelmingly positive experience with respect to both personal and professional education. Becoming a CDE has opened the doors for opportunities that were not present prior to becoming a CDE and has led to increased recognition and validation by other health care professionals. It has also led to a collaborative prescribing agreement in one participant. However, not one CDE pharmacist reported that he or she received financial or career gains as a result of the CDE designation. Although some CDE pharmacists received dedicated time to provide diabetes care services as a result of the CDE designation, they still felt more time is needed. All of the CDE pharmacists interviewed are happy with their decision to become a CDE, feel it has helped them in one way or another, and will recertify when the time comes.

The third research question was, **‘What successes and challenges do CDE pharmacists experience in diabetes management?’** The findings revealed that CDE pharmacists face several complex problems when trying to provide diabetes-related education and clinical services, similar to most other practicing pharmacists. The majority of the CDE pharmacists interviewed reported that these challenges prevented them from practicing to the full scope of their abilities. Lack of time was reported as a significant challenge. Therefore, all the CDE pharmacists want more time to provide diabetes care services. Most CDE pharmacist listed financial issues as a problem; however, no one felt comfortable asking for money. Nurses still appear to feel most “threatened” of all of the health care professionals by the CDE pharmacists’ new and expanding role. This study also found that hospital CDE pharmacists were more organized and encountered fewer challenges than community CDE pharmacists.

The fourth question was, **‘What strategies do CDE pharmacists use to overcome challenges?’** Practical strategies that were proposed by CDE pharmacists and that could be implemented considering the challenges identified in this study were 1) provide adequate compensation for diabetes-related activities 2) enhance awareness among patients and other HCPs about CDE pharmacist services, and 3) build rapport and trust with other HCPs.

Overall, the findings revealed that a few of the participants have had significant changes to their job profiles and the way in which they practice pharmacy as a result of their CDE designation. Although some practical strategies were offered, participants still encounter challenges in putting their knowledge to full use.

CHAPTER FIVE

STRENGTHS, LIMITATIONS, IMPLICATIONS, AND CONCLUSION

5.1. Strengths and limitations of the study

To my knowledge, this is the first Canadian study to examine the practice experiences of CDE pharmacists through a qualitative assessment. There are many strengths to this study, most of which can be attributed to the methodological rigour of the study. Through the use of semi-structured interviews, I provided a sample of 14 CDE pharmacists with the opportunity to reflect on their individual roles in providing diabetes education to patients with diabetes and the impact of the CDE designation on their practice. The interviews were conducted face to face in a comfortable location chosen by the participants with no time constraints, so participants were free to share as much information as they wanted. Rich data were collected from pharmacists practicing all across the province in a variety of practice settings. Hence, I believe the answers are fairly indicative of the practice experiences of CDE pharmacists across Saskatchewan. In general, the external auditor agreed with the themes found by the researcher and drew the same general conclusions.

As with all studies, there were some limitations inherent in the design of the study. As with other qualitative approaches, a descriptive qualitative approach is documented as having a number of essential limitations, such as ability to generalise the findings, researcher's bias, and time consumption.

Although the results reported in this research provide a rich explanation of the practice experiences of CDE pharmacists in Saskatchewan, these findings may not be generalizable to a

wider population of CDE pharmacists. A larger, pan-Canadian study is necessary to determine whether similar results would be seen across Canada.

Of the 14 pharmacists who chose to participate, 13 were female. However, Zrebiec previously surveyed 339 CDEs and 91% identified themselves as females, so this number is consistent with previous literature.¹⁸⁹ It is unknown how many CDE pharmacists are currently working in Saskatchewan, but the number is estimated to be less than 40. A sample size of 14 may seem low, but in qualitative design the focus is on the value and richness of information achieved from participants¹³³ and that endeavour is not associated with the number of participants. It was also not possible to expand the study beyond Saskatchewan due to financial and time constraints.

Another limitation that could affect this study is researcher bias. Although strong actions were taken to avoid confusing the data gathering and analysis, it is likely that some feature of the experiences of the researcher interrelated with the research procedure. Because I hold opinions on this topic, it may be difficult to obscure certain biases and opinions about this subject.

5.2. Implications for education, practice, and future research

CDE pharmacists can play a significant role in enhancing patients' ability to successfully manage their diabetes. They encourage patients with diabetes to create health-promoting habits and lifestyle changes through the use of many different educating strategies.¹⁰² This study is expected to contribute to the body of knowledge related to diabetes care management and CDE pharmacists in Canada. This study took an important step in furthering our understanding of CDE certification and the implications it has on pharmacy practice. The findings can be used to determine active solutions to help optimize the skills and knowledge of CDE pharmacists. In

addition, providing details about these individuals and their experiences may encourage other pharmacists to seek the CDE designation.

The findings of this research form a springboard for future research to report further characteristics of the practice experiences of CDE pharmacists within a larger, more diverse sample size to obtain a true reflection of experiences across Canada. The answers provided through these interviews can be used to inform the development of a pan-Canadian survey which could be analysed quantitatively. Further study could also look at differences in patient outcomes between CDE pharmacists and non-CDE pharmacists to obtain further knowledge as to the utility of the CDE designation.

5.3. Conclusion

This research examined the experiences of CDE pharmacists in delivering diabetes care services in the province of Saskatchewan. The concept of the “practice experience” as a research framework helped in developing a rich understanding of CDE pharmacists and their experiences. Little research has focused on CDE pharmacists’ experience of providing diabetes-related education and clinical services beyond their dispensing roles. This study has provided a gateway to discover, describe, and document the experience of CDE pharmacists in everyday practice. It thereby enhances the existing body of knowledge regarding CDE pharmacists’ care of patients with diabetes.

This qualitative study describes the practice experiences of 14 CDE pharmacists who provide services for people with diabetes. The qualitative descriptive methodology underpins this study. Four major themes formed the basis of the outcomes reported, from which 18 subthemes emerged. The CDE pharmacists described the diabetes-related activities that they provide in everyday practice; they use their skills and knowledge to provide advanced diabetes clinical

management. Participant pharmacists emphasised the positive impact of the CDE designation on their professional practice. Becoming a CDE has had a positive impact on pharmacists through engaging in more comprehensive diabetes management, overcoming challenges to delivering diabetes care, and improving relationships with other healthcare professionals and patients. All these CDE pharmacists reported many challenges in putting their skills and knowledge to use and offered a series of practical strategies to overcome these challenges. They agreed that finding solutions, such as creating a new mode of reimbursement for diabetes care services, could help them provide full and comprehensive diabetes care.

The findings of this study support key results in relation to studies from other fields. They have provided insight into the experience of CDE pharmacist in delivering diabetes-related education in SK. By providing details about pharmacist CDEs, it is hoped that other pharmacists will be motivated to become a CDE. The paucity of available literature in the area of Canadian pharmacists suggests that greater information is necessary to describe CDE pharmacists' practice experiences across Canada.

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(Appendix A)

Recruitment Letter



College of Pharmacy and Nutrition

Needed: Certified Diabetes Educator Pharmacists!

If you are a pharmacist in Saskatchewan and are currently a Certified Diabetes Educator (CDE), we would like to hear from you! We are looking for volunteers to take part in a study evaluating your experiences as a CDE in diabetes management.

As a participant in this study, you will be asked to share your experiences during a single interview, which will take approximately 60 minutes.

A small honourarium will be offered as a token of appreciation.

For more information, or to volunteer for this study, please contact:

Kerry Mansell, BSP, PharmD, CDE
Assistant Professor of Pharmacy
College of Pharmacy and Nutrition
Ph: 306-966-5235
Email: kerry.mansell@usask.ca
or

Mr. Fahad M. Alzahrani, B.Sc. Pharm. M.Sc. candidate
College of Pharmacy and Nutrition
(306) 262-0047
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This study has been approved by the University of Saskatchewan's Behavioural Research Ethics Board.

(Appendix B)

Participant information sheet with consent form



Participant Consent Form

Project Title

Diabetes Management: Practice Experiences of CDE Pharmacists.

Researcher:

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Purpose and Objectives of the Research

The purpose of this study is to obtain a description of the work activities of Certified Diabetes Educator (CDE) pharmacists in Saskatchewan. We want to know what impact, if any, becoming a CDE has had on you with respect to your job duties, relationships with other healthcare

professionals, job satisfaction, and delivery of information as it relates to diabetes management. We also intend to identify any challenges encountered by yourself as a CDE pharmacist in delivering diabetes-specific care and any successes you have had in overcoming these challenges.

Procedures

This study will consist of a personal, one-to-one interview which will last approximately 60 minutes. It will be conducted in-person in a room where privacy can be ensured or over the telephone at a mutually agreeable time. The interview will be audio-recorded in order for the recordings to be transcribed at a later date. All recorded interviews will de-identify all respondents by utilizing an identification code.

You will be made aware of the purpose of the study prior to the actual interview taking place. The interview will be semi-structured to allow for focused, conversational, two-way communication. This study is not looking to obtain specific answers to questions – you are free to say whatever you like. Importantly, we are looking to explore the experiences of CDE pharmacists in diabetes management.

Funding

This research is being funded by an internal grant from the College of Pharmacy and Nutrition, University of Saskatchewan.

Potential risks

There are no known or anticipated risks to you for participating in this study.

Potential Benefits

While there is no direct benefit to you for participating in this study, indirect benefits may come from a better understand of the perspectives of CDE pharmacists in diabetes management.

Confidentiality

Only the researchers will have access to the master list identifying each participant. All direct quotations used when presenting the results of the interviews will be de-identified. If you mention the name of a company, person, etc. during the interview, we will de-identify that information in the final transcript. Confidentiality will be maintained at every possible level.

Storage of Data

All transcripts of the interviews will be de-identified. Audio recordings and consent forms will be stored in a secure, locked filing cabinet in the locked office of Dr. Kerry Mansell at the University of Saskatchewan. These materials will be kept for a period of no less than five years. After this time, if the audio recordings are deemed no longer needed, they will be erased; also, the transcripts and consent forms will be shredded if no longer required.

Compensation

As a small measure of our gratitude, we will offer you a \$40 gift card for completing this interview. We will also reimburse you for any out-of-pocket expenses directly related to your participation (for example, parking).

Right to Withdraw

Your participation is voluntary, and you may withdraw from the study for any reason, at any time, without penalty of any sort. You may also refuse to respond to any question(s) asked in the interview. If you withdraw from the study, any data that you have contributed will be destroyed at your request. However, your right to withdraw from the study will apply until such time that the results have already been disseminated (i.e. published). After this point, it is possible that some of the data from your interview may have been used and it may not be possible to withdraw your data.

Follow-up

We will notify you when the study ends. If you are interested in receiving more information regarding the results of this study, or would like a summary of the results upon its completion, we will send you a copy of the results via email.

Questions or concerns

Should you have any questions concerning the study, please feel free to ask them at any point. You are free to contact either Fahad Alzahrani at 306-262-0047 or fma216@mail.usask.ca or Kerry

Mansell at 306-966-5235 or kerry.mansell@usask.ca. This study has been approved on ethical grounds by the University of Saskatchewan Behavioural Research Ethics Board (10-XXX) on DATE, 2012. Should you have any questions regarding your rights as a participant in this study you may call the Research Ethics Office toll free at 1-866-966-2975.

SIGNED CONSENT

Your signature below indicates that you have read and understand the description provided: I have had an opportunity to ask questions and my questions have been answered. I consent to participate in the research project. A copy of this Consent Form has been given to me for my records.

_____	_____	_____
<i>Name of Participant</i>	<i>Signature</i>	<i>Date</i>
_____		_____
<i>Researcher's Signature</i>	<i>Date</i>	

A copy of this consent form will be left with you, and a copy will be taken by the researcher.

(Appendix C)

The Interview Guide and Schedule

Time limit

Approximately 60 minutes.

<i>Name</i>	
<i>Date</i>	
<i>Time</i>	
<i>Location</i>	

Opening the Interviews

Refreshments will be offered, introductions made, and participants will once again be reminded that their participation is strictly voluntary and all responses will be held confidentially.

Topic Area 1: Description of daily activities as they relate to diabetes management

1. In a typical workweek (or month), what percentage of your time would you spend on providing diabetes management services?
2. Could you provide a description of the diabetes-related activities you do?
 - Use the following priming topics to get a further description:
 - a) Counselling on diabetic medications
 - b) Ordering and/or interpretation of blood work
 - c) Monitoring/follow-up
 - d) Providing diabetes education
 - I. One to one?
 - II. With family members?
 - III. To groups?
 - e) Providing advice on diet and physical activity. To what extent?

- f) Providing advice on management of other related chronic conditions (For example: blood pressure, cholesterol, kidney disease....).
3. Do you provide information on insulin starts/adjustments? Why or why not?
 4. In a typical workweek (or month), approximately how many people with diabetes would you interact with? How many of these do you provide “extra” services to, beyond what is considered a typical interaction?
 5. How do you provide the above services (i.e. when dispensing medications, as an appointment, in their homes, in the community, in the pharmacy counselling rooms)?
 6. Are the patients/groups ever charged a fee by yourself or the pharmacy for obtaining these services? Please explain.

Topic Area 2: The CDE Designation

1. Why did you obtain your CDE?
2. In what ways have your daily activities changed since receiving the CDE designation?
3. Who paid the cost of obtaining your CDE designation?
4. Did your employer support your decision to pursue becoming a CDE? If yes, in what way?
5. Do you feel you receive more support from your employer in providing diabetes management now that you have become a CDE?
6. What are your goals related to diabetes management?
7. Are you happy with your decision to become a CDE? Do you feel satisfied that it has helped you achieve some of your goals related to diabetes management? Please explain.
8. Will you choose to recertify when the time comes? Please explain.

Topic Area 3: Connecting with Other HCPs and Marketing

1. Do you collaborate with other HCPs (e.g. physicians, dieticians, exercise therapists) regarding diabetes management? Please explain.
2. How, if at all, did you make other HCPs and the general public aware that you are a CDE?
3. Do you think that the CDE credential has helped you gain more respect from other HCPs? Do you feel it has led to improved relationships with other HCPs regarding diabetes management? Did “respect” from those others take some time to acquire? Please explain.
4. How do diabetics access your services (i.e. do you proactively seek them out, mainly through word of mouth, from other healthcare provider referrals)? Please explain.

Topic Area 4: Challenges in Putting Diabetes Expertise to Use

1. In general, what are the challenges you have experienced in putting your diabetes management knowledge to use?
 - If necessary, some priming questions include:
 - a) Are there time limitations? Please explain.
 - b) Are there insufficient human resources? Please explain.
 - c) Is diabetes management a priority in your work setting?
 - d) Have you encountered resistance from any other HCPs?
2. Do you feel confident in yourself in providing diabetes management?

Topic Area 5: Overcoming challenges to delivering diabetes management

1. How did you overcome any of the challenges you faced (if applicable)?
2. If you could change one challenge you mentioned, would it lead to a big improvement?

3. What advice would you give to another pharmacist thinking about obtaining his or her CDE in order to be successful?

Topic Area 6: Demographic Information

1. Age

- | | |
|---|--|
| <input type="checkbox"/> Under 25 years | <input type="checkbox"/> 41 - 45 |
| <input type="checkbox"/> 25 - 30 years | <input type="checkbox"/> 46 - 50 |
| <input type="checkbox"/> 31 – 35 | <input type="checkbox"/> 51 - 60 |
| <input type="checkbox"/> 36 - 40 years | <input type="checkbox"/> 61 years old or older |

2. Gender

- | | |
|-------------------------------|---------------------------------|
| <input type="checkbox"/> Male | <input type="checkbox"/> Female |
|-------------------------------|---------------------------------|

3. Source of Pharmacy Degree

- University of Saskatchewan
- Other Canadian University
- Non-Canadian University

4. Practice Setting

- Inpatient Hospital Setting
- Community Practice Setting

- Outpatient Hospital Setting
- Primary Healthcare Site
- Management
- Other: _____

5. Year You Became Licensed as a Pharmacist: _____

6. Year You Became a CDE: _____

7. Other Pharmacy-Related Credentials

- Yes No

Please Explain: _____

8. Work schedule

- Full time (35+ hours/week)
- Part time (less than 35 hours/week)
- Casual hours

9. Would you like to add your name to go on a registry for CDEs in SK?

- Yes No

Conclusion:

Do you have any other comments you would wish to share about your experiences regarding diabetes management?

End of the Interview