Perceptions of Healthcare Professionals on Implementation of an Oral Health Case Manager: A Qualitative Case Study

Dissertation Manuscript

Submitted to National University

School of Business and Economics

in Partial Fulfillment of the

Requirements for the Degree of

DOCTOR OF BUSINESS ADMINISTRATION

by

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San Diego, California

May 2026

Abstract

This research examined the perceptions of healthcare professionals on the implementation of an oral health case manager into a primary care setting in Massachusetts. The problem addressed in this qualitative case study was the lack of implemented interprofessional collaboration between primary health care and dental professionals within Massachusetts, resulting in reduced patient care. The purpose of this study was to examine the perception of physician's assistants, nurses, nurse practitioners, and medical assistants on the implementation of an oral health case manager to increase interprofessional collaboration between health care and dental professionals within Massachusetts in 2026. The conceptual framework for this study was interprofessional collaborative practice (ICP). This framework guided the research as the interviewing process included the groundwork and findings of the ICP framework and the underlying basis of RCC and used it as a guide for facilitating ICP and oral health case managers in primary care organizations in Massachusetts. A qualitative instrumental case study was used to collect narrative data, and the analysis of the information was through thematic analysis. The findings in this study support the research questions about implementing an oral health case manager to improve interprofessional collaboration, the benefits of this integration, and the barriers or facilitators of this integration. Future research recommendations include conducting similar studies in other locations in the United States to gain perspective from other states. Another recommendation is to examine the barriers and address how to overcome them. The last recommendation is for future studies to implement an oral health case manager, conduct research on the outcomes of the role, and thoroughly document the implementation process, cost, successes and hardships, and statistical data on addressing the oral-systemic link and achieving healthcare needs and goals.

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Chapter 1: Introduction

Primary oral health is described as the incorporation of promotion of oral health, prevention of oral diseases, and providing a regular source of care (Isman, 1993; Prasad et al., 2019). Many health conditions have a bidirectional link and relationship with oral health. This two-way association is also known as the oral-systemic link. Some of these links include the oral cavity's relation to diabetes, cardiovascular disease, obesity, cancer, respiratory conditions, Alzheimer's disease, and adverse pregnancy outcomes (Bui et al., 2019; Ruscio, 2020). Despite research proving numerous connection points in the oral-systemic link, the dental and medical fields remain separate (Atchinson et al., 2018).

The medical and dental fields are separated in education and training, clinical practice, and insurance (Simon, 2016; Vujicic & Fosse, 2022). This separation began before the mid-1800s, when the earliest dental schools were founded, and has continued since then. A lack of integration between oral care and medical care continues (Simon, 2016). Previous attempts at integration methods and pilot programs resulted in low implementation rates. There are various reasons for these low rates including, barriers created by legislation, a lack of health policies that allow for the delivery of oral health services, and the absence of a standardized system that is effective (Harnagea, Lamothe, Couturier, & Emami, 2018).

Previous studies suggest that one of the main barriers to primary oral health is the lack of collaboration amongst healthcare providers (Akl et al., 2021; Harnagea, Lamothe, Couturier, & Emami, 2018). The collaborative work that is needed is commonly referred to as interprofessional collaboration (Akl et al., 2021). The most reported implementers are optimizing coordination tools, creating policies that support areas of system integration, budget allocation, and innovative care models providers (Harnagea, Lamothe, Couturier, & Emami, 2018). An

innovative care model that is a way to integrate and optimize coordinated care is the creation of an oral health case manager.

Case managers are members of the healthcare team who educate, advocate, plan, coordinate, and provide referrals or facilitate care (Baker et al., 2020; Case Management Society of America [CSMA], n.d.). Case managers work in coordination with a range of healthcare providers to enhance patient outcomes. Patients tend to overuse emergency care when there is a lack of access to case management, resulting in increased costs for both the individuals and the broader healthcare system, or alternatively, they may underutilize primary ambulatory services and fail to meet their healthcare needs and objectives (Giardino & De Jesus, 2022; Hudon et al., 2017). For example, studies have shown that over 80% of patients who frequently use emergency services have chronic conditions that could be addressed by primary ambulatory care (Hudon et al., 2017). Additionally, there is a high number of documented emergency visits among patients with chronic conditions, specifically experiencing dental problems (Kelekar & Naavaal, 2019; Wei et al., 2022).

Patients who come from low-income households and do not have private dental insurance are less likely to have had a dental visit within the past year. Medical visits, including emergency services, may be the only opportunity to provide dental education, advice, and referrals (Wei et al., 2022). This research topic is currently of interest because it has been identified as the main factor for integrating oral health into medical care (Harnagea, Lamothe, Couturier, & Emami, 2018). If this problem persists, oral health and addressing the oral-systemic link will continue to be absent from medical care, and patients will continue to receive substandard care.

Statement of the Problem

The problem addressed in this qualitative case study was the lack of implemented interprofessional collaboration between primary health care and dental professionals within Massachusetts, resulting in reduced patient care (Akl et al., 2021; Atchinson et al., 2018). Many health conditions have a bidirectional link and relationship with oral health. This two-way association is also known as the oral-systemic link. Some of these links include the oral cavity's relation to diabetes, cardiovascular disease, obesity, cancer, respiratory conditions, Alzheimer's disease, and adverse pregnancy outcomes (Bui et al., 2019). However, despite research proving connections in the oral-systemic link, there is still a lack of interdisciplinary collaboration and integration of oral care into medical care (Akl et al., 2021; Atchinson et al., 2018).

There have been previous attempts at integration methods and pilot programs, but implementation rates have remained low. This is because there is little documentation on the models used in these programs, regarding the context of the integration approach and what is successful and unsuccessful (Harnagea, Lamothe, Couturier, Esfandiari, et al., 2018). This collaborative work that is needed is commonly referred to as interprofessional collaboration, and it has been identified as the main factor for integrating oral health into medical care (Harnagea, Lamothe, Couturier, & Emami, 2018).

The continuation of this problem will affect patients and the entire healthcare system. Patients often overutilize emergency services, causing greater expenses for both the patient and the healthcare system, or patients underutilize primary ambulatory services and do not achieve their healthcare needs and goals (Giardino & De Jesus, 2022; Hudon et al., 2017). If this problem persists oral health and addressing the oral-systemic link will continue to be absent from medical care, and patients will continue to receive substandard care.

Purpose of the Study

The purpose of this qualitative case study was to examine the perception of physician's assistants, nurses, nurse practitioners, and medical assistants on the implementation of an oral health case manager to increase interprofessional collaboration between primary health care and dental professionals within Massachusetts in 2026. An instrumental case study model was used, in which narrative data were collected and analyzed to evaluate an oral health case manager's role within medical settings. The target population was physician assistants, nurses, nurse practitioners, and medical assistants in clinical settings affiliated with larger comprehensive, collaborative, and integrated health systems. These types of clinical settings (i.e., primary care, emergency department, specialty offices) are a part of healthcare systems that range from 15,000 to 74,000 employees (Mass General Brigham, n.d.; Tufts Medicine, n.d.).

To gather data and explore how to clinically integrate the medical and dental fields, this study reached a data saturation with a selected sample of 12 participants from a population of healthcare professionals working in various clinical settings (Bloomberg & Volpe, 2019). The target population was physician assistants, nurses, nurse practitioners, and medical assistants working in a clinical setting that is affiliated with a larger comprehensive, collaborative, and integrated health system. These types of primary care offices are a part of healthcare systems that range from 15,000 to 74,000 employees (Mass General Brigham, n.d.; Tufts Medicine, n.d.). To reach saturation, this study selected a sample of 12 participants from a population of healthcare professionals working in these various clinical settings. To help in ensure there were enough responses to reach saturation, this research used snowball sampling and obtained permission to post in various Facebook and LinkedIn groups. This study also obtained approval from the Massachusetts Coalition of Nurse Practitioners' research committee and sent out an email to its

members list. Recruiting was done by sending a flyer via email, located in Appendix C, and making a social media post on LinkedIn and Facebook, located in Appendix D. Data collection was conducted via document analysis, semi-structured Zoom calls, and semi-structured phone interviews.

Recruiting was done by sending a flyer via email, LinkedIn, and Facebook, and data collection was conducted via document analysis, semi-structured Zoom calls, and semi-structured phone interviews. These data represent the opinions and experiences of healthcare professionals regarding oral health and integrating the dental and medical fields in a primary care setting. The reason for using this method was to generate data, develop an in-depth understanding of the barriers and benefits to an oral health case manager providing care within a primary care setting, and better integrate oral health into primary care for the best possible patient and business outcome (i.e., reducing cost, overutilization, and underutilization) (Harnagea, Lamothe, Couturier, & Emami, 2018). For validation and credibility, collected data were returned to participants to ensure the transcripts include what the participant said, and the responses were properly interpreted (Birt et al., 2016). After member checking, NVivo was used to organize and analyze the collected data.

Introduction to Conceptual Framework

The two conceptual frameworks guiding the research were the Health Belief Model (HBM) and interprofessional collaborative practice (ICP). The HBM has two foundational components: the desire to avoid illness or get well if already ill, and the belief that a specific health action will prevent or cure illness. There are six concepts of the HBM: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, cue to action, and self-efficacy. The HBM is most effective when integrated with other models that consider

environmental factors and recommend strategies for change, and the ICP framework addresses both (Stutsky & Spence Laschinger, 2014; Syed Kholed et al., 2021).

ICP uses Relationship-Centered Collaborative Care (RCC) as the underlying base, which includes three relationships necessary for patient care: patient-practitioner, practitioner-practitioner, and community-practitioner relationships. ICP has four model concepts: understanding of roles, interdependence, knowledge exchange, and collective ownership of goals. The ICP framework conducted the Interprofessional Collaborative Practice Survey (ICPS) and is measured by four subscales and thirteen items corresponding to the four model concepts. The research used a case study model with an interviewing and conversing method with an illustrative type of verbal language. The interviewing process included the groundwork and findings of the ICP framework and used it as a guide for facilitating ICP and oral health case managers in primary care organizations in Massachusetts (Behavioral change, 2019).

Introduction to Research Methodology and Design (Nature of the Study)

A qualitative instrumental case study was conducted to gather and analyze narrative data about how healthcare professionals perceive adding an oral health case manager to a primary care setting in Massachusetts. Qualitative data were gathered to explore how to clinically integrate the medical and dental fields from healthcare professionals at a primary care office (Northridge et al., 2020). These data represent the opinions and experiences of healthcare professionals on oral health and integrating the dental and medical fields in a primary care setting. The reason for using this method was to generate data, develop an in-depth understanding of the barriers and benefits to an oral health case manager providing care within a primary care setting, and better integrate oral health into primary care for the best possible

patient and business outcome (i.e., reducing cost, overutilization, and underutilization) (Harnagea, Lamothe, Couturier, & Emami, 2018).

A case study design was the best approach to gain a deeper insight into a topic that provided advice for professional practice. This type of design is used when the research question requires a look at single or multiple cases in a particular inquiry within the proposed population in the selected geographic location. Case studies do not require questions or the observation of others regarding their own experiences to collect the data needed to answer the research question (Bloomberg & Volpe, 2019). The design of the case study gained insight via document analysis and interviews, by conducting semi-structured phone interviews and email surveys.

Population and Sample

This study selected a sample of 12 participants from a population of physician assistants, nurses, nurse practitioners, and medical assistants working in a clinical setting that is affiliated with a larger comprehensive, collaborative, and integrated health system. These types of primary care offices are a part of healthcare systems that range from 15,000 to 74,000 employees (Mass General Brigham, n.d.; Tufts Medicine, n.d.). To reach saturation, this study selected a sample of 12 participants from a population of healthcare professionals working in these various clinical settings (Bloomberg & Volpe, 2019). To help ensure there were enough responses to reach saturation, this research used snowball sampling and obtained permission to post in various Facebook and LinkedIn groups. This study also obtained approval from the Massachusetts Coalition of Nurse Practitioners' research committee and sent out an email to its members list. Recruiting was done by sending a flyer via email, located in Appendix C, and making a social media post on LinkedIn and Facebook, located in Appendix D. Data collection was conducted via document analysis, semi-structured Zoom calls, and semi-structured phone interviews.

In using a case study design to address the research questions, a purposive sampling technique was used. In purposive sampling, the participants are selected to include those most likely to produce appropriate and useful information. Using this technique, the strategy made sure that specific kinds of participants were included in the final sample in the research study, rather than being random. This ensured that each kind of healthcare professional from the target population was included, physician assistants, nurses, nurse practitioners, and medical assistants. There are different types of purposive sampling, with the most common being stratified, cell, quota, and theoretical sampling. In comparison to the other types, quota purposive sampling is easier in recruitment and more flexible in forming the final sample of participants (Campbell et al., 2020).

The research used an interviewing and conversing method with an illustrative type of verbal language, by conducting qualitative interviews via phone and email. In qualitative interviews, while there was an agenda and research protocol, the questions were adjusted and discussion on the context of the situation and the person they were talking to (Yin, 2015). Analysis of online documents, Zoom calls, and phone interviews, was a low-cost and effective way to interact with participants. After interviews were complete, the collected data were returned to participants to ensure the transcripts included what the participant said, and the responses were properly interpreted (Birt et al., 2016).

Data Analysis

To validate the collected data and eliminate bias, member checking was completed. Then, all the data were managed and organized via NVivo. It is important for interviews to be transcribed precisely, including spoken words and nonverbal communication, giving a large

amount of data (Bloomberg & Volpe, 2019). To manage and organize this volume of data, a coding and thematic analysis was completed (Kaczkó & Ostendorf, 2023).

Research Questions

To examine the perceptions of healthcare professionals on the implementation of an oral health case manager in a primary care setting in Massachusetts, a qualitative case study was performed to collect and analyze narrative data. The target population was physician assistants, nurses, nurse practitioners, and medical assistants working in clinical settings that are affiliated with a larger comprehensive, collaborative, and integrated health system. These types of clinical settings (i.e., primary care, emergency department, specialty offices) are a part of healthcare systems that range from 15,000 to 74,000 employees (Mass General Brigham, n.d.; Tufts Medicine, n.d.). Data collection included document analysis, semi-structured Zoom calls, and phone interviews. These data represent the opinions and experiences of healthcare professionals on oral health and integrating the dental and medical fields in a primary care setting.

RQ1

How do physician's assistants, nurses, nurse practitioners, and medical assistants perceive the implementation of an oral health case manager improving interprofessional collaboration in a primary care setting in Massachusetts?

RQ2

In what ways and to what extent do physician's assistants, nurses, nurse practitioners, and medical assistants perceive are the benefits of integrating an oral health case manager into a primary care setting in Massachusetts?

RQ3

In what ways and to what extent do physician's assistants, nurses, nurse practitioners, and medical assistants perceive are the barriers or facilitators to creating the role of an oral health

case manager to increase interprofessional collaboration between primary health care and dental professionals within a primary care office in Massachusetts?

Significance of the Study

This study is important because previous research has proven numerous connection points in the oral-systemic link, yet the dental and medical fields remain separate (Atchinson et al., 2018). Previous studies suggest one of the main barriers to primary oral health is the lack of collaboration amongst healthcare providers (Akl et al., 2021; Harnagea, Lamothe, Couturier, & Emami, 2018). This study gathered data representing the opinions and experiences of healthcare professionals working in various clinical settings (i.e., primary care, emergency department, specialty offices) in Massachusetts. The gathered data developed an in-depth understanding of the barriers and benefits to an oral health case manager providing care within a primary care setting and better integrate oral health into primary care for the best possible patient and business outcome (i.e., reducing cost, overutilization, and underutilization) (Harnagea, Lamothe, Couturier, & Emami, 2018). If the main barrier to interprofessional collaboration is improved, then the separation of the medical and dental fields can begin to close.

Definitions of Key Terms

Buccal Mucosa

The inner lining of the cheeks and lips (NCI, n.d.).

Case Manager

A person who collaborates with various healthcare providers to advocate, educate, and coordinate care for patients (Baker et al., 2020).

Chronic Conditions

Diseases that last one year or more and require ongoing healthcare services (Centers for Disease Control and Prevention [CDC], 2022).

Gingiva

Soft tissue on the upper and lower jaws that surrounds the base of erupted teeth and lies over the crowns of unerupted teeth. Also known as the gums in the oral cavity (American Dental Association [ADA], n.d.; NCI, n.d.).

Interprofessional Collaboration

Occurs when more than one specialty or profession works together (Green & Johnson, 2015).

Oral Cavity

The mouth, including the lips, buccal mucosa, gingiva, teeth, retromolar trigone, hard and soft palate, front two-thirds of the tongue, and the floor of the mouth (National Cancer Institute [NCI], n.d.).

Oral Health

Refers to the condition of health of the oral cavity (Gauger et al., 2018).

Oral-Systemic

The connection between oral health and overall health. There are specific associations between oral health and a multitude of systemic conditions and diseases (ADA, 2021).

Primary Health

People's condition of health, including health promotion, disease prevention, and continuation of care from specialists (Healthcare.gov, n.d.; World Health Organization [WHO], 2021).

Retromolar Trigone

Part of the oral cavity behind the third molars (wisdom teeth) (NCI, n.d.).

Scope of Practice

The tasks and services qualified healthcare professionals are allowed to perform within the terms of their job title or professional licensure (American Medical Association [AMA], 2022).

Summary

Despite research proving numerous connection points in the oral-systemic link, the dental and medical fields remain separate (Atchinson et al., 2018). There is a lack of integration of oral care into medical care, including primary care and specialty settings. There have been previous attempts at integration methods and pilot programs, but implementation rates have remained low. Previous studies suggest one of the main barriers to primary oral health is the lack of interprofessional collaboration (Akl et al., 2021; Harnagea, Lamothe, Couturier, & Emami, 2018).

The problem addressed in this qualitative case study is the lack of implemented interprofessional collaboration between primary health care and dental professionals within Massachusetts, resulting in reduced patient care. The purpose of this qualitative case study was to examine the perception of physician's assistants, nurses, nurse practitioners, and medical assistants on the implementation of an oral health case manager to increase interprofessional collaboration between primary health care and dental professionals within Massachusetts in 2026.

The conceptual framework that guided the research is Interprofessional Collaborative Practice (ICP). A qualitative instrumental case study model was used, in which narrative data

were collected and analyzed to evaluate an oral health case manager's role within a primary care office. The target population was physician assistants, nurses, nurse practitioners, and medical assistants working in a clinical setting that is affiliated with a larger comprehensive, collaborative, and integrated health system. The data collected represents the opinions and experiences of healthcare professionals on oral health and integrating the dental and medical fields in a primary care setting. The reason for using this method is to generate data, develop an in-depth understanding of the barriers and benefits to an oral health case manager providing care within a primary care setting, and better integrate oral health into primary care for the best possible patient and business outcome (i.e., improved quality of care, reducing cost, overutilization, and underutilization) (Harnagea, Lamothe, Couturier, & Emami, 2018; Kleinman et al., 2021).

To gather data and explore how to clinically integrate the medical and dental fields from healthcare professionals at a primary care office, this study selected a sample of 12 participants from a population of healthcare professionals working in various clinical settings, aiming to reach data saturation (Bloomberg & Volpe, 2019). To help ensure there were enough responses to reach saturation, this research used snowball sampling and obtained permission to post in various Facebook and LinkedIn groups. This study also obtained approval from the Massachusetts Coalition of Nurse Practitioners' research committee and sent out an email to its members list. Recruiting was done by sending a flyer via email, located in Appendix C, and making a social media post on LinkedIn and Facebook, located in Appendix D. Data collection was conducted via document analysis, video conference interviews via Zoom, and phone interviews. Chapter two includes a review of the literature that guided this study.

Chapter 2: Literature Review

The purpose of this qualitative case study was to examine the perception of physician's assistants, nurses, nurse practitioners, and medical assistants on the implementation of an oral health case manager to increase interprofessional collaboration between primary health care and dental professionals within Massachusetts in 2026. The problem addressed in this qualitative case study is the lack of implemented interprofessional collaboration between health care and dental professionals within Massachusetts, resulting in reduced patient care (Akl et al., 2021; Atchinson et al., 2018).

The conceptual framework that guided the research, interprofessional collaborative practice (ICP), is outlined within this chapter. Following, the literature review will be organized into three sections: oral-systemic link, interprofessional collaboration, and oral health case manager. The first section, oral-systemic link, will review previous studies showing evidence of multiple links between oral health and overall health. The subheadings under the oral-systemic link are patient awareness and medical provider awareness. The second section, interprofessional collaboration between dental and medical providers, will review studies researching dental and medical professionals working together. Within the interprofessional collaboration section, there are subheadings of health professional perspectives and attitudes, integration methods, and barriers to integration. The last section, oral health case manager, will review previous studies on the role of case managers in healthcare settings.

To find articles for the literature review, search engines Roadrunner and Google Scholar were used, along with National University databases Academic Source Complete, Business Source Complete, and ProQuest Healthcare Administration Database. Furthermore, the search parameters include a multitude of search terms, a range of years the articles were published, and

types of literature. The search terms are *health, oral, oral health, dental, medical and dental, oral-systemic, oral-systemic link, interprofessional collaboration, interprofessional education, integrate, integrating, integration, integrated, primary care, health care, healthcare, and case manager*. The range of years are published within the last five years, which is 2018 to 2023. When searching, there was no limitation on types of studies within the literature, but most of the sources were qualitative work.

Conceptual Framework

The conceptual framework that guided the conducted research was interprofessional collaborative practice (ICP). This framework was created when Stutsky and Spence Laschinger (2014) found a lack of a consistent theoretical framework to guide research and gain evidence to inform interprofessional education (IPE) and interprofessional collaborative practice. They did an extensive literature review on interprofessional education and practice, created a conceptual framework for ICP, and conducted a preliminary study in Canada to test the validity of the framework. Interprofessional collaborative practice has four model concepts: understanding of roles, interdependence, knowledge exchange, and collective ownership of goals (Stutsky & Spence Laschinger, 2014). ICP also uses an underlying base of Relationship-Centered Collaborative Care (RCC), which was created in 1994 (Stutsky & Spence Laschinger, 2014; Tresolini & Pew-Fetzer Task Force, 1994). Relationship-Centered Collaborative Care includes three relationships necessary for patient care: patient-practitioner, practitioner-practitioner, and community-practitioner relationship (Gaboury et al., 2011; Stutsky & Spence Laschinger, 2014).

Langer and Fukkink (2022) applied the ICP conceptual framework when conducting a realist synthesis of interprofessional collaborative practices in early intervention for children with speech language and communication needs. Then, Langer et al. (2023) applied the ICP

framework and parts of the Interprofessional Collaborative Practice Survey, both created by Stutsky and Spence Laschinger (2014). Langer et al. (2023) conducted a survey comparing Dutch and Norwegian perspectives on interprofessional collaborative practices for children with speech, language, and communication needs in early childhood education and care.

In this research study, the interprofessional collaborative practice framework was used in a similar way by collecting data to represent the opinions and experiences of healthcare professionals on interprofessional collaboration, but specifically oral health and integrating the dental and medical fields in a primary care setting, as shown in Figure 1. The research conducted a qualitative instrumental case study to collect and analyze narrative data to evaluate an oral health case manager's role within a primary care office. The target population was the physician assistants, nurses, nurse practitioners, and medical assistants working in a clinical setting that is affiliated with a larger comprehensive, collaborative, and integrated health system. The reason for using this framework was to generate data and develop an in-depth understanding of the barriers, facilitators, and benefits to the interprofessional collaboration of an oral health case manager providing care within a primary care setting.

Other frameworks that were considered but not chosen include the Health Belief Model (HBM), Interprofessional Capability Framework, and Oral Health Literacy and Health Integration Framework. The health belief model was not selected as the framework guiding the research because it analyzes the health behavior of individuals' motivation toward their own health goals, and the target population of the proposed research is the healthcare professionals (Janz & Becker, 1984). The Interprofessional Capability Framework was not selected because it focuses on the education and training of healthcare professionals while they are still students (Walsh et al., 2005). Lastly, Oral Health Literacy and Health Integration Framework was not

selected because it was designed for broader studies with participants who have a clear understanding of health conditions, health needs, care services, and the roles played by health care providers, policy makers, and individuals (Kleinman et al., 2021).

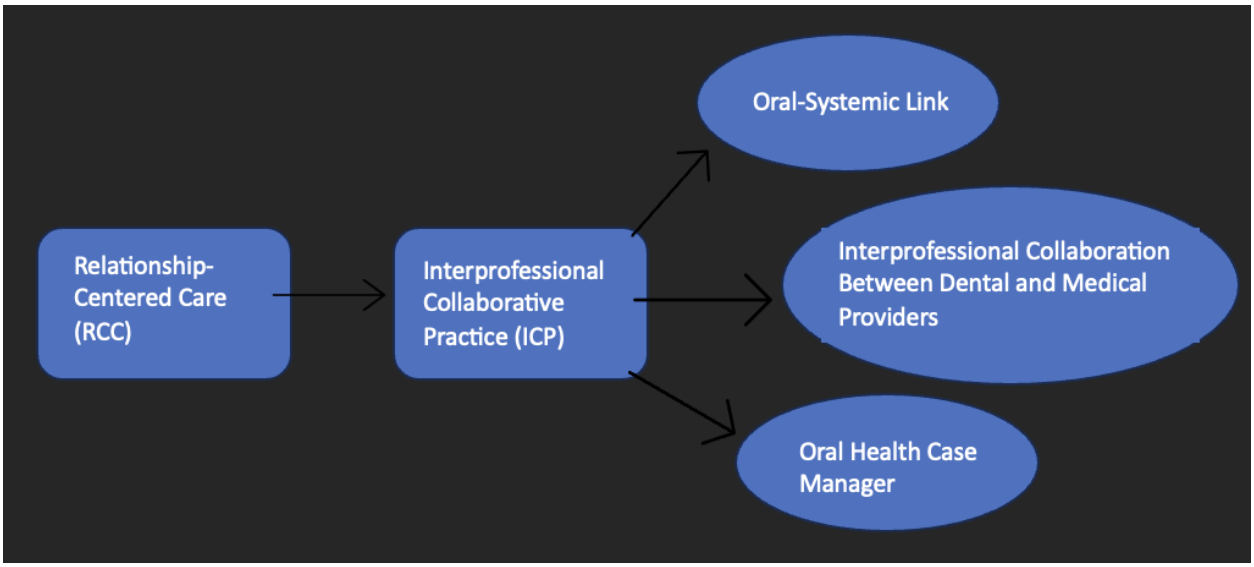
The interprofessional collaborative practice framework was chosen because of the terminology used in the title, the fact that it can be used by healthcare professionals at all levels, and the goals of the framework (D'Amour et al., 2005; Stutsky & Spence Laschinger, 2014). The terminology in the title specifically uses interprofessional collaboration. There is other vocabulary used to describe concepts similar to collaboration (e.g. sharing, partnership) and team (e.g. multidisciplinary, interdisciplinary, transdisciplinary), but these similarly termed concepts have definitions that could skew provider autonomy, shared responsibilities, and possible creation of a power dynamic (D'Amour et al., 2005; Green & Johnson, 2015). The term interprofessional collaboration has the key elements of role definition, interdependence, communication, and trust. When interprofessional collaboration is used, healthcare professionals have perceptions and expectations of other professionals, their interest in collaborative practice, and their skills (Sirimsi et al., 2022). Interprofessional collaborative practice was also chosen because of the goals of the framework: the ability to provide a guide that can be used to improve patient outcomes, safety, and quality of care (Stutsky and Spence Laschinger, 2014).

The goals of ICP were strived toward in addressing the lack of implemented interprofessional collaboration between primary health care and dental professionals within Massachusetts. Figure 1 is a display of the conceptual framework, showing how RCC was the base of ICP, and the ICP framework was integrated into the three sections of the literature review: oral-systemic link, interprofessional collaboration between dental and medical providers,

and oral health case manager. Each of these sections is where the ICP goals were focused, to address the problem of reduced patient care.

Figure 1

Interprofessional Collaborative Practice (ICP) Conceptual Framework



Note. RCC was created by Tresolini and Pew-Fetzer task Force (1994), and ICP was created by Stutsky and Spence Laschinger (2014). This figure shows how RCC was the base of ICP, and the ICP framework was integrated into the three sections of the literature review: oral-systemic link, interprofessional collaboration between dental and medical providers, and oral health case manager.

The research used the analyzed data to aid in better integration of oral health into primary care, giving the best possible patient and business outcome (i.e., improved quality of care, reduced cost, overutilization, and underutilization) (Harnagea, Lamothe, Couturier, & Emami, 2018; Kleinman et al., 2021). The research used a case study model and an interviewing and conversing method with an illustrative type of verbal language. The conceptual framework guided the proposed research, as the interviewing process included the groundwork and findings

of the ICP framework, and the underlying basis of RCC, and used it as a guide for facilitating ICP and oral health case managers in primary care organizations in Massachusetts (Gaboury et al., 2011; Green & Johnson, 2015; Stutsky & Spence Laschinger, 2014; Tresolini & Pew-Fetzer Task Force, 1994).

Oral-Systemic Link

There are many health conditions that have a bidirectional link and relationship with oral health. This two-way association is also known as the oral-systemic link. Some of these links include the oral cavity's relation to diabetes, cardiovascular disease, obesity, cancer, respiratory conditions, Alzheimer's disease, and adverse pregnancy outcomes (Bui et al., 2019; Janto et al., 2022; Kapoor et al., 2022; Kleinman et al., 2021; Laniado et al., 2021; Migliorati & Madrid, 2007; Ruscio, 2020; Siddiqi et al., 2022). In addition to the bidirectional links between these health connections and oral health, they can also share risk factors, i.e., hygiene, diet, weight, smoking, and alcohol use (Kleinman et al., 2021; Migliorati & Madrid, 2007; Prasad et al., 2019). Several studies found patients and medical providers to lack awareness of these links and the associations between the oral cavity and systemic conditions (Ahern et al., 2021; Akl et al., 2021; Alsalleh et al., 2022; Atchison et al., 2018; Christian et al., 2020; Desai et al. 2021; Kleinman et al., 2021; Koike et al., 2022; Kumara et al., 2022; Laniado et al., 2021; Maharani et al., 2019; Makoni et al., 2022; Migliorati & Madrid, 2007; Peterson, 2014; Poudel et al., 2022; Siddiqi et al., 2022). This lack of patient health literacy can be due to dental and medical professionals not informing their patients, which could be caused by a lack of appointment time, insufficient understanding of oral health, and a lack of confidence (Alsalleh et al., 2022; Matsuda et al., 2017). For providers, the lack of knowledge can be a result of a lack of education and understanding of the oral cavity and oral health, having no interest in oral health, and little to no

interprofessional education or experience with dental professionals (Alsalleh et al., 2022; D'Souza et al., 2022; Janto et al., 2022; Kleinman et al., 2021; Matsuda et al., 2017; Peterson, 2014; Poudel et al., 2022; Tseng et al., 2020).

Patient Awareness

Akl et al. (2021) included 24 articles in their systematic review investigating patient knowledge and awareness of the association between oral health and systemic conditions of diabetes, heart disease, bone disease, and pregnancy. Poudel et al. (2022) included 23 articles in their scoping review on oral health knowledge, attitudes, and practices of people with diabetes, specifically in South Asia. Both studies followed the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines. However, Akl et al. (2021) had the limitation that most of the reviewed studies used self-administered questionnaires to assess the awareness and knowledge of participants. Poudel et al. (2022) had the limitation of nearly all studies being conducted within a hospital setting, which likely limited the focus to people with more severe diabetes and oral health problems.

Alsalleh et al. (2022) conducted a cross-sectional survey that interviewed 502 participants on the public awareness of the association between periodontal disease and systemic conditions of diabetes mellitus, hypertension, respiratory tract infection, coronary heart disease, and atherosclerosis. The survey consisted of ten closed-ended questions asking demographic information, dental and systemic health questions, and using a five-point Likert scale, assessed participant awareness of the association between systemic conditions and periodontal disease. This study has limitations of being only residents of Saudi Arabia and the participants having to self-report their dental and medical conditions (Alsalleh et al., 2022).

The reviews and surveys concluded that most patients with major systemic conditions have poor awareness and knowledge of the oral health associations of their condition. These results shed light on the importance of improving awareness and oral health literacy of the oral-systemic link and stress the need to distribute more oral health information to patients and implement evidence-based strategies to expand access to dental care (Akl et al., 2021; Alsalleh et al., 2022; Kleinman et al., 2021; Peterson, 2014; Poudel et al., 2022; Tseng et al., 2020). This lack of knowledge can be due to dental and medical professionals not informing their patients, which could be caused by a lack of appointment time, insufficient understanding of oral health, and having no interactions with dental providers (Alsalleh et al., 2022; Matsuda et al., 2017). This calls for greater efforts toward integrating oral-systemic education during the delivery of care (Kleinman et al., 2021). One suggestion is to incorporate a dedicated medical staff member to conduct oral health screenings and educate patients on the oral-systemic link (Alsalleh et al., 2022; Poudel et al., 2022). It is suggested that future research measure the effect of educational programs and policy changes on patient knowledge of their systemic conditions (Akl et al., 2021; Janto et al., 2020; Laniado et al., 2021; Peterson, 2014).

Medical Provider Awareness

Cross-sectional surveys were largely used to examine health care providers' awareness of the oral-systemic link, interprofessional collaboration, and providers' attitudes toward both (Desai et al., 2021; Laniado et al., 2021; Maharani et al., 2019; Makoni et al., 2022). Desai et al. (2021) conducted a survey comparing awareness of the link between oral and systemic health among undergraduate dental and medical students in India. There was a total of 300 participants, 150 third and final year medical students, and 150 third and final year dental students (Desai et al., 2021). Maharani et al. (2019) distributed a questionnaire surveying the attitude toward and

awareness of medical-dental collaboration among medical and dental students in a university in Indonesia. The web-based survey was completed by 1,137 people, 579 medical students, and 558 dental students. Desai et al. (2021) results concluded that dental students have more oral health knowledge, better oral health behavior, and more awareness of the oral-systemic link in comparison to medical students. Maharani et al. (2019) survey results showed that curriculum and year of study were related to the students' awareness and attitudes toward medical-dental collaboration. This is thought to be because more time in the program meant more exposure to didactic and clinical learning (Maharani et al., 2019).

Laniado et al. (2021) surveyed 119 attending physicians, internal medicine residents, nurses, and physician assistants in the primary care medical departments at Jacobi Medical Center in New York on their knowledge and practice behaviors regarding interprofessional oral health collaboration. The survey found 69% of providers rarely or never examine a patient's oral cavity, and 64% rarely or never inquire about a patient's dental health. The findings of this study suggest that most medical providers lack oral health training and experience. Results also suggest that when medical providers do perform an oral-health-related task, they lack confidence in their skills because of a lack of training and experience (Laniado et al., 2021). This was also found to be true when Makoni et al. (2022) measured the knowledge, attitudes, and practices that 101 nurses have toward oral care of hospitalized patients in Zimbabwe. Results showed the nurses had an average knowledge about oral health, the nurses' general attitude regarding oral management of admitted patients was good, but the overall practice of oral care was deemed fair. The resulting measurements are thought to be due to a lack of confidence and resources, including manpower (Makoni et al., 2022).

Siddiqi et al. (2022) investigated 13 studies to examine medical professionals' awareness and knowledge of the association between periodontal disease and diabetes mellitus. The systematic review reported that approximately half of the medical professional participants were unfamiliar with the association between oral health and systemic health, and more specifically, the link between periodontal disease and diabetes mellitus. Even though the other half of medical professionals had some knowledge on the oral-systemic link, and specifically periodontal disease and diabetes mellitus, approximately only one-third of medical professionals referred patients to a dental office. There was an even lower percentage of medical professionals who screen their patients' oral health and periodontal status or provide patients with information regarding the oral-systemic link. Results show an overall absence of interprofessional collaboration between dental and medical professionals while managing patients with diabetes mellitus (Siddiqi et al., 2022).

Hollaar et al. (2023) conducted focus group interviews in the Netherlands with nine dietitians and 11 dental hygienists to explore professional opinions on current collaboration between the two fields. The study aimed to identify barriers and success factors in interprofessional collaboration between these fields. Results from the focus group interviews showed that dental hygienists conduct nutritional counseling, focusing on xerostomia and caries, but typically do not refer to dietitians. Also, dietitians encounter situations where patients express that they cannot chew properly due to pain or a loose-fitting denture, but dietitians typically do not refer to dental hygienists or dental offices. Some of the focus group participants expressed that they had not considered referring to the other profession until this study took place. Participants also expressed that now, if they consider referring to the other profession, they are wondering when and how to execute referrals and coordinate care (Hollaar et al., 2023).

Interprofessional Collaboration Between Dental and Medical Providers

Previous studies suggest that one of the main barriers to primary oral health is the lack of collaboration amongst healthcare providers (Akl et al., 2021; Harnagea, Lamothe, Couturier, & Emami, 2018). The collaborative work that is needed is commonly referred to as interprofessional collaboration (Akl et al., 2021; Green & Johnson, 2015). There are multiple positive effects of interprofessional collaboration and working as a team. Some of these positive effects include better coordination, continuity of care, and improved knowledge of other professions (Rawlinson et al., 2021). Interprofessional collaboration is shown to generate better health service outcomes for patients due to improved skills and efficiency, innovation, and a more holistic, whole-body approach. Studies show interprofessional collaboration improves access to care, proper use of specialty care, and outcomes of chronic diseases (Green & Johnson, 2015). Despite these outlined benefits of interprofessional collaboration, collaboration and integration can be difficult (Adeniyi et al., 2020; Ahern et al., 2021; Akl et al., 2021; Alsalleh et al., 2022; Atchison & Weintraub, 2017; Atchinson et al., 2018; Atchison et al., 2019; Cardenas et al., 2023; Christian et al., 2020; Connell et al., 2019; Harnagea, Lamothe, Couturier, & Emami, 2018; Poudel et al., 2022). This section will also review health professional perspectives and attitudes, integration methods, and barriers to integration.

Health Professional Perspectives and Attitudes

Christian et al. (2020) evaluated attitudes toward interprofessional collaboration and education among health professional learners. A quantitative study was conducted to measure learner attitudes before and after an interprofessional education (IPE) workshop in 2017 and 2018 via a 7-point Likert scale ranging from strongly agree to strongly disagree. In 2017, there were 420 participants, and in 2018, there were 466 participants representing various health

professions such as pharmacy, dentistry, optometry, nursing, occupational therapy, social work, and first-year medicine. Learners were asked survey questions based on the interprofessional care competencies of the Canadian Interprofessional Health Collaborative Competencies Framework: communication, roles and responsibilities, collaboration, patient-centered approach, conflict management/resolution, and team functioning. The findings of this study were consistent with previous studies, that health professional learners involved in IPE significantly improved in interprofessional competencies post-intervention compared with baseline, and interprofessional collaboration in health care has a positive impact on improving patient outcomes (Christian et al., 2020; Green & Johnson, 2015).

The following year, Ahern et al. (2021) conducted a cross-sectional, multi-state analysis of primary care providers and staff perspectives on considering dentists within the healthcare team. Samples were drawn from 59 practice sites in 17 health systems across four states. The survey was administered over a 23-month period to 1360 staff members. There was a 61% response rate, equaling 828 respondents. The survey used an instrument of a 3-point scale: rarely/never, sometimes, usually/always (Ahern et al., 2021). Results indicated that dentists are commonly not considered to be part of the healthcare team in primary care settings, but IPE must be a part of health profession training to reach interprofessional collaboration and integrated care (Ahern et al., 2021; Christian et al., 2020; Green & Johnson, 2015; Peterson, 2014). This is important because IPE has been shown to create positive outcomes in improved role comprehension, learner satisfaction, and greater application of collaborative work (Christian et al., 2020).

Integration Methods

Atchison and Weintraub (2017) conducted an environmental scan to look at the methods of integrating oral health and primary care. Four methods were outlined: integration through a formal closed-loop referral process, integration through shared finances, co-location and closer integration of medical and dental providers, and no integration. The following year, Atchison et al. (2018) conducted an environmental scan to evaluate the status of integration of oral health and primary care services, creating four integration categories: preventative oral health services (POHS) provided by medical care providers in their medical clinics, POHS provided by dental providers in medical primary care clinics or nontraditional settings, preventative (nondental) health services provided by a dental provider in a dental clinic setting, and care coordination, case management, and referral that can be provided in multiple medical, dental, and community settings. Then, four programs were chosen to use as case studies and conducted interviews with key personnel in each program: InterCommunity Health Network Coordinated Care Organization in collaboration with Willamette Dental Group, Mouth of Babes, Health Partners, and Grace Health (Atchison et al., 2018).

Closed-Loop Referral. The first method Atchison and Weintraub (2017) outlined was integration through a formal closed-loop referral process that occurs when dental and medical professionals are not in an integrated practice, so they have an agreement in place for referral and acceptance of patients (Atchison & Weintraub, 2017; Kleinman et al., 2021). An example of a closed-loop referral process is the case study of the collaboration between InterCommunity Health Network Coordinated Care Organization and Willamette Dental Group. These two organizations came together and created a diabetes integration pilot program. In this program, every diabetic patient was mailed a brochure, medical providers educated their patients on the importance of oral health, dentists reminded patients to see medical providers, and both medical

and dental professionals provided a referral to the other profession if the patient did not have a primary care provider or a home dental office (Atchison et al, 2018).

An additional example of a closed-loop referral process is the Teaming and Integrating for Smiles and Health (TISH) Learning Collaborative, developed by the Center for Integration for Primary Care and Oral Health (CIPCOH) and the Harvard School of Dental Medicine's Initiative to Integrate Oral Health and Medicine. Cardenas et al. (2023) conducted a quantitative multidisciplinary research project that evaluated the TISH Learning Collaborative for integrating oral and primary care. The project had two goals: improving referrals between primary care providers and dental professionals by increasing early detection of gingivitis in the primary care setting and detecting hypertension in the dental setting early. A total of 17 sites completed a Readiness Assessment questionnaire, ten of those sites completed an Interprofessional Assessment questionnaire using a Likert scale, and eight of those sites continued to participate in biweekly calls and data collection. Each of the eight sites created a team of 3-5 primary care and dental professionals that participated in virtual learning sessions about integrating primary health care and oral health. The teams of 3-5 professionals then theorized plans on how to achieve the project goals by making changes only to their existing workflows. Ideas were tested through Plan-Do-Study-Act (PDSA) cycles in between biweekly meetings, and progress updates were presented as storyboards during the learning sessions. Participants found some of the key takeaways from these presentations to be a continuous amount of effort required to maintain the drive toward integration. These key takeaways include consistent coaching, creating incentives for staff, and retraining if needed. Teams also found various strategies that increased the success of their referrals, such as warm hand-offs to medical and dental partners, scheduling patient's referrals while still in the office, and communicating the oral-systemic link by making

connections between that specific patients' medical history and their own oral health (Cardenas et al., 2023).

Shared Finances. Integrating through shared finances occurs when oral health services are covered under a medical plan. An example of this is an Accountable Care Organization (ACO) in Minnesota offering preventative dental services to specific populations, such as pregnant and diabetic patients. Another example is a Coordinated Care Organization (COO) in Oregon integrating medical, behavioral, and oral health (Atchison & Weintraub, 2017). The case study Into the Mouth of Babes is an example of POHS provided by medical care providers in their pediatric medical clinics. In this program, medical providers are reimbursed by Medicaid for POHS provided during visits for children up to age 3.5 years old. The reimbursed POHS services include risk assessments and oral screening, caregiver counseling, dental referrals, and application of fluoride varnish (Atchison et al., 2018). Atchison et al. (2018) could not find a direct example of a case study for preventative (nondental) health services provided by a dental professional in a dental clinic setting. However, they did find a case study at HealthPartners, an ACO in Minnesota, which is another example of shared finances. HealthPartners offers both medical and dental insurance, added dentists to their clinical practice guidelines for multidisciplinary teams, and waived the copayment for diabetic patients seeking dental care (Atchison et al., 2018).

Another example of shared finances, POHS provided by medical care providers in a medical setting, and preventative (nondental) health services provided by a dental professional in a dental clinic setting, is the evaluation of the TISH Learning Collaborative. One of the project goals was to increase early detection of gingivitis in the primary care setting and hypertension in the dental setting. The results from the Interprofessional Assessment Likert scale questionnaire

showed an improvement in dental professionals' ability to counsel hypertension patients, but there were no notable changes for primary care providers (Cardenas et al., 2023).

Co-location. Co-location and closer integration of medical and dental providers occur when medical and dental providers share facilities and, if possible, also share electronic health records (EHR) (Atchison & Weintraub, 2017; Kleinman et al., 2021). An example of this integration method is happening at Kaiser Permanente Northwest. This ACO uses the philosophy of discussing every patient's preventative care plan with them to encourage the patient to complete the recommended services (i.e., flu shots, mammograms, colonoscopy) (Atchison & Weintraub, 2017). Atchison et al. (2018) found the case study Grace Health, a nonprofit federally qualified health center (FQHC) in Michigan, to be an example of POHS provided by dental professionals in medical primary care clinics or nontraditional settings. Grace Health has both medical and dental clinics, but also received special certification, as part of Michigan's Public Dental Prevention Program, for their employed dental hygienists to provide preventative dental services with indirect supervision from their employed dentists. For dental hygienists to provide services as a part of this special certification, they incorporated a dental operatory into the obstetrics-gynecology (OB-GYN) suite within Grace Health's medical clinic. During pregnancy, the provided services include dental screenings, prophylaxis dental cleanings, a review of oral hygiene homecare practices, and nutrition in relation to both the mother's and child's oral health. The services provided postpartum include evaluating how the mother is doing, gifting a book on oral health and a finger toothbrush, stressing the importance of dental visits for both mother and child, and providing any oral health-related guidance and advice for both the mother and child. Grace Health's initiative benefited pregnant women's oral health, addresses oral conditions and

problems that could potentially lead to poor birth outcomes, and improves the oral health of the future child and any siblings (Atchison et al., 2018).

Another example of POHS provided by dental professionals in medical primary care clinics or nontraditional settings is school-based sealant and fluoride programs. These initiatives also identify individuals' unmet dental needs and provide referrals to accessible dental providers in the community. Connell et al. (2019) conducted a literature review to provide clarity around the delivery of oral health service policies in Minnesota, focusing on those that aim to strengthen delivery models and the dental workforce. To conduct this review, Delta Dental of Minnesota Foundation and Wilder Research collaborated with the mission of breaking down barriers to positive oral health. At the time of this study in 2019, only 61% of children in Minnesota under the age of 18 living in low-income households had a dental visit within the past year. This is the reason for incorporating sealant and fluoride programs into schools. Sealants and fluoride are effective ways to aid in the prevention of tooth decay in children. During these school-based programs or on their own, there are also initiatives that focus on oral health education, mostly targeting daily behaviors of toothbrushing and other oral hygiene adjuncts, fluoride sources, a healthy diet, and sugar consumption (Connell et al., 2019). Connell et al. (2019) found that oral health education improves individuals' understanding, attitude, and application of oral health techniques and other daily habits. Therefore, children and adults who received this education had reduced plaque, bleeding, probing depths, and decay (Connell et al., 2019).

Lastly, another example of POHS provided by dental professionals in a nontraditional setting occurs in nursing facilities in Australia and Japan (Janto et al., 2022; Ohara et al., 2021). Australia created the Nursing Home Oral and Dental Plan, where the oral health model Better Oral Health in Residential Care was implemented. In these nursing homes, dental professionals

offer palliative treatment to make patients comfortable and improve their quality of life (Janto et al., 2022). In Japan, the level of nursing facility care is determined by assessing the patient's cognitive function as well as their ability to change clothes, walk, feed, bathe, and engage in proper excretion behaviors (Matsuda et al., 2017). At each level of care, Japan has implemented nationwide efforts to manage oral conditions, functions, and hygiene. For example, managing the oral health of those on ventilators or aiding those with dementia who are refusing oral care (Koike et al., 2022). Ohara et al. (2021) surveyed 368 dental hygienists in Japan who work with geriatric populations in nursing facilities. The survey concluded that daily tasks of these dental hygienists include daily oral hygiene, dental cleanings, interprofessional collaboration, and providing oral hygiene education to patients and staff. It was concluded that dental hygienists play an important role in enhancing oral hygiene in nursing facilities in Japan, making it necessary for them to be a part of the staff on long-term care teams. Dental hygienists also enhance the understanding of a patient's health status, making the contribution of dental hygienists in interprofessional teams even more valuable (Ohara et al., 2021).

No Integration. Lastly, no integration commonly occurs between dental and medical providers. No integration leaves patients to manage the challenges of seeking, receiving, and managing proper care on their own (Atchison & Weintraub, 2017; Prasad et al., 2019). There have been previous attempts at integration methods and pilot programs, but implementation rates have remained low. There are various reasons for these low rates, including barriers created by legislation, a lack of health policies that allow for the delivery of oral health services, and a lack of a standardized system that is effective (Harnagea, Lamothe, Couturier, Esfandiari, et al., 2018). Also, there is little documentation on the models used in these pilot programs, regarding

the context of the integration approach and what is successful and what is unsuccessful (Adeniyi et al., 2020; Harnagea, Lamothe, Couturier, Esfandiari, et al., 2018).

Barriers to Integration

Rawlinson et al. (2021) conducted an overview of reviews and thematic synthesis to gain information on barriers and facilitators in interprofessional collaboration. Some of the integration barriers faced by previous studies include lack of clarity on function and scope of other professionals, lack of support at political and national level for expanding roles, fear of new territory and professional identity, power imbalance between professionals, poor communication, and financial issues (e.g., funding, reimbursement structures and policies) (Rawlinson et al., 2021). The most reported barriers by previous studies are a lack of awareness of the oral-systemic link and interprofessional education, and the separation of medical and dental insurance and electronic health records (EHR) (Adeniyi et al., 2020; Ahern et al., 2021; Akl et al., 2021; Alsalleh et al., 2022; Atchison & Weintraub, 2017; Atchinson et al., 2018; Atchison et al., 2019; Cardenas et al., 2023; Christian et al., 2020; Connell et al., 2019; D'Souza et al., 2022; Gauger et al., 2018; Harnagea, Lamothe, Couturier, & Emami, 2018; Hollaar et al., 2023; Janto et al., 2022; Kleinman et al., 2021; Northridge et al., 2020; Poudel et al., 2022; Rawlinson et al., 2021).

Lack of Awareness. One of the most cited barriers to medical and dental integration is the overall lack of awareness of the oral-systemic link (Ahern et al., 2021; Akl et al., 2021; Alsalleh et al., 2022; Atchinson et al., 2018; Christian et al., 2020; Poudel et al., 2022; Tseng et al., 2020). As previously mentioned, most patients with major systemic conditions have poor awareness and knowledge of the oral health associations of their condition (Akl et al., 2021; Alsalleh et al., 2022; Poudel et al., 2022). On the provider side, results from Ahern et al. (2021) had varied responses within practices, implying that provider and staff perceptions may cause

difficulties for integrating dentists into primary care (Ahern et al., 2021). This lack of knowledge can be due to dental and medical professionals not informing their patients, which could be caused by a lack of appointment time, insufficient understanding of oral health, and having no interactions with dental providers (Alsalleh et al., 2022; Matsuda et al., 2017). To overcome this lack of awareness, these studies suggest educational programs and policy changes that integrate oral health literacy and care into medical care by providing oral-systemic education to patients and to medical providers within their educational programs (Alsalleh et al., 2022; D'Souza et al., 2022; Janto et al., 2022; Kleinman et al., 2021; Matsuda et al., 2017; Peterson, 2014; Poudel et al., 2022; Tseng et al., 2020). This would allow for the distribution of more oral health information to patients and implement evidence-based strategies to expand access to dental care (Akl et al., 2021; Alsalleh et al., 2022; Kleinman et al., 2021; Peterson, 2014; Poudel et al., 2022; Tseng et al., 2020).

Interprofessional Education. Atchinson et al. (2019) found that competencies for more education focusing on interprofessional collaboration between medical and dental systems have not been widely adopted. Some patients have more complex oral, medical, and financial needs, so there needs to be more interprofessional education to prepare healthcare professionals regarding the complexity of patients and how best to communicate clearly with team members and the patient (Atchison et al., 2019; Peterson, 2014). To improve integration, recommendations include incorporating oral health and dental care into education and medical guidelines, and for future research to focus on interventions to inspire providers and staff to reevaluate their perceptions about dentists (Ahern et al., 2021; Atchison et al., 2019; Christian et al., 2020; Koike et al., 2022; Kumara et al., 2022; Matsuda et al., 2017).

Cardenas et al. (2023) recommend that education and guidelines optimize electronic health record systems between medical and dental professionals. However, Christian et al. (2020) reported barriers to interprofessional education when incorporating oral health and dental care into medical education. Barriers include limited participants from other disciplines, comparable readiness of learners, and a lack of student interest. There was a significant decrease in medical learners' attitudes in teamwork and collaboration, professional identity, and patient-centeredness after IPE training (Christian et al., 2020). These types of barriers and medical learner attitudes were more common among trainees who lacked clinical exposure, possibly causing them to be unsure about boundaries, overlap and role blurring, status issues, and a threat to professional identity among other health professions (Christian et al., 2020; Green & Johnson, 2015). The study hypothesized that the best way to facilitate future collaborative practice would be to implement IPE in the first-year curriculum of health professional programs with realistic clinical scenarios. Therefore, future studies should assess the effectiveness of IPE programs with more balanced teams as well as whether there is a long-term improvement in learners' interprofessional competency after participating in IPE activities during their professional training (Christian et al., 2020).

Separation of Medical and Dental Insurance. In the United States, there is a higher number of people without dental insurance in comparison to medical insurance (Amen et al., 2021; Conthron et al., 2021; Northridge et al., 2020; Taylor et al., 2020; Vujicic & Fosse, 2022; Vujicic et al., 2016). If oral disease is left untreated, patients can experience discomfort, pain, and issues eating and talking (Taylor et al., 2020). Taylor et al. (2020) conducted a cross-sectional study across the United States to determine the prevalence of, and factors associated with adults' unmet dental needs. It was concluded that 6% of adults in the United States have

experienced unmet dental needs. The contributing factors to this include education level, lower income, and poorer health (Taylor et al., 2020). There is a correlation between a lack of dental insurance coverage and over-utilization of the emergency department when uninsured patients are having dental concerns. However, most emergency departments are not equipped to provide dental care (Amen et al., 2021; Conthron et al., 2021). Amen et al. (2021) conducted an observational study evaluating emergency room claims data from a large national private health care plan, ranging from 2015 to 2018. In contrast, Conthron et al. (2021) conducted a systematic review, which included 31 studies spanning over a 15-year period, evaluating emergency department visits among Medicaid beneficiaries. Both studies found that treating dental concerns in the emergency department can cost up to 7.5 times more than treating these conditions in a dental office and diverting these patients to dental offices could save $1.7 dollars annually. Both studies also found that emergency services are most over-utilized when patients are not receiving preventive dental care at least once a year. Therefore, use of the emergency department is likely preventable through access to routine dental care (Amen et al., 2021; Conthron et al., 2021).

Connell et al. (2019) conducted a literature review for the Delta Dental of Minnesota Foundation, and it reports information on promising practices in improving oral health care services, delivery, and access. Multiple barriers to receiving dental care are discussed: lack of dental insurance and high out-of-pocket costs, low Medicaid reimbursement rates resulting in dental providers not accepting this type of insurance, a shortage of dentists, dentists clustering into suburban areas, and a disconnect between the medical and dental fields (Connell et al., 2019). Additional barriers mentioned specific to working in interprofessional teams were differing reimbursement structures, interoperable electronic health records, and persistent health disparities (Connell et al., 2019; Kleinman et al., 2021; Peterson, 2014; Rawlinson et al., 2021).

These persistent health disparities include the oral health care workforce, resource allocation for oral health care, the actual utilization of oral health care services, the quality of oral health care services, and the financing of oral health care, specifically the burden of payment for households and individuals (Northridge et al., 2020).

Electronic Health Records (EHR). The case study of the collaboration between InterCommunity Health Network Coordinated Care Organization and Willamette Dental Group demonstrated the difficulty of implementing integration between medical and dental providers belonging to different practices (Atchison et al., 2018). There have been a multitude of barriers encountered when attempting to integrate or research the integration of the medical and dental fields (Adeniyi et al., 2020; Ahern et al., 2021; Akl et al., 2021; Alsalleh et al., 2022; Atchison & Weintraub, 2017; Atchinson et al., 2018; Atchison et al., 2019; Cardenas et al., 2023; Christian et al., 2020; Connell et al., 2019; Harnagea, Lamothe, Couturier, & Emami, 2018; Poudel et al., 2022). One of the most common barriers is a lack of integrated EHRs and scope of practice acts, and restrictive licensing that makes innovative integrative employment opportunities challenging (Atchison & Weintraub, 2017; Cardenas et al., 2023; Connell et al., 2019). For example, results from Cardenas et al. (2023) Interprofessional Assessment Likert scale questionnaire showed an improvement in dental professionals' ability to counsel hypertension patients, but there were no notable changes for primary care providers. During this research, sites reported a challenge to streamlining referrals and data tracking processes due to electronic health record systems (Cardenas et al., 2023). Due to these findings, future research could focus on a learning collaborative that optimizes electronic health record systems between medical and dental professionals (Cardenas et al., 2023; Christian et al., 2020). An example of this is in a community health setting, Federally Qualified Health Centers (FQHC), which can house both

medical and dental offices in the same building and can more easily share EHR due to their co-location (Kleinman et al., 2021). Future research should be done on increasing coordination, communication, and integration between dental and medical practices. The authors concluded their recommendation for future research with what they refer to as the triple aim: reducing cost, improving patients' health care experience, and improving population health (Atchison & Weintraub, 2017).

An innovative care model that is a way to integrate and optimize coordinated care is the creation of an oral health case manager. With the formation of this new role, previous research recommends creating clear descriptions for professional roles, services to be provided, and expected oral health outcomes (Adeniyi et al., 2020). As previously mentioned, several studies found people to be lacking an awareness of various oral-systemic links (Ahern et al., 2021; Akl et al., 2021; Alsalleh et al., 2022; Atchison et al., 2018; Christian et al., 2020; Desai et al. 2021; D'Souza et al., 2022; Janto et al., 2022; Kleinman et al., 2021; Koike et al., 2022; Kumara et al., 2022; Laniado et al., 2021; Maharani et al., 2019; Makoni et al., 2022; Migliorati & Madrid, 2007; Peterson, 2014; Poudel et al., 2022; Siddiqi et al., 2022). This lack of patient health literacy can be due to dental and medical professionals not informing their patients, which could be caused by a lack of appointment time, insufficient understanding of oral health, and a lack of confidence (Alsalleh et al., 2022; Matsuda et al., 2017). For providers, the lack of knowledge can be a result of a lack of education and understanding of the oral cavity and oral health, having no interest in oral health, and little to no interprofessional education or experience with dental professionals.

To overcome this lack of awareness, studies suggest educational programs and policy changes that integrate oral health literacy and care into medical care by providing oral-systemic

education to patients and to medical providers within their educational programs (Alsalleh et al., 2022; D'Souza et al., 2022; Janto et al., 2022; Kleinman et al., 2021; Matsuda et al., 2017; Peterson, 2014; Poudel et al., 2022; Tseng et al., 2020). This would allow for the distribution of more oral health information to patients and implement evidence-based strategies to expand access to dental care (Akl et al., 2021; Alsalleh et al., 2022; Kleinman et al., 2021; Peterson, 2014; Poudel et al., 2022; Tseng et al., 2020). To accomplish this, two of the studies suggest incorporating a dedicated medical staff member, who is a non-dental care provider, to conduct oral health screenings and provide oral-systemic education to patients and staff (Alsalleh et al., 2022; Poudel et al., 2022). However, dental hygienists are already educated on the oral-systemic link and trained to do oral health and oral cancer screenings. Integrating dental hygienists within medical offices could help improve interprofessional collaboration between the medical and dental fields.

Oral Health Case Manager

Case managers are members of the healthcare team who educate, advocate, plan, coordinate, and provide referrals or facilitate care (Baker et al., 2020; Giardino & De Jesus, 2022). Case managers collaborate with various healthcare providers to optimize the outcome for patients. Patients who do not have case managers often overutilize emergency services, causing larger expenses for both the patient and the healthcare system, or patients underutilize primary ambulatory services and do not achieve their healthcare needs and goals (Amen et al., 2021; Baker et al., 2020; Conthron et al., 2021; Giardino & De Jesus, 2022; Hudon et al., 2016; Hudon et al., 2017; Hudon et al., 2018; Hudon et al., 2020; Vujicic et al., 2016). For example, studies have shown that over 80% of patients who frequently use emergency services have chronic conditions that could be addressed by primary ambulatory care (Hudon et al., 2017; Hudon et al.,

2018; Hudon et al., 2020). Additionally, there is a high number of documented emergency visits among patients with chronic conditions, specifically experiencing dental problems (Amen et al., 2021; Kelekar & Naavaal, 2019; Migliorati & Madrid, 2007; Wei et al., 2022). Patients who come from low-income households and do not have private dental insurance are less likely to have had a dental visit within the past year (Peterson, 2014; Wei et al., 2022). Medical visits, including emergency services, may be the only opportunity to provide dental education, advice, and referrals (Wei et al., 2022).

It is inappropriate, for both patients and the healthcare system, to frequently use emergency services, such as the emergency department. Regarding dental issues, Amen et al. (2021) and Conthron et al. (2021) found that emergency services are most over-utilized when patients are not receiving preventive dental care at least once a year. Therefore, use of the emergency department is likely preventable through access to routine dental care (Amen et al., 2021; Conthron et al., 2021). Regarding primary care, over 80% of the frequent use of emergency services is by people who suffer from chronic conditions that should be cared for in a primary care setting (Hudon et al., 2017). WHO has identified four major non-communicable diseases: cancer, cardiovascular disease, diabetes, and chronic respiratory diseases; and four major risk factors: unhealthy diet, use of tobacco, physical inactivity, and alcohol abuse. Oral diseases share common risk factors and are interconnected to the four major non-communicable diseases (Kapoor et al., 2022). In addition, specific populations can have other conditions and risk factors. For example, the elderly population can frequently experience various dental pathologies, such as caries, periodontal disease, oral cancer, and edentulism. These pathologies can further impact an individual's oral function, nutrition, self-esteem, financial planning, and the overall quality of life (Janto et al., 2022). Improving oral health will have a significant impact

on all populations in reducing morbidity and mortality from non-communicable diseases, along with overall quality of life of an individual, such as loss of work or school hours, economic loss, pain and discomfort, low self-esteem, and difficulty in chewing (Kapoor et al., 2022).

Patients with complex care needs often unsuccessfully attempt to address their unmet health needs by using uncoordinated, ineffective, excessive, and potentially harmful healthcare and social services. This results in poorer health, large costs to the health and social services system, and higher mortality rates (Hudon et al., 2017; Hudon et al., 2018). To effectively manage non-communicable diseases and their risk factors, stronger healthcare systems supported by primary health care are needed (Kapoor et al., 2022). Case management is the intervention method most used because it lessens healthcare use and cost and provides better overall care. Case management is effective because the care team identifies and resolves barriers surrounding access to care, emotional support, and the patient-caregiver trust (Baker et al., 2020; Hudon et al., 2016). The review conducted by Hudon et al. (2016) suggests that case management could reduce emergency department visits, hospitalizations, and costs.

Community health workers are a favorable profession to deliver high-value preventative services that focus on reducing risk factors for chronic conditions in underserved populations (Baker et al., 2020; Connell et al., 2019; Martin et al., 2020; Martin et al., 2022; Mathu-Muju et al., 2017; Northridge et al., 2020). However, there is no clear evidence to support the claim that when community health workers incorporate case management into a dental professional's practice, prevention is raised, leading to increased access and decreased costs (Connell et al., 2019; Grover, 2017; Mathu-Muju et al., 2017). Oral health, specifically, is a somewhat new area for community health workers to be involved in, so development of training and curriculum modules began in the last five years (Connell et al., 2019; Martin et al., 2018). Northridge et al.

(2020) recommend intervening at multiple levels to improve access to preventive and restorative oral health care. At the provider and organization level, interventions are needed to demonstrate how community health workers can be used to improve coordination and access to primary and oral health care. Interventions at the provider and organizational level are also needed to determine how to optimize health information technology and data sources to improve providers' cultural competence and communication skills and reduce biases against underserved populations. Lastly, interventions are needed to increase the attention of health care organization leaders on oral health equity (Northridge et al., 2020).

Integration of community health workers into oral health teams has begun to be explored by the Minnesota Community Health Worker Alliance. Reports show an increase in pediatric referrals, and a decrease in tooth decay in children, missed appointments, and emergency room visits for those working with community health workers (Connell et al., 2019). Also, the American Dental Association created a Community Dental Health Coordinator program. This program is designed to teach dental professionals the skills of community health workers and is incorporated into existing schooling programs for dental assistants or dental hygienists. The curriculum is a collection of community health workers' skills that are integrated into the dental field. Some of the community health worker skills include health literacy, social determinants of health, cultural competence, community resource mapping, verbal and non-verbal communication, motivational interviewing, care coordination, case management, mechanisms of financing, and the process of enrolling in third-party payer programs (Grover, 2017).

Mathu-Muju et al. (2017) investigated the utilization of the Children's Oral Health Initiative in Canada's indigenous communities. For Canada to implement this initiative, they created the role of local community health workers to provide children with preventive dental

services. Mathu-Muju et al. (2017) sampled 25 communities over a 7-year study period to collect data on the availability of community health workers, enrollment of children, the number of sealants placed, the number of fluoride varnish applications, and the number of glass ionomer restorations placed. The findings of the investigation show that children in communities with high levels of support from community health workers have better access to preventive dental services in comparison to children with lower levels of support from community health workers. During one of the program years, community health workers increased their days of availability. This increase in availability showed a corresponding increase in enrollment and preventive dental services delivered. The overall outcomes of this study revealed that community oral health workers were beneficial in promoting program enrollment and facilitating the delivery of preventive dental services (Mathu-Muju et al., 2017).

Martin et al. (2020) and Martin et al. (2022) conducted a cluster-randomized controlled trial to test the efficacy of the intervention of community health workers in promoting tooth brushing with children in low-income households. There were 420 participants, all children under the age of three, recruited from 20 sites surrounding Chicago, IL. The community health workers offered four home visits over a one-year period, where they administered the non-clinical portion of the Caries-Risk Assessment Tool to inquire about family needs and then covered conversation topics of toothbrushing, preventing tooth decay, fluoride, nutrition, and seeing a dentist. However, despite the community health workers' intervention, their services were not associated with a change in brushing frequency or plaque score. Despite Martin et al. (2020) and Martin et al. (2022) community health workers employed evidence-based methods when conducting conversations catered to the family's needs, there were speculations on why the intervention methods were not successful: oral health conversations not frequent or deep enough,

oral health not being a top priority for the families, the community health workers may have needed more training, or an overall lack of motivation from participants (Martin et al., 2020; Martin et al., 2022). As mentioned previously, most community health worker cases have had success when individuals are struggling with managing chronic conditions (Connell et al., 2019; Martin et al., 2020; Martin et al., 2022). Oral health community health workers may be more effective when a part of overall health coordination (Martin et al., 2020; Martin et al., 2022).

Healthcare workers often feel limited with their intervention methods because of insufficient understanding of oral health, the potential of patients' complex needs, shortened appointment times, and lack of collaboration and integrated care (Alsalleh et al., 2022; Hudon et al., 2016; Koike et al., 2022; Matsuda et al., 2017; Ohara et al., 2021). This limitation can lead patients to receive substandard care and healthcare systems to be overwhelmed by rising costs (Hudon et al., 2016; Koike et al., 2022). Case management has been shown to reduce costs associated with frequent use of services and improve provider and patient satisfaction and quality of life (Baker et al., 2020; Giardino & De Jesus, 2022; Hudon et al., 2016). Case management is an effective and promising intervention to offer frequent users, as it has been shown to improve management of patients' care and save unnecessary and excessive costs (Baker et al., 2020; Hudon et al., 2017). Integrating dental hygienists, acting as oral health case managers, within medical offices could help improve interprofessional collaboration between the medical and dental fields (Akl et al., 2021; Atchinson et al., 2018). This is of importance and in need of further research as the literature reviewed throughout this chapter includes that patients that do not have case managers, often overutilize emergency services causing larger expenses for both the patient and the healthcare system, or patients underutilize primary ambulatory services and

do not achieve their healthcare needs and goals (Giardino & De Jesus, 2022; Hudon et al., 2017; Hudon et al., 2018; Hudon et al., 2020).

Summary

To collaborate, healthcare professionals and caregivers need to accept working as a team and have the right mindset to take necessary action towards efficient interprofessional collaboration. The right mindset is strongly influenced by awareness, attitudes, knowledge and understanding, and the satisfaction of providers and caregivers. Then, interprofessional collaborative teams should develop their shared vision, values, goals, guidelines, and protocols (Sirimsi et al., 2022). Connell et al. (2019) state that to aid in addressing all the barriers, significant changes are needed in our health profession education, legislation, and public and private insurance systems. There are numerous reasons why policymakers and professional organizations are beginning to recognize the benefits of interprofessional collaboration. Some of the reasons include an improved understanding of the relationship between the oral cavity and the rest of the body, improving quality and access to care, lowering the number of dental related emergency department visits, and reducing the overall cost of health care (Atchinson & Weintraub, 2017; Atchinson et al., 2018; Atchinson et al., 2019; Kleinman et al., 2021; Peterson, 2014; Rawlinson et al., 2021).

As previously mentioned, several studies found people to be lacking an awareness of various oral-systemic links and therefore recommend educational programs and policy changes that integrate oral health care into medical care (Ahern et al., 2021; Akl et al., 2021; Alsalleh et al., 2022; Atchison et al., 2018; Christian et al., 2020; Desai et al. 2021; D'Souza et al., 2022; Janto et al., 2022; Kleinman et al., 2021; Koike et al., 2022; Kumara et al., 2022; Laniado et al., 2021; Maharani et al., 2019; Makoni et al., 2022; Migliorati & Madrid, 2007; Peterson, 2014;

Poudel et al., 2022; Rawlinson et al., 2021). The most reported implementors are optimizing coordination tools, creating policies that support areas of system integration, budget allocation, and innovative care models providers (Harnagea, Lamothe, Couturier, & Emami, 2018). An innovative care model that is a way to integrate and optimize coordinated care is the creation of an oral health case manager.

With the formation of this new role, previous research recommends creating clear descriptions of professional roles, services to be provided, and expected oral health outcomes (Adeniyi et al., 2020). Due to case management's roots of coordination, multidisciplinary communication, and teamwork, Giardino and De Jesus (2022) recommend that case managers have some form of clinical experience. The clinical experience can be generalized or concentrated, bringing their expertise into the case management setting (Giardino & De Jesus, 2022). Dental hygienists have clinical experience in the three aspects of case management. Also, dental hygienists are already educated on the oral-systemic link and would therefore be a good fit as case managers to collaborate with various healthcare providers to optimize the outcome for patients. Patient outcomes are improved when oral management is performed by dental hygienists, including activities of daily living, feeding functions, in the hospital and rehabilitation centers, and home discharge (Koike et al., 2022; Ohara et al., 2021). Integrating dental hygienists, acting as oral health case managers, within medical offices could help improve interprofessional collaboration between the medical and dental fields. This is of importance and in need of further research as the literature reviewed throughout this chapter includes that patients that do not have case managers, often overutilize emergency services causing larger expenses for both the patient and the healthcare system, or patients underutilize primary ambulatory services and do not achieve their healthcare needs and goals (Giardino & De Jesus,

2022; Hudon et al., 2017; Hudon et al., 2018; Hudon et al., 2020). Chapter 3 will elaborate on the methods and design for this study.

Chapter 3: Research Method

The problem addressed in this qualitative case study was the lack of implemented interprofessional collaboration between primary health care and dental professionals within Massachusetts, resulting in reduced patient care. The purpose of this qualitative case study was to examine the perception of physician's assistants, nurses, nurse practitioners, and medical assistants on the implementation of an oral health case manager to increase interprofessional collaboration between health care and dental professionals within Massachusetts in 2026. An instrumental case study model was used, in which narrative data were collected and analyzed to evaluate an oral health case manager's role within a primary care office. This chapter contained further explanations of the research methodology and design for this study, the population and sample, materials and instrumentation, study procedures, data analysis, assumptions, limitations, delimitations, and ethical assurances.

Research Methodology and Design (Nature of the Study)

To examine the perception of healthcare professionals on the implementation of an oral health case manager into a primary care setting in Massachusetts, a qualitative instrumental case study was used to collect and analyze narrative data. Qualitative data were gathered to explore how to integrate the medical and dental fields from healthcare professionals working in various clinical settings (Northridge et al., 2020). These data represent the opinions and experiences of healthcare professionals on oral health and integrating the dental and medical fields in a primary care setting. Using this method allowed for generation of data, development of an in-depth understanding of the barriers and benefits to an oral health case manager providing care within a primary care setting, and how to integrate oral health into primary care for the best possible

patient and business outcome (i.e., reducing cost, overutilization, and underutilization) (Harnagea, Lamothe, Couturier, & Emami, 2018).

A qualitative study was preferred over a quantitative or mixed methods approach because the oral health case manager role does not formally exist. A qualitative research study allowed for the exploration of perceptions of healthcare workers, to able to begin to formally develop the role and identify potential obstacles ahead of time (Yin, 2015). A qualitative study was preferred over a quantitative or mixed methods approach because of the five features that distinguish qualitative research: representing the perspectives of the people in the study, examining people's lives in the real world, accounting for real-world conditions, and contributing insights that may aid in explaining social thinking and behavior. A qualitative approach also reduces or removes the restrictions that other research methods have studying the past, inability to create the research conditions needed, insufficient data or coverage of variables, and trouble in recruiting an adequate sample size and having a high response rate (Yin, 2015). There is also a wide selection of specialized types of variants. Yin (2015) specifies twelve specialties: action research arts-based research, autoethnography, case study, critical theory, discourse analysis, ethnography, ethnomethodology, grounded theory, narrative inquiry and life history, oral history, and phenomenology. These valuable traits and specialties provide a connection between the research problem and the qualitative approach.

A case study design was the best approach to gain a deeper insight into a topic that will provide advice for professional practice. This type of design is used when the research question requires looking at single or multiple cases in a particular inquiry within the proposed population in the selected geographic location. Case studies do not require asking questions or observing others regarding their own experiences to collect the data needed to answer the research

(Bloomberg & Volpe, 2019). The design of the case study gained insight via document analysis, phone interviews, and email surveys (Bloomberg & Volpe, 2019). The other common research design in qualitative studies is the phenomenological design, which is used to study a group that has been affected by an experience, or something similar, that is being researched. This type of design was not suitable for researching the presented problem, because it is best used when deeply exploring the participants and the event through immersion (Faulkner & Faulkner, 2019). This would be difficult to achieve because the proposed oral health case manager does not exist, so self-immersion could not happen.

Population and Sample

To gather data and explore how to clinically integrate the medical and dental fields, this study reached a data saturation with a selected sample of 12 participants from a population of healthcare professionals working in various clinical settings (Bloomberg & Volpe, 2019). The target population was physician assistants, nurses, nurse practitioners, and medical assistants working in a clinical setting that is affiliated with a larger comprehensive, collaborative, and integrated health system. These types of primary care offices are a part of healthcare systems that range from 15,000 to 74,000 employees (Mass General Brigham, n.d.; Tufts Medicine, n.d.). To reach saturation, this study selected a sample of 12 participants from a population of healthcare professionals working in these various clinical settings. To help in ensure there were enough responses to reach saturation, this research used snowball sampling and obtained permission to post in various Facebook and LinkedIn groups. This study also obtained approval from the Massachusetts Coalition of Nurse Practitioners' research committee and sent out an email to its members list. Recruiting was done by sending a flyer via email, located in Appendix C, and making a social media post on LinkedIn and Facebook, located in Appendix D. Data collection

was conducted via document analysis, semi-structured Zoom calls, and semi-structured phone interviews.

In using a case study design to address the research questions, a purposive sampling technique was used. In purposive sampling, the participants are selected to include those most likely to produce appropriate and useful information. Using this technique, the strategy makes sure that specific kinds of participants will be included in the final sample in the research study, rather than being random. This ensured that each kind of healthcare professional from the target population was included, i.e., physician assistants, nurses, nurse practitioners, and medical assistants. There are different types of purposive sampling, with the most common being stratified, cell, quota, and theoretical sampling. In comparison to the other types, quota purposive sampling is easier in recruitment and more flexible in forming the final sample of participants (Campbell et al., 2020).

Materials

Materials and instruments used to conduct the semi-structured Zoom calls and phone interviews and included an interview protocol based on the literature included in Appendix A. Each question in the interview protocol was created based on the literature; see Appendix A for the interview protocol and in-text citations. The first four questions were baseline questions, and the remainder of the questions were open-ended and aimed to answer the research questions (Ahlin, 2019). The literature states that semi-structured interviews are an effective way to collect open-ended data when conducting research in primary care settings (Ahlin, 2019; DeJonckheere & Vaughn, 2019). After interviews were completed, the collected data were returned to participants to ensure the transcripts included what the participant said, and responses were properly interpreted (Birt et al., 2016). Field testing was completed via an email sent to those

who fit the inclusion criteria of healthcare professionals working in various clinical settings. The target population was physician assistants, nurses, nurse practitioners, and medical assistants working in a clinical setting that is affiliated with a larger comprehensive, collaborative, and integrated health system. These types of primary care offices are a part of healthcare systems that range from 15,000 to 74,000 employees (Mass General Brigham, n.d.; Tufts Medicine, n.d.). The email sent for field testing is in Appendix E. It was sent to healthcare professionals, one person in each role of physician assistant, nurse, nurse practitioner, and medical assistant. The field test participants provided feedback on the appropriateness of the questions and how they were being asked in relation to the study focus and with the proposed sample. There was no feedback that indicated the need for modification, so no changes were made.

The online documents used in this study aided in representing the opinions and experiences of healthcare professionals when it comes to oral health and integrating the dental and medical fields in a primary care setting. One of the online sources was the Massachusetts state website, which outlines the scope of practice for dental hygienists. Other online sources were some of the schools in Massachusetts that offer educational programs for physician's assistants, nurses, nurse practitioners, and medical assistants. These online sources provided insight into the course requirements surrounding oral health, dental care, the oral-systemic link, and interprofessional education.

Study Procedures

To begin, the study received approval from National University's Institutional Review Board (IRB) prior to data collection, and participants signed an informed consent. The target population was physician assistants, nurses, nurse practitioners, and medical assistants working in a clinical setting that is affiliated with a larger comprehensive, collaborative, and integrated

health system. These types of primary care offices are a part of healthcare systems that range from 15,000 to 74,000 employees (Mass General Brigham, n.d.; Tufts Medicine, n.d.). Aiming to reach saturation, this study selected a sample of 12 participants from a population of healthcare professionals working in these types of clinical settings. To help ensure there were enough responses to reach saturation, this research used snowball sampling and obtained permission to post in various Facebook and LinkedIn groups. This study also obtained approval from the Massachusetts Coalition of Nurse Practitioners' research committee and sent out an email to its members list.

Recruiting was done by sending a flyer via email, located in Appendix C, and making a social media post on LinkedIn and Facebook, located in Appendix D. Data collection was conducted via document analysis, semi-structured Zoom calls, and semi-structured phone interviews. The research used an interviewing and conversing method with an illustrative type of verbal language. A script was followed, asking baseline and open-ended questions that aimed to answer the research questions. The semi-structured interviews asked open-ended questions that allowed adjusting the discussion based on the context of the situation and the person they were talking to (Yin, 2015). Analysis of online documents, Zoom calls, and phone interviews, was a low-cost and effective way to interact with participants. For validation and credibility, member checking was completed by returning collected data to participants to ensure the transcripts included what the participant said, and the responses were properly interpreted (Birt et al., 2016). After member checking, NVivo was used to organize and analyze the collected data.

Data Analysis

Data collection was conducted via document analysis, semi-structured Zoom calls, and semi-structured phone interviews. The interview protocol is in Appendix A, and these data

represent the opinions and experiences of healthcare professionals regarding oral health and integrating the dental and medical fields in a primary care setting. To validate the collected data and eliminate bias, member checking was completed by returning collected data to participants to ensure the transcripts included what the participant said, and the responses were properly interpreted (Birt et al., 2016). Then, all the data were managed and organized via NVivo. It is important for interviews to be transcribed precisely, including spoken words and nonverbal communication, giving a large amount of data (Bloomberg & Volpe, 2019). To manage and organize this volume of data, a coding and thematic analysis was completed (Kaczkó & Ostendorf, 2023).

The online documents that were used in this study aided in representing the opinions and experiences of healthcare professionals when it comes to oral health and integrating the dental and medical fields in a primary care setting. One of the online sources was the Massachusetts state website, which outlines the scope of practice for dental hygienists. Other online sources were some of the schools in Massachusetts that offer educational programs for physician's assistants, nurses, nurse practitioners, and medical assistants. These online sources provided insight into the course requirements surrounding oral health, dental care, the oral-systemic link, and interprofessional education. Data analyzed from document analysis, semi-structured Zoom calls, and semi-structured phone interviews, was used to answer the research questions with the ultimate goal of addressing the identified problem.

Assumptions

Assumptions are what the researcher believes is true going into the study (Bloomberg & Volpe, 2019). An assumption in this qualitative case study was that participants would answer the phone interview and email survey questions honestly. It could be difficult to engage in

conversation with some of the participants, or they may be hesitant to share information related to their job. An active listening was used while following the interview protocol in Appendix A, and the interviewer approached the interview with a friendly and non-judgmental attitude (DeJonckheere & Vaughn, 2019). Another assumption is that participants received their healthcare education in Massachusetts. If participants received their healthcare education in another state, the scope of practice for that state may differ from Massachusetts, and education may not have been the same (AMA, 2022).

Limitations

Limitations are aspects of the research design or methodology that place constraints on the study (Bloomberg & Volpe, 2019). One of the limitations of this study was only analyzing documents from some of the schools in Massachusetts that have programs for physician's assistants, nurses, nurse practitioners, and medical assistants. Another limitation was the lack of research on the implementation of an oral health case manager, as this is a new role being proposed. The last limitation was the history of non-successful attempts at previous interprofessional collaborations between the medical and dental professions (Harnagea, Lamothe, Couturier, & Emami, 2018). To mitigate research limitations, limitations were identified early.

Delimitations

Delimitations are the researcher's initial decisions about the overall design that narrow the scope of the study (Bloomberg & Volpe, 2019). This qualitative case study had two delimitations. The first was limiting the study to Massachusetts. The study was limited to Massachusetts because the state has multiple primary care offices affiliated with a larger, comprehensive, collaborative, and integrated health system. These types of primary care offices

are a part of healthcare systems that range from 15,000to 74,000 employees, giving a larger pool of potential participants (Mass General Brigham, n.d.; Tufts Medicine, n.d.). The second delimitation was limiting the asking of questions about integrating the oral health case manager into primary care, specifically. Primary care settings are the most ideal location for the role of an oral health case manager because this is where patients have their primary care physicians (PCP), where patients typically get diagnosed with various conditions and diseases, and where patients have their follow-up appointments.

Ethical Assurances

The study received approval from National University's Institutional Review Board (IRB) prior to data collection, and participants signed an informed consent. NVivo was used to safely store and analyze collected data. To validate the collected data and eliminate bias, member checking was completed by returning collected data to participants to ensure the transcripts included what the participant said, and the responses were properly interpreted (Birt et al., 2016). Then, NVivo was used to manage, analyze, and code the collected data. It is important for interviews to be transcribed precisely, including spoken words and nonverbal communication, giving a large amount of data (Bloomberg & Volpe, 2019). To manage and organize this volume of data, a coding and thematic analysis was completed (Kaczkó & Ostendorf, 2023). It was worked to ensure anonymity, confidentiality, and participants' risk not be greater than minimal. This was achieved by collecting and holding all data confidentially, the study not including any information about participants' identities, and the study not linking patient identities with their responses. To further ensure participants' identities remain anonymous, each participant was assigned a code to replace their names (Bloomberg & Volpe, 2019). After three years, all data stored in NVivo will be destroyed.

Summary

The problem addressed in this qualitative case study was the lack of implemented interprofessional collaboration between primary health care and dental professionals within Massachusetts, resulting in reduced patient care. The purpose of this qualitative case study was to examine the perception of physician's assistants, nurses, nurse practitioners, and medical assistants on the implementation of an oral health case manager to increase interprofessional collaboration between primary health care and dental professionals within Massachusetts in 2026.

To examine the perceptions of healthcare professionals on the implementation of an oral health case manager into a primary care setting in Massachusetts, a qualitative instrumental case study was used as the best option to collect and analyze narrative data. This study selected a sample of 12 participants from a population of healthcare professionals working in various clinical settings, aiming to reach data saturation. To help ensure there were enough responses to reach saturation, this research used snowball sampling and obtained permission to post in various Facebook and LinkedIn groups. This study also obtained approval from the Massachusetts Coalition of Nurse Practitioners' research committee and sent out an email to its members list. Recruiting was done by sending a flyer via email, located in Appendix C, and making a social media post on LinkedIn and Facebook, located in Appendix D. Data collection was conducted via document analysis, semi-structured Zoom calls, and semi-structured phone interviews.

The study received approval from National University's Institutional Review Board (IRB) prior to data collection, and participants signed an informed consent. NVivo was used to safely store and analyze collected data. Though this chapter outlines assumptions, limitations, and delimitations, efforts were made to ensure anonymity, confidentiality, and that the risk to

participants was not greater than minimal. Chapter four will report the study's main findings and will present all relevant data (Bloomberg & Volpe, 2019).

Chapter 4: Findings

The problem addressed in this qualitative case study was the lack of implemented interprofessional collaboration between primary healthcare and dental professionals within Massachusetts, resulting in reduced patient care. The purpose of this qualitative case study was to examine the perception of physician's assistants, nurses, nurse practitioners, and medical assistants on the implementation of an oral health case manager to increase interprofessional collaboration between health care and dental professionals within Massachusetts in 2026. This chapter will address the trustworthiness of the data, the results, and an evaluation of the findings.

Trustworthiness of the Data

The foundation of trustworthiness is built on credibility, transferability, and confirmability (Johnson et al., 2020). Credibility refers to the extent to which a researcher demonstrates and assures the reader of the accuracy and trustworthiness of the supporting evidence reflecting the subject under investigation (Johnson et al., 2020). To enhance credibility, member checking were completed in this study. Data collection was conducted via document analysis, semi-structured Zoom calls, and semi-structured phone interviews. To validate the collected data and eliminate bias, member checking was completed by returning collected data to participants to ensure the transcripts included what the participant said, and responses were interpreted properly (Birt et al., 2016).

Transferability is the extent to which the research findings can be generalized to other contexts or situations (Johnson et al., 2020). The study focused on physician assistants, nurses, nurse practitioners, and medical assistants who work in clinical environments connected to a broad, integrated health system that emphasizes collaboration and comprehensive care. This study included a sample of 12 participants from a population of healthcare professionals working

in various clinical settings. Data collection was conducted via document analysis, semi-structured Zoom calls, and semi-structured phone interviews. Open-ended questions were used in the semi-structured interviews, adapted to fit the situation and the interviewee (Yin, 2015).

Dependability is the documentation researchers provide for their methodology, data gathering, and analysis (Johnson et al., 2020). This documentation allows for other researchers to repeat the study (Ahmed, 2024). In this study, a qualitative instrumental case study was used to collect and analyze narrative data. Data collection was conducted via document analysis, semi-structured Zoom calls, and semi-structured phone interviews. The conceptual framework that guided the research was interprofessional collaborative practice (ICP). The interviewing process included the groundwork and findings of the ICP framework and used it as a guide for facilitating ICP and oral health case managers in primary care organizations in Massachusetts (Behavioral change, 2019). To help ensure there were enough responses to reach saturation, this research used snowball sampling and obtained permission to post in various Facebook and LinkedIn groups. This study also obtained approval from the Massachusetts Coalition of Nurse Practitioners' research committee and sent out an email to its members list. The study reached data saturation with a selected sample of 12 participants from a population of healthcare professionals working in various clinical settings affiliated with a larger comprehensive, collaborative, and integrated health system. These types of primary care offices are a part of healthcare systems that range from 15,000 to 74,000 employees (Mass General Brigham, n.d.; Tufts Medicine, n.d.). To reach saturation, this study selected a sample of 12 participants from a population of healthcare professionals working in these various clinical settings.

For validation and credibility, member checking was completed by returning collected data to participants to ensure the transcripts included what the participant said, and the responses were

properly interpreted (Birt et al., 2016). After member checking, NVivo was used to organize and analyze the collected data.

Confirmability is the various approaches researchers take to guarantee that they remain unbiased (Johnson et al., 2020). To validate the collected data and eliminate bias, member checking was completed by returning collected data to participants to ensure the transcripts included what the participant said, and the responses were properly interpreted (Birt et al., 2016). Anonymity and confidentiality were achieved by collecting and holding all data confidentially, the study not including any information about participants' identities, and the study not linking patient identities with their responses. To further ensure participants' identities remain anonymous, each participant was assigned a code to replace their names (Bloomberg & Volpe, 2019). Then, the data were managed and organized via NVivo, and to manage and organize this volume of data, a coding and thematic analysis was completed (Kaczkó & Ostendorf, 2023). After three years, all data stored in NVivo will be destroyed.

Results

To examine the perceptions of healthcare professionals on the implementation of an oral health case manager into a primary care setting in Massachusetts, a qualitative case study was performed to collect and analyze narrative data. The target population was physician assistants, nurses, nurse practitioners, and medical assistants working in clinical settings that are affiliated with a larger comprehensive, collaborative, and integrated health system. Data collection included document analysis, semi-structured Zoom calls, and semi-structured phone interviews. To help ensure there were enough responses to reach saturation, snowball sampling was conducted, and permission was obtained to post in various Facebook and LinkedIn groups. This study also obtained approval from the Massachusetts Coalition of Nurse Practitioners' research

committee and sent out an email to its members list. The study reached data saturation with a selected sample of 12 participants from a population of healthcare professionals working in various clinical settings affiliated with a larger comprehensive, collaborative, and integrated health system. These types of primary care offices are a part of healthcare systems that range from 15,000 to 74,000 employees (Mass General Brigham, n.d.; Tufts Medicine, n.d.). Two participants completed the interview via Zoom, and the remaining 10 participants completed the interview over the phone. The amount of time participants spent on the Zoom calls and phone interview ranged from 45:26 to 64:04 minutes. Table 1 shows the length of each Zoom call and phone interview, as well as the number of transcript pages for each participant.

Table 1

Details of the Semi-Structured Zoom Calls and Phone Interviews

Pseudonym	Location	Length in minutes	Number of Transcript Pages
916 Zoom	Zoom interview	64:04	12
917 Zoom	Zoom interview	61:05	10
9291 phone	Phone interview	48:02	8
9292 phone	Phone interview	48:52	8
9301 phone	Phone interview	45:26	7
9302 phone	Phone interview	45:49	7
10011 phone	Phone interview	47:58	8
10012 phone	Phone interview	48:03	8
10021 phone	Phone interview	49:01	8
10022 phone	Phone interview	48:16	8
10031 phone	Phone interview	46:13	7
10032 phone	Phone interview	51:58	9

For validation and credibility, member checking was completed by returning collected data to participants to ensure the transcripts included what the participant said, and the responses were properly interpreted (Birt et al., 2016). After member checking, NVivo was used to

organize and analyze the collected data. It is important for interviews to be transcribed precisely, including spoken words and nonverbal communication, giving a large amount of data (Bloomberg & Volpe, 2019). To manage and organize this volume of data, a coding and thematic analysis was completed. These data represent the opinions and experiences of healthcare professionals on oral health and integrating the dental and medical fields in a primary care setting. The remainder of chapter four will provide an overview of the demographic information collected, and then the results will be broken down by research question. See Table 2 for the total demographics for the study.

A total of 12 people participated: two completed their interviews via Zoom, and the remaining ten participants answered questions by phone, both according to the interview protocol in Appendix A. The target population was physician assistants, nurses, nurse practitioners, and medical assistants working in clinical settings that are affiliated with a larger comprehensive, collaborative, and integrated health system. There were three participants for each type of population group: three physician assistants, three nurses, three nurse practitioners, and three medical assistants. Each participant held a different job title: Urgent care PA [physician assistant], critical care PA, adult oncology PA, float ED [emergency department] and med surge [medical surgical] RN [registered nurse], emergency department RN, orthopedic operating room RN, psychiatric mental health NP [nurse practitioner], family NP, adult gerontology NP, dermatology MA [medical assistant], float ED and med surge MA, and primary care certified MA. Each participant stated how many years they have been working in their occupation. One participant stated they have worked in their occupation for one year, two participants have been working in their occupation for two years, two participants for three years,

two participants for four years, one participant for five years, two participants for six years, one participant for 10 years, and one participant has been working in their occupation for 12 years.

The last question participants were asked was what level of certificate or degrees they received and where their training or education was completed. All participants, except for one, completed their training or education in Massachusetts. One participant completed their associate's degree in nursing in Massachusetts but then completed their bachelor's degree in nursing in New Hampshire. Two participants were on the job trained, three participants are certificate holders, one participant received their associate's degree, 10 participants received their bachelor's degree, six participants completed their master's degrees, and one participant received their doctorate.

Table 2

Demographics for Total Study Respondents (n = 12)

Demographics	Categories	*n*(%)
Occupation	Physician assistant	3(25)
	Nurse	3(25)
	Nurse practitioner	3(25)
	Medical assistant	3(25)
Job Title	Urgent care PA	1(8.33)
	Critical care PA	1(8.33)
	Adult oncology PA	1(8.33)
	Float ED and med surge RN	1(8.33)
	Emergency department RN	1(8.33)
	Orthopedic operating room RN	1(8.33)
	Psychiatric mental health NP	1(8.33)
	Family NP	1(8.33)
	Adult gerontology NP	1(8.33)
	Dermatology MA	1(8.33)
	Float ED and Med Surge MA	1(8.33)
	Primary care certified MA	1(8.33)
Years in Occupation	1 year	1(8.33)
	2 years	2(16.67)
	3 years	2(16.67)
	4 years	2(16.67)

	5 years	1(8.33)
	6 years	2(16.67)
	10 years	1(8.33)
	12 years	1(8.33)
Education	On the job trained	2(8.69)
	Certificate	3(13.04)
	Associates	1(4.35)
	Bachelors	10(43.48)
	Masters	6(26.09)
	Doctorate	1(4.35)

Research Question 1

The first research question was: How do physician's assistants, nurses, nurse practitioners, and medical assistants perceive the implementation of an oral health case manager improving interprofessional collaboration in a primary care setting in Massachusetts? Questions in the interview protocol asked about experiences and observations of patients with oral health issues, understanding of the oral-systemic link, and how the role of an oral health case manager can be envisioned working in a primary care setting. An analysis of the interviews identified two themes relating to the first research question: knowledge and experience, and terms for acceptance and follow through. These themes were generated by coding participant responses, grouping codes together to create categories, and then defining overarching themes from the grouped categories and codes, as noted in Table 3.

Table 3

Codes, categories, and themes under Research Question 1 (n = 12)

Theme	Category	Code	*n*
Knowledge and experience	Lack of knowledge	Only aware in relation to specialty	1
		Surface level understanding	4
		Unaware of oral-systemic link connection	10
	Oral health experience	No oral health focus in specialties	2

		No patients presenting oral concerns	6
		Oral-systemic link experience	12
Terms for acceptance and follow through	Important yet overlooked	Importance	2
		Overlooked	3
	Must find value	Follow through	2
		Value	3
	Attitude and reception	Accepting of role	4
		Good idea	6
		Helpful	3
		Introduction and explanation	10
		Staff participation	2
		Valuable	1

Theme 1: Knowledge and Experience. Participant answers to the questions asked in the interview protocol were coded based on commonalities. There are two categories within this theme: lack of knowledge, and oral health experience. Under the category of lack of knowledge, there are three codes of only aware in relation to specialty, surface level understanding, and being unaware of the oral-systemic link connections. Under the category oral health experience, there are three codes of no oral health focus in specialties, no patients presenting oral concerns, and oral systemic link experience. Under the code, oral-systemic link experience, there were 17 additional codes listing the oral-systemic links that participants listed.

The first category associated with this theme was lack of knowledge. The first code within this category was only being aware in relation to specialty, with one participant making two references. Participant 10032 phone said, “I am only aware of how it related to my oncology patients,” and “just those that are immunocompromised and going through cancer treatment.” The second code within this category was having no patients presenting oral concerns, with six participants making 10 references to this code. Participant 10011 phone said, “I have not had any patients that present oral health concerns.” This statement was reiterated by participants 916

Zoom, 917 Zoom, and 9291 phone. Other participants indicated the reason they have not had patients presenting oral concerns is because of their specific line of work. Participant 10022 phone said, “The office I work at mostly does elective surgery joint replacements, so we do not have patients presenting with oral health concerns.” Participant 9302 phone echoed this by saying, “I work with patients coming from all different traumas and mental health diagnoses. Patients don’t come to me with concerns about their oral health.”

The third code within this category was being unaware of the oral-systemic link connections, with 10 participants making 18 references to this code. Participants 10011 phone, 10022 phone, 10032 phone, 917 Zoom, 9291 phone, 9301 phone, and 9302 phone said, they are “not aware” or “not familiar with specific connections.” Participant 10011 said “this is not something I am knowledgeable about,” and participant 916 Zoom said, “I don’t have a lot of knowledge on the oral-systemic link.” Participants 917 Zoom, 9301 phone, and 9302 phone specified that they “have not learned about this.”

The second category associated with this theme was oral health experience. The first code within this category was there being no oral health focus in specialties, with two participants making six references to this code. Participant 916 Zoom said. “I think medical staff and especially nurses are more focused on the issues the patients are in the hospital for, and they put their focus on that.” Participant 10011 phone echoed this statement with experience in the ICU stating, “Usually in the ICU, we are so focused on bigger health and medical concerns with patients that oral health is not a top priority and no issues come to light.” Furthermore, participant 10011 phone said, “For example, I said oral health does not have priority in the ICU, but I know that the aides brush the patients’ teeth and help with antimicrobial products and keeping moisture in and around the mouth.” Participant 10011 phone also said “I can envision a

dental hygienist calling me and the ICU and telling me about the importance of oral health and why this patient needs to have their teeth brushed. However, on my side of things, again the patients' life-threatening condition is my priority, not brushing their teeth." Based on participant 10011 phone's vision of the oral health case manager, they did suggest to "make sure to include the aides within all conversations since they are the ones performing the care."

The second code within this category was having no patients presenting with oral concerns, with six participants making 10 references to this code. Participants 10011 phone, 10022 phone, 916 Zoom, 917 Zoom, 9291 phone, and participant 9302 phone all stated they "have not had any patients present with oral health concerns." Participant 10022 phone stated they do not have patients presenting oral concerns because "the office I work at mostly does elective surgery join replacements." Participant 9302 phone echoed this with their work experience stating, "I work with patients coming from all different traumas and mental health diagnoses. Patients don't come to me with concerns about their oral health."

The third code within this category was oral-systemic link, with 12 participants making 71 references to their experience with oral-systemic links. Participants who were aware of the oral-systemic link listed which connections between the body and the oral cavity they were aware of. These connections totaled 17 different categories: degenerative cognitive disorders, delayed healing, dentures, depression, diabetes, dry mouth, immunocompromised patients, joint replacements, kids, mouth sores, nutrition, OCD, osteoporosis, the overall bacteria oral-systemic link, sport injuries, tooth decay and inflammation, and toothache/infection. The category of overall bacteria oral-systemic link was mentioned by eight participants, the category of toothache/infection was referenced by seven people, and the category of dry mouth was identified by six participants. The categories of depression and joint replacements were each

identified by two participants. Lastly, of the remaining 12 categories were only identified by one participant each: degenerative cognitive disorders, delayed healing, dentures, diabetes, immunocompromised patients, kids, mouth sores, nutrition, OCD, osteoporosis, sport injuries, and tooth decay and inflammation.

Theme 2: Terms for Acceptance and Follow Through. Participant answers to the questions asked in the interview protocol were coded based on commonalities. Table 4 shows how many participants in each occupation made references to a code relating to the theme of knowledge and experience. There are three categories within this theme: important yet overlooked, must find value, and attitude and reception. Under the category of important yet overlooked, there are two codes of importance and overlooked. Under the category must find value, there are two codes of follow through and value. Lastly, under the category attitude and reception there are six codes of accepting of role, good idea, helpful, introduction and explanation, and staff participation.

The first category associated with this theme was important yet overlooked. The first code within this category was importance, with two participants making two references to this code. Participant 10021 phone stated that "all areas of health important, including oral health," and participant 10022 phone said, "integration could be beneficial for the healthcare system by bringing the opportunities of shining light on the importance of oral health." The second code within this category was overlooked, with three participants making three references to this code. Participants 10021 phone and 10022 phone said that "oral health is commonly overlooked." For example, participant 916 Zoom said, "What if they have extreme medication side effects that are not being addressed because of the focus on larger medical concerns?"

The second category within this theme was, must find value. The first code within this category was follow through, with two participants making three references to this code. Participant 9302 phone said, there would be a "negative impact if there is no follow through from providers." Participant 9292 phone said, "The benefits would have to be laid out to providers and office staff so that they keep the momentum going with a full schedule. If no one sees a benefits in it, then no one will be motivated to work toward a smooth integration." The second code within this category was value, with three participants making 10 references to this code. Participant 917 Zoom said, "you would have to really explain the value and vision to all the staff for it to be successful," because "they would need to see the value in it." Participant 917 Zoom specified, "this would be so they could understand the value in adding this role to the team," and participant 9302 phone explained, "anything that is new and introduced in a healthcare workflow must be valuable."

The third category within this theme is attitude and reception, having six codes full under this category. The first code within this category was accepting of role, with four participants making six references to this code. Participants 9301 phone and 10032 phone shared that they feel like "patients would perceive this fine," and "don't see any reason why patients would perceive it in a negative way." Participant 10032 also said "patients that have more going on medically, would be the most receptive to this," and this was echoed by participant 10012 phone who said, "I am sure those with conditions and diseases that have a link to oral health, will be very accepting of this role."

The second code within this category was it being a good idea, with six participants making seven references to this code. Participant 10021 phone said they "like the sound of this idea," and participant 92921 phone said, "this could like a great idea." Participant 917 Zoom said

this would "valuable," especially for those "with a lot going on medically." Participant 10012 phone said, "This would be an amazing addition to primary care offices," and participant 10031 expanded on that by saying this would be amazing outside of primary care offices. Lastly, participant 9301 phone expressed, "I think this would greatly enhance the patience experience."

The third code within this category was it being helpful, with three participants making four references to this code. Participant 10032 phone stated, "I think patients would find it helpful." Participant 10031 phone echoed this statement saying, "I think patients would be all for it. I think it would be another person that could help them with dental issues, and they would find that helpful." Participant 10011 phone specified that "it would be helpful in primary care settings," and participant 10032 phone gave the example, "When a patient is going through cancer treatment, their mind is in a million places and they are usually upset, anxious, and depressed. They would be relieved to have someone come in and tell them about their oral health and what to do when." Participant 10032 further specified, "It would be less thinking on their end, and just following more instructions, which is helpful for the state of mind they are in."

The fourth code within this category was the need for an introduction and explanation of the role, with 10 participants making 13 references to this code. Participant 92921 phone said they "think it really depends on the patient and how the office sets up the introduction." Participant 9302 phone elaborated stating, "I can see the potential challenge of getting resistance about the integration and focus on oral health," and "to support this integration, you would need more provider and staff education." One area of education mentioned by participants 10021 phone, 10022 phone, and 9301 phone was, "explaining the oral health links" and "connections." Participants 9292 phone, and 10032 phone specified that "the benefits of this integration" and "having the dental professional a part of the healthcare team needs to be explained to providers

and patients." Participant 10031 emphasized this as well saying, "I think it would be important to have a big introduction and explanation of the role and the benefits to providers and staff, as well as an email or portal message to patients." Participant 10022 phone furthermore explained the outreach in regard to becoming a part of provider teams and said, "there would be a lot of outreach on the phone and in person to explain the importance of oral health to other providers, and to advocate for their patients, and to become part of provider teams for medically complex patients."

The fifth code within this category was staff participation, with two participants making six references to this code. Participant 916 Zoom stated that "a potential challenge would be the willingness of offices and providers participating and collaborating." This participant gave the example,

> Let's say oral health questions are added to patient forms, and the medical assistants ask oral health questions before the provider enters the room. In this scenario, the front desk staff needs to be on board because if a patient turns in the forms, they need to make sure the oral health questions were not skipped. In this scenario, the medical assistants need to be on board because they need to ask questions about the patients' oral health and dental care.

Participant 916 Zoom also specified that "if the provider is the one to pass the case on, then they need to be on board by not forgetting to pass any patient chart on to the oral health case manager." Participant 9291 phone provided a similar response stating,

> Providers would need to be on board with adding the oral health case manager to the team and making referrals, the medical assistants would be on board with asking oral health related questions or flagging the need for referral in the software, and the

administrative staff would need to be on board with triaging oral-related phone calls from patients and scheduling referrals.

Research Question 2

The second research question was: In what ways and to what extent do physician's assistants, nurses, nurse practitioners, and medical assistants perceive the benefits of integrating an oral health case manager into a primary care setting in Massachusetts? Questions in the interview protocol asked about factors supporting the successful integration, potential positive impacts, ways the role could enhance or improve the healthcare experience for patients, and how the role could support or improve the work of providers. An analysis of the interviews identified three themes relating to the second research question: specialized expertise, improved patient care, and time and resources. These themes were generated by coding participant responses, grouping codes together to create categories, and then defining overarching themes from the grouped categories and codes, as noted in Table 4.

Table 4

Codes, categories, and themes under Research Question 2 (n = 12)

Theme	Category	Code	*n*
Specialized expertise	Education	Patient education	9
		Product recommendation	3
		Provider education	11
	Specialist on staff	More knowledgeable	7
		Specialist on staff	9
Improved patient care	More preventative care	Add service	10
		Add to provider team	9
		All in one preventative care	6
	Easing patients into dental	Ask oral health questions	1
		Dental anxiety	4
		No dental home	7
	Interprofessional collaboration	Interprofessional collaboration	9
		Refer to dentist	2

		Referred from dentist to PCP	1
Time and resources	Healthcare providers' time	Decreased wait times	4
		Take on all dental cases	11
	Resources	Less dental issues in ED	4
		More resources	4
		Save money	7

Theme 1: Specialized Expertise. Participant answers to the questions asked in the interview protocol were coded based on commonalities. There are two categories within this theme: education and having a specialist on staff. Under the category of education, there are three codes of patient education, product recommendations, and provider education. Under the category specialist on staff, there are two codes of more knowledgeable and having a specialist on staff.

The first category associated with this theme was education. The first code within this category was patient education, with nine participants making 37 references to this code. Participants 10021 phone, 10022 phone, 10032 phone, 916 Zoom, 917 Zoom, 9291 phone, 9292 phone, 9301 phone, and 9302 phone all made references to the benefits of the oral health case manager "providing education to patients." Participants 10022 phone, 10032 phone, 917 Zoom, 9291 phone, 9292 phone, and 9301 phone, all specified the benefit of having the oral health case manager provide patient education on the "oral-systemic links." Within education of oral-systemic links, participant 916 Zoom included "oral side effects of patients' medications," and participants 1022 phone and 9292 phone included oral health explanations in "pre and post op surgical care." Participants 916 Zoom and 9301 phone further specified that there is a benefit to having the oral health case manager provide education to patients after they are diagnosed with a specific condition or disease that has an oral-systemic link. The second code within this category

was product recommendation, with three participants making five references to this code. Participant 10021 phone stated, “The introduction could bring the benefits of patients receiving dental recommendations.” Participants 10022 phone and 916 Zoom specified “product recommendation,” and “over-the-counter recommendations.”

The third code within this category was provider education, with 11 participants making 29 references to this code. Participants 10011 phone, 10012 phone, 10022 phone, 10031 phone, 10032 phone, 916 Zoom, 917 Zoom, 9291 phone, 9292 phone, 9301 phone, and 9302 phone all made references to the benefits of having the oral health case manager “provide education to other providers.” Participant 10031 phone also stated the specific benefit of “interprofessional education,” and how “it would be beneficial to both primary care offices but especially the broader healthcare system.” Participants 10011 phone, 10032 phone, 9292 phone, and 9301 phone, all specified the benefit of having the oral health case manager explain “oral-systemic links” to providers. Participant 9292 phone stated this could “prevent further oral-systemic complications,” and participant 916 Zoom said, “this could help staff to triage better and help providers to deliver optimal care.” Participant 9302 phone said, “the oral health case manager could educate all the staff,” not just providers. This participant also said, “since a lot of primary care offices are under a larger medical name and tied to certain specialty offices and hospitals, the oral health case manager could provider education to all of the providers and staff.”

The second category associated with this theme was having a specialist on staff. The first code within this category was having someone more knowledgeable, with seven participants making 13 references to this code. Participants 10012 phone, 10021 phone, 916 Zoom, 917 Zoom, and 9302 phone stated that having a dental professional in this role would be a benefit because they “would have more knowledge,” and “be an expert in this area.” Furthermore,

participants 10022 phone, 10032 phone, and 9302 phone stated that care coming from a dental professional would be “more accurate” and have more “up-to-date information on oral health.”

The second code within this category was having a specialist on staff, with nine participants making 28 references to this code. Participants 10011 phone, 10012 phone, 10022 phone, 10031 phone, 10032 phone, 917 Zoom, and 9302 phone, all stated there would be a benefit to having a “specialist on staff.” Participant 10011 phone specified, “This would be like having an in-house dental specialist to help patients navigate oral health and dental-related issues.” Participant 10021 phone gave an example, “an explanation of whatever oral links are relevant to them and then any dental/oral health recommendations.” This participant also said this specialist wouldn’t only benefit patients but “providers would have a dental professional to consult with” too. This participant gave the example, “I had a patient coming in because their dentist took an x-ray and staid they needed to see a cardiologist or their PCP.”

Theme 2: Improved Patient Care. Participant answers to the questions asked in the interview protocol were coded based on commonalities. There are three categories within this theme: more preventative care, easing patients into dental, and interprofessional collaboration. Under the category of more preventative care, there are three codes of add service, add to provider team. Under the category of easing patients into dental, there are three codes of asking oral health questions, dental anxiety, and no dental home. Under the third category of interprofessional collaboration, there are three codes of interprofessional collaboration, refer to dentist, and referred from dentist to PCP.

The first category associated with this theme was more preventative care, with three codes falling under this category. The first code was adding a service, with 10 participants making 21 references to it. Participants 1001 phone, 10012 phone, 10021 phone, 10031 phone,

10032 phone, 916 Zoom, 9301 phone, and 9302 phone, all stated that integrating an oral health case manager would "add another preventative service." Participant 9302 phone stated, "The integration of someone with an oral health background would contribute immensely to the goals of primary care and the broader healthcare system." Participants 10011 phone said that primary care offices "are preventative care focused," and participant 10012 phone explained that primary care offices are "the home office that patients always come back to," meaning primary care offices are like a "home base." Participant 10022 further explained,

> The primary care doctor is the person who coordinates all of the persons care, medications, referrals, follow ups, etc. So, the integration of an oral health case manager to provide education and recommendations, is aligned with the goals of primary care offices.

The next code under this category was adding a provider to the team, with nine participants making 27 references to this code. Participants 10011 phone, 10022 phone, 10031 phone, 10032 phone, 916 Zoom, 9291 phone, 9292 phone, and 9301 phone, all stated there is a benefit to having "this person be a part of collaborative teams for patients." Participant 10032 phone specified the oral health case manager could "be a part of the provider team" and "support the treatment plan of providers, by providing their knowledge on how it all relates to the patients' oral health," and the "oral health affects along the way and how to address them." Participants 10011 phone, 10032 phone, and 916 Zoom said this would especially benefit "medically complex patients." Participants 10031 phone and 10032 phone gave examples of medically complex patients including senior living communities and oncology patients.

The third code under this category was all in one preventative care with six participants making 24 references to this code. Participants 10021 phone, 916 Zoom, 917 Zoom, and 9291 phone described a benefit of "all-in-one care," more "well-rounded whole-body care," all-encompassing whole-body care," and "treating the patient as a whole and in a more preventative way." Participants 10032 phone, 916 Zoom, 917 Zoom, and 9292 phone said the oral health case manager would add "more preventative care services," and "get more patients proper preventative treatment." Participants 10032 phone, 916 Zoom, and 9292 phone, all explained that this would lead to "overall better patient care," and it would "improve the care that is provided in primary care settings."

The second category associated this theme was easing patients into dental care, with three codes falling under this category. The first code was asking oral health questions, with one participant making eight references to this code. Participant 916 Zoom began by saying, "I feel like no one is asking the patient questions about their oral health or oral care routine or providing education to patients." This participant recommended the oral health case manager in primary care offices "add oral health questions to patient forms," and the "medical assistants ask about oral health." Participant 916 Zoom said, "I envision them having the medical assistants (when they seat the patient, take vitals, go over currents medications, and ask about reason for visit) ask about the patients' oral health and how often they see their dentist."

The second code within this category was dental anxiety, with four participants making 10 references to this code. Participants 10021 phone, 917 Zoom, 9301 phone, and 9302 phone, all stated the integration of an oral health case manager would be beneficial to "those afraid of going to the dentist" and "patients with dental anxiety." Participant 917 Zoom said, "it would be a way to lightly introduce them into the importance of dental care," and participant 9301 phone

said, “the presence of an oral health case manager would be a great way to help patients ease into the dental world.” Participant 9302 phone said, “maybe this would be a good way to transition patients with dental anxiety into dental offices and address their oral health needs.”

The third code within this category was not having a dental home, with seven participants making 20 references to this code. Participants 10012 phone, 10021 phone, 916 Zoom, 917 Zoom, 9292 phone, 9301 phone, and 9302 phone, all stated that an oral health case manager would be beneficial for those “without a dental home,” or those who “don’t see a dentist regularly.” Participants 916 Zoom, 917 Zoom, 9292 phone, and 9301 phone recommended the oral health case manager help patients enroll in dental insurance, refer to in-network dental offices, and find a dental home. Participant 9302 phone stressed the importance of seeing a dentist regularly because “The broader healthcare system can be affected by oral problems if someone does not have the education on oral health or if they do not have a dental home.”

The third category associated with this theme is interprofessional collaboration, and three codes falling within it. The first code within this category is interprofessional collaboration, with nine participants making 37 references to this code. Participants 10012 phone, 10031 phone, 10032 phone, 916 Zoom, and 917 Zoom said the integration of an oral health case manager would create the benefit of “more interprofessional collaboration.” Participants 10012 phone, 10032 phone, 916 Zoom, 917 Zoom, 921 phone, and 9292 phone said the addition of this role would give providers a “go to dental professional for any questions and consultations.” Lastly within this code, participants 916 Zoom, 917 Zoom, and 9302 phone highlighted the need for the collaborative effort to go both ways. Participant 917 Zoom explained “the dental professional in this role would need everyone on board to collaborate and refer patients to them,” and participant

9302 phone stated there would be a “negative impact if there is no follow through from providers.”

The second code within this category is referring to a dentist, with participants making four references to this code. Participants 10012 phone and 917 Zoom have recommended their patients to see a dentist to follow up on an issue they noted. Participant 10012 phone said, “I encourage my diabetic patients to see a dentist regularly because of periodontal disease.” This participant also said, “I have also seen children who I recommended see a dentist due to the odor in the mouth, unsure if there was a cavity or they needed a cleaning.” When a patient presents with an infected tooth, participant 917 Zoom said they prescribe an antibiotic and recommend over the counter pain relievers but also “recommend they follow up with a dentist for actual treatment on the tooth.” The third code within this category is referring from a dentist to a PCP, with one participant making three references to this code. Participant 10021 phone said they have had two situations where a patients’ dentist referred them to their PCP office. Once scenario was seeing their PCP or cardiologist because of something the dentist saw on an x-ray they took. They other scenario was “a patient asking for a dermatology referral because their dental hygienist told him to a dermatologist because of a white area on the lower lip.”

Theme 3: Time and Resources. Participant answers to the questions asked in the interview protocol were coded based on commonalities. There are two categories within this theme: healthcare providers’ time and resources. Under the category of healthcare providers’ time, there are two codes of decreased wait times and taking on all dental cases. Under the category resources, there are three codes of less issues in the ED, more resources, and saving money. The first category associated with this theme was healthcare providers’ time. The first code within this category was decreased wait times, with four participants making five references

to this code. Participants 916 Zoom, 9292 phone, and 9301 phone said, “providers would have more time to see other patients, and participant 1022 phone said the integration of an oral health case manager “would enhance patient experience because the wait times wouldn’t be as long.” The second code within this category was having the oral health case manager take on all dental cases, with 11 participants making 26 references to this code. Participants 10022 phone, 10031 phone, 10032 phone, 916 Zoom, 917 Zoom, 92921 phone, 9292 phone, and 9302 phone described the benefit of the oral health case manager taking on “oral-related topics” within primary care offices. Participants 10022 phone, 10031 phone, 916 Zoom, 917 Zoom, 92921 phone, and 9302 phone furthermore described this to also benefits providers, because it “would lighten the workload” and take oral-related cases “off providers’ plates and caseload.”

The second category associated within this theme was resources. The first code within this category was less issues in the ED, with four participants making seven references to this code. Participants 917 Zoom, 9291 phone, 9292 phone, and 9301 phone stated the integration of an oral health case manager would “lighten the load of dental patients in the ED.” The second code within this category was having more resources, with four participants making 10 references to this code. Participants 10021 phone, 917 Zoom, 92921 phone, and 9292 phone said a benefit would be to “free up resources for others.” Participant 917 Zoom specified saying it would free up “the time of healthcare providers working in the emergency room,” and participant 9291 said, “this would open appointment times and hospital beds for other patients in need.”

The third code within this category was savings money, with seven participants making 10 references to this code. Participant 10021 phone, 10022 phone, 916 Zoom, 917 Zoom, 9291 phone, 9301 phone, and 9302 phone listed saving money as one of the benefits. Participants 10021 phone, 917 Zoom, 9291 phone, 9301 phone, and 9302 phone said the healthcare system

would save money. Participants 10021 phone, 917 Zoom, and 9291 phone said it would save patients money. Participant 10022 phone said it "could potentially reduce healthcare costs and waste, because patients and providers would be more educated."

Research Question 3

The third research question was: In what ways and to what extent do physician's assistants, nurses, nurse practitioners, and medical assistants perceive are the barriers or facilitators to creating the role of an oral health case manager to increase interprofessional collaboration between primary health care and dental professionals within a primary care office in Massachusetts? Questions in the interview protocol asked about potential challenges, potential negative impacts, and patient perception. An analysis of the interviews identified three themes relating to the third research question: new concept, workplace logistics, and cost. These themes were generated by coding participant responses, grouping codes together to create categories, and then defining overarching themes from the grouped categories and codes, as noted in Table 5.

Table 5

Codes, categories, and themes under Research Question 3 (n = 12)

Theme	Category	Code	*n*
New concept	New	Already seeing a dentist	3
		Confused	2
		Has not been done yet	8
		Separation	5
	Patient hesitation	Patient hesitation	7
Workplace logistics	Regulatory	Regulatory	3
	Time and space	Time and space	8
	Workflow	Workflow	9
Cost	Insurance	Insurance	10
	Money	Money challenge	7

Theme 1: New Concept. Participant answers to the questions asked in the interview protocol were coded based on commonalities. There are two categories within this theme: new and patient hesitation. Under the category of new, there are four codes of already seeing a dentist, confused, has not been done yet, and separation. Under the category patient hesitation, there is one code of patient hesitation.

The first category associated with this theme was the role being new. The first code within this category was already seeing a dentist, with three participants making four references to this code. Participant 10012 phone said the patients that might be more hesitant toward the oral health case manager "are those who already see a dentist regularly." Participant 916 Zoom said, "if they already have a dental home, maybe they would find this role to be a waste of time." Lastly participant 9292 phone said, "a young and healthy individual who sees a dentist routinely, is probably going to find meeting with an oral health case manager to be a waste of their time."

The second code within this category was confusion, with two participants making three references to this code. Participants 10021 phone and 10022 phone said they "think patients would be confused at first." The third code within this category was that it has not been done yet, with eight participants making 13 references to this code. Participants 10011 phone, 10021 phone, 10022 phone, 10031 phone, 10032 phone, 917 Zoom, 92921 phone, and 9292 phone said there could be a potential challenge with the integration of this new role because it is new and something patients, staff, and providers would not be used it.

The fourth code under this category was separation, with five participants making seven references to this code. Participants 10011 phone, 10021 phone, 10022 phone, 916 Zoom, and 9302 phone said there is a "separation of the medical and dental fields." Participant 916 Zoom

said, “the oral health case manager could help close the gap between medical and dental,” and participant 9302 phone said, “this could be a bridge for patients.” However, participants 10022 phone and participant 916 Zoom said because of the separation, the introduction of the dental professional will probably cause confusion.

The second category associated with this theme was patient hesitation. The only code within this theme was patient hesitation, with seven participants making 12 references to it. Participants 10011 phone, 10021 phone, 10032 phone, 916 Zoom, 917 Zoom, 9291 phone, and 9301 phone described the challenge of patient compliance and hesitation. Participants 10021 phone, 10032 phone, 917 Zoom, and 9291 phone labeled one of the causes for patient hesitation to be because of “seeing any one except their PCP.” Participants 916 Zoom labeled one of causes being patients “insecure about their appearance and lack of access to oral care products and routine dental visits” and participant 9301 phone said those “embarrassed about their mouth.”

Theme 2: Workplace Logistics. Participant answers to the questions asked in the interview protocol were coded based on commonalities. There are three categories within this theme: regulatory, time and space, and workflow. Under the category of regulatory, there is one code of regulatory. Under the category time and space, there is one code of time and space. Under the category workflow, there is one code of workflow.

The first category associated with this theme was regulatory. The only code within this category was regulatory, with three participants making 14 references to this code. Participants 10031 phone, 10032 phone, and 916 Zoom expressed concern over “regulatory issues.” Participant 10031 phone questioned about the scope of dental hygienists in Massachusetts, and participant 916 Zoom wondered the extent of treatment the oral health case manager would

provide. Participants 10032 phone and 10031 phone described the importance of regulatory issues being "completely figured out" and the "kinks ironed out" before integration of the new role.

The second category associated with this theme was time and space. The only code within this category was time and space, with eight participants making 26 references to this code. Participants 10011 phone, 10012 phone, 10021 phone, 916 Zoom, 9291 phone, 9292 phone, 9301 phone, and 9302 phone listed the challenge of "time," and specifically, "offices already short on appointment time." Participants 10012 phone, 10021 phone, and 9291 phone also stated the challenge of "space," meaning physical space and space within the office schedule.

The third category associated with this theme was workflow. The only code within this category was workflow, with nine participants making 23 references to this code. Participants 10012 phone, 10021 phone, 10031 phone, 916 Zoom, 917 Zoom, 9291 phone, 9292 phone, 9301 phone, and 9302 phone questioned how the oral health case manager would "fit into the workflow." Participants 10012 phone, 10021 phone, and 9301 phone specifically wondered about the workflow of appointments and when the oral health case manager would see patients. Participants 10031 phone, 9291 phone, 9301 phone, and 9302 phone questioned how the oral health case manager would fit into the workflow of the office and schedule.

Theme 3: Cost. Participant answers to the questions asked in the interview protocol were coded based on commonalities. There are two categories within this theme: insurance and money. Under the category of insurance, there is one code of insurance. Under the category money, there is one code of money challenge.

The first category associated with this theme was insurance. The only code within this category was insurance, with 10 participants making 35 references to this code. Participants 10012 phone and 9291 phone questioned if the services provided by the oral health case manager would be billed through medical or dental insurance. Participants 10011 phone, 10021 phone, 9291 phone, 9292 phone, and 9301 phone wondered what happens if someone does not have dental insurance. Participants 10011 phone, 10012 phone, 10022 phone, 10032 phone, and 916 Zoom expressed concern if the services will be covered by insurance and what insurance reimbursement would be. Participants 916 Zoom, 917 Zoom, and 9301 phone said the person in this role could help people sign up for dental insurance.

The second category associated with this theme was money. The only code associated with this category was the money challenge, with seven participants making 20 references to this code. Participants 10011 phone, 10022 phone, 10032 phone, 916 Zoom, 917 Zoom, 9291 phone, and 9301 phone questioned the finances and money challenges that patients, offices, and the healthcare system would endure with the creation of this role.

Comparison of Results to the Literature Review

This study gathered data representing the opinions and experiences of healthcare professionals working in various clinical settings (i.e., primary care, emergency department, specialty offices) in Massachusetts. The conceptual framework, interprofessional collaborative practice framework, guided the research as the interviewing process included the groundwork and findings of the ICP framework and the underlying basis of RCC, and used it as a guide for facilitating ICP and oral health case managers in primary care organizations in Massachusetts (Gaboury et al., 2011; Green & Johnson, 2015; Stutsky & Spence Laschinger, 2014; Tresolini & Pew-Fetzer Task Force, 1994).

The findings from this study align with existing literature and framework related to provider experience with oral health (Laniado et al., 2021; Makoni et al., 2022). In this study, most participants stated they have not had a patient with an oral-related chief complaint or oral-related side effect. Previous studies found that most providers rarely or never examine a patient's oral cavity or inquire about a patient's dental health (Laniado et al, 2021; Makoni et al., 2022). The findings from this research also reinforce previous studies that suggest one of the main barriers to primary oral health is the lack of collaboration amongst healthcare providers (Akl et al., 2021; Harnagea, Lamothe, Couturier, & Emami, 2018). In this research study, participants made references to the benefits of patient and provider education and made references to the benefits of having a knowledgeable specialist on staff. Additionally, participants discussed the benefits of improving interprofessional collaboration and lessening the burden on the healthcare system. The findings from this research study also reinforce existing literature and framework by Ahern et al. (2020), where results indicated that dentists are commonly not considered to be part of the healthcare team in primary care settings.

This study aligns with integration barriers faced by previous studies, including lack of clarity on function and scope of other professionals, lack of support at political and national level for expanding roles, fear of new territory and professional identity, power imbalance between professionals, poor communication, the separation of medical and dental insurance and electronic health records, financial issues (e.g., funding, reimbursement structures and policies) (Adeniyi et al., 2020; Ahern et al., 2021; Akl et al., 2021; Alsalleh et al., 2022; Atchison & Weintraub, 2017; Atchinson et al., 2018; Atchison et al., 2019; Cardenas et al., 2023; Christian et al., 2020; Connell et al., 2019; D'Souza et al., 2022; Gauger et al., 2018; Harnagea, Lamothe,

Couturier, & Emami, 2018; Hollaar et al., 2023; Janto et al., 2022; Kleinman et al., 2021; Northridge et al., 2020; Poudel et al., 2022; Rawlinson et al., 2021).

When participants of this study were asked to list the oral-systemic links they were aware of, all 12 participants made a total of 71 references to their experience with oral-systemic links, listing at least one oral-systemic connection. This contradicts previous research conducted by Ahern et al., 2021; Christian et al., 2020; Desai et al. 2021; Kleinman et al., 2021; Koike et al., 2022; Kumara et al., 2022; Laniado et al., 2021; Maharani et al., 2019; Makoni et al., 2022; Migliorati & Madrid, 2007; Peterson, 2014; and Siddiqi et al., 2022. The evaluation of findings is broken down by research question.

Research Question 1

The first research question was: How do physician's assistants, nurses, nurse practitioners, and medical assistants perceive the implementation of an oral health case manager improving interprofessional collaboration in a primary care setting in Massachusetts? Questions in the interview protocol asked about experiences and observations of patients with oral health issues, understanding of the oral-systemic link, and how the role of an oral health case manager can be envisioned working in a primary care setting. Several studies found medical providers to lack awareness of the oral-systemic link (Ahern et al., 2021; Christian et al., 2020; Desai et al. 2021; Kleinman et al., 2021; Koike et al., 2022; Kumara et al., 2022; Laniado et al., 2021; Maharani et al., 2019; Makoni et al., 2022; Migliorati & Madrid, 2007; Peterson, 2014; Siddiqi et al., 2022). In this research study, four participants, one physician's assistant, two nurse practitioners, and one medical assistant, felt they only had a surface level understanding of the oral-systemic connection. One participant, a physician's assistant, said they were only aware of the oral-systemic connection in relation to the specialty they worked in. Ten participants, three

physician's assistants, three registered nurses, one nurse practitioner, and three medical assistants, said they were unaware of oral-systemic connections. However, this research study contradicts previous research conducted by Ahern et al., 2021; Christian et al., 2020; Desai et al. 2021; Kleinman et al., 2021; Koike et al., 2022; Kumara et al., 2022; Laniado et al., 2021; Maharani et al., 2019; Makoni et al., 2022; Migliorati & Madrid, 2007; Peterson, 2014; and Siddiqi et al., 2022. When participants of this study were asked to list the oral-systemic links they were aware of, all 12 participants made a total of 71 references to their experience with oral-systemic links, listing at least one oral-systemic connection. These connections totaled 17 different categories: degenerative cognitive disorders, delayed healing, dentures, depression, diabetes, dry mouth, immunocompromised patients, joint replacements, kids, mouth sores, nutrition, OCD, osteoporosis, the overall bacteria oral-systemic link, sport injuries, tooth decay and inflammation, and toothache/infection.

All participants were asked about their experiences with patients presenting oral-related chief complaints or oral-related side effects. Aligning with existing literature and framework, most participants stated they have not had a patient with an oral-related chief complaint or oral-related side effect. Previous studies found that most providers rarely or never examine a patient's oral cavity or inquire about a patient's dental health (Laniado et al, 2021; Makoni et al., 2022). Three participants in this research study described the importance of oral health and how it is commonly overlooked. All participants were also asked their thoughts on the proposal for the implementation of an oral health case manager. These findings address the study problem and purpose, as six participants expressed that they thought the implementation of an oral health case manager was a good idea, three stated they thought the implementation would be helpful, and one participant said the new role would be valuable.

Research Question 2

The second research question was: In what ways and to what extent do physician's assistants, nurses, nurse practitioners, and medical assistants perceive are the benefits of integrating an oral health case manager into a primary care setting in Massachusetts? Participants listed the benefits of improving patient and preventative care with improved education, resources, recommendations, and services. Participants also described how the creation of this role would make things easier for patients, how patients and healthcare providers would benefit from the education and specialized expertise this new role would provide, and how helpful it would be to patients who are medically complex or do not have a dental home. In this research study, participants made references to the benefits of patient and provider education and made references to the benefits of having a knowledgeable specialist on staff. Additionally, participants discussed the benefits of improving interprofessional collaboration and lessening the burden on the healthcare system. This reinforces previous studies that suggest one of the main barriers to primary oral health is the lack of collaboration amongst healthcare providers (Akl et al., 2021; Harnagea, Lamothe, Couturier, & Emami, 2018). Participants in this research study also described the importance of oral health and how oral health is commonly overlooked. The findings from this research study reinforce existing literature and framework by Ahern et al. (2020), where results indicated that dentists are commonly not considered to be part of the healthcare team in primary care settings.

Research Question 3

The third research question was: In what ways and to what extent do physician's assistants, nurses, nurse practitioners, and medical assistants perceive are the barriers or facilitators to creating the role of an oral health case manager to increase interprofessional

collaboration between primary health care and dental professionals within a primary care office in Massachusetts? There have been previous attempts at integration methods and pilot programs, but implementation rates have remained low. There are various reasons for these low rates, including barriers created by legislation, a lack of health policies that allow for the delivery of oral health services, and a lack of a standardized system that is effective (Harnagea, Lamothe, Couturier, Esfandiari, et al., 2018). Participants of this study noted some of the same integration barriers, with three participants mentioning regulatory issues. This aligns with integration barriers faced by previous studies, including lack of clarity on function and scope of other professionals, lack of support at political and national level for expanding roles, fear of new territory and professional identity, power imbalance between professionals, poor communication, the separation of medical and dental insurance and electronic health records, financial issues (e.g., funding, reimbursement structures and policies) (Adeniyi et al., 2020; Ahern et al., 2021; Akl et al., 2021; Alsalleh et al., 2022; Atchison & Weintraub, 2017; Atchinson et al., 2018; Atchison et al., 2019; Cardenas et al., 2023; Christian et al., 2020; Connell et al., 2019; D'Souza et al., 2022; Gauger et al., 2018; Harnagea, Lamothe, Couturier, & Emami, 2018; Hollaar et al., 2023; Janto et al., 2022; Kleinman et al., 2021; Northridge et al., 2020; Poudel et al., 2022; Rawlinson et al., 2021). Aligning with previous research, participants of this study noted some of the same integration barriers, with 10 participants citing insurance as a barrier and seven participants referring to money challenges 20 times as a barrier. Participants of this study also made references to the separation of medical and dental, patient hesitation, and the appointment and office workflow.

Summary

The purpose of this qualitative case study was to examine the perception of physician's assistants, nurses, nurse practitioners, and medical assistants on the implementation of an oral health case manager to increase interprofessional collaboration between primary health care and dental professionals within Massachusetts in 2026. The problem addressed by this study was the lack of implemented interprofessional collaboration between primary health care and dental professionals within Massachusetts, resulting in reduced patient care. In this study, there were a total of 12 participants: three physician's assistants, three nurses, three nurse practitioners, and three medical assistants. To help ensure there were enough responses to reach saturation, this research used snowball sampling and obtained permission to post in various Facebook and LinkedIn groups. This study also obtained approval from the Massachusetts Coalition of Nurse Practitioners' research committee and sent out an email to its members list. The conceptual framework, interprofessional collaborative practice framework, guided the research as the interviewing process included the groundwork and findings of the ICP framework and the underlying basis of RCC, and used it as a guide for facilitating ICP and oral health case managers in primary care organizations in Massachusetts (Gaboury et al., 2011; Green & Johnson, 2015; Stutsky & Spence Laschinger, 2014; Tresolini & Pew-Fetzer Task Force, 1994).

Qualitative data were gathered to explore how to integrate the medical and dental fields from healthcare professionals working in various clinical settings (Northridge et al., 2020). Then, NVivo was used to manage, analyze, and code the collected data. Interviews were transcribed precisely, including spoken words and nonverbal communication, giving a large amount of data (Bloomberg & Volpe, 2019). To manage and organize this volume of data, a coding and thematic analysis was completed (Kaczkó & Ostendorf, 2023). These data represent the opinions and

experiences of healthcare professionals on oral health and integrating the dental and medical fields in a primary care setting.

The first research question was: How do physician's assistants, nurses, nurse practitioners, and medical assistants perceive the implementation of an oral health case manager improving interprofessional collaboration in a primary care setting in Massachusetts? The resulting themes for RQ1 were knowledge and experience, and terms for acceptance and follow through. These findings contradict previous research conducted by Ahern et al., 2021; Christian et al., 2020; Desai et al. 2021; Kleinman et al., 2021; Koike et al., 2022; Kumara et al., 2022; Laniado et al., 2021; Maharani et al., 2019; Makoni et al., 2022; Migliorati & Madrid, 2007; Peterson, 2014; and Siddiqi et al., 2022. When participants were asked to list the oral-systemic links they were aware of, all 12 participants made a total of 71 references to their experience with oral-systemic links, listing at least one oral-systemic connection.

The second research question was: In what ways and to what extent do physician's assistants, nurses, nurse practitioners, and medical assistants perceive are the benefits of integrating an oral health case manager into a primary care setting in Massachusetts? The resulting themes for RQ2 were specialized expertise, improved patient care, and time and resources. These findings are consistent with existing literature and framework.

The third research question was: In what ways and to what extent do physician's assistants, nurses, nurse practitioners, and medical assistants perceive are the barriers or facilitators to creating the role of an oral health case manager to increase interprofessional collaboration between primary health care and dental professionals within a primary care office in Massachusetts? Lastly, the resulting themes for RQ3 were new concept, workplace logistics,

and cost. These findings are consistent with the existing literature and framework. Chapter five will discuss the implications surrounding the results of each research question, recommendations for practice, and recommendations for future research.

Chapter 5: Discussion, Recommendations, and Study Summary

The problem addressed in this qualitative case study was the lack of implemented interprofessional collaboration between primary healthcare and dental professionals within Massachusetts, resulting in reduced patient care. The purpose of this qualitative case study was to examine the perception of physician's assistants, nurses, nurse practitioners, and medical assistants on the implementation of an oral health case manager to increase interprofessional collaboration between healthcare and dental professionals within Massachusetts in 2026. To examine the perceptions of healthcare professionals on the implementation of an oral health case manager into a primary care setting in Massachusetts, a qualitative case study was performed to collect and analyze narrative data. The study reached data saturation with a selected sample of 12 participants from a population of healthcare professionals working in various clinical settings, who are affiliated with a larger comprehensive, collaborative, and integrated health system (Bloomberg & Volpe, 2019).

Data collection included document analysis, semi-structured Zoom calls, and semi-structured phone interviews. Member checking was completed for validation, credibility, and to eliminate bias. This was completed by returning collected data to participants to ensure the transcripts included what the participant said, and the responses were properly interpreted. After member checking, NVivo was used to organize and analyze the collected data. The limitations of this study included the research being limited to Massachusetts, the lack of research on the implementation of an oral health case manager, and the history of unsuccessful attempts at previous interprofessional collaborations between the medical and dental professions (Harnagea, Lamothe, Couturier, & Emami, 2018). This chapter will discuss the implications surrounding the

results of each research question, recommendations for practice, and recommendations for future research.

Discussion

The most substantial implication of this study is the potential to improve patient and preventive care with improved access, resources, and services. The creation of the oral health case manager would improve interprofessional collaboration and lessen the burden on the healthcare system clinically and financially. The proposed new role could work toward addressing those who have experienced unmet dental needs (Green & Johnson, 2015; Rawlinson et al., 2021; Taylor et al., 2020).

Research Question 1

The first research question was: How do physician's assistants, nurses, nurse practitioners, and medical assistants perceive the implementation of an oral health case manager improving interprofessional collaboration in a primary care setting in Massachusetts? Participants in this research study described the importance of oral health and how it is commonly overlooked. Participants were also asked about their experiences with patients presenting oral-related chief complaints or oral-related side effects. The findings from this study align with existing literature and framework related to provider experience with oral health (Laniado et al., 2021; Makoni et al., 2022). In this study, most participants stated they have not had a patient with an oral-related chief complaint or oral-related side effect. Previous studies found that most providers rarely or never examine a patient's oral cavity or inquire about a patient's dental health (Laniado et al, 2021; Makoni et al., 2022). Participants were also asked their thoughts on the proposal for the implementation of an oral health case manager. These findings address the study problem and purpose, as six participants expressed that they thought

the implementation of an oral health case manager was a good idea, three stated they thought the implementation would be helpful, and one participant said the new role would be valuable.

The research findings contradict existing literature and framework related to provider awareness of the oral-systemic link (Ahern et al., 2021; Christian et al., 2020; Desai et al. 2021; Kleinman et al., 2021; Koike et al., 2022; Kumara et al., 2022; Laniado et al., 2021; Maharani et al., 2019; Makoni et al., 2022; Migliorati & Madrid, 2007; Peterson, 2014; Siddiqi et al., 2022). This study found that all participants were aware of the oral-systemic link, as participants of the study made a total of 71 references to their experience with oral-systemic links. Participants were asked to list the links they were aware of, totaling 17 different categories: degenerative cognitive disorders, delayed healing, dentures, depression, diabetes, dry mouth, immunocompromised patients, joint replacements, kids, mouth sores, nutrition, OCD, osteoporosis, the overall bacteria oral-systemic link, sport injuries, tooth decay and inflammation, and toothache/infection.

Research Question 2

The second research question was: In what ways and to what extent do physician's assistants, nurses, nurse practitioners, and medical assistants perceive are the benefits of integrating an oral health case manager into a primary care setting in Massachusetts? Three participants in this research study, two medical assistants and one registered nurse, described the importance of oral health and how oral health is commonly overlooked. This reinforces existing literature and framework by Ahern et al. (2020), where results indicated that dentists are commonly not considered to be part of the healthcare team in primary care settings. There are many health conditions that have a bi-directional link and relationship with oral health, and there are many connections that share risk factors (Bui et al., 2019; Janto et al., 2022; Kapoor et al., 2022; Kleinman et al., 2021; Laniado et al., 2021; Migliorati & Madrid, 2007; Prasad et al.,

2019; Ruscio, 2020; Siddiqi et al., 2022). Kleinman et al. (2021) state that this calls for greater efforts toward integrating oral-systemic education during the delivery of care.

Participants listed additional benefits of improving patient and preventative care with improved education, resources, recommendations, and services. Nine participants, two physician's assistants, three registered nurses, one nurse practitioner, and three medical assistants, described the benefit of improving patient education. Eleven participants, three physician's assistants, three registered nurses, three nurse practitioners, and two medical assistants, described the benefit of improving provider education. Eight participants, one physician's assistant, three registered nurses, one nurse practitioner, and three medical assistants described the benefit of having access to more resources. Three participants, one registered nurse and two medical assistants, listed the benefit of the dental professional making product recommendations. Eleven participants, two physician's assistants, three registered nurses, three nurse practitioners, and three medical assistants, described the benefit of adding oral health services into primary care.

Participants also described how the creation of this role would make things easier for patients, how patients and healthcare providers would benefit from the education and specialized expertise this new role would provide, and how helpful it would be to patients who are medically complex or do not have a dental home. In this research study, participants made 71 references to the benefits of patient and provider education, and 41 references to having a knowledgeable specialist on staff. The proposed new role could work toward addressing those who have experienced unmet dental needs (Green & Johnson, 2015; Rawlinson et al., 2021; Taylor et al., 2020). Additionally, participants discussed the benefits of improving interprofessional collaboration and lessening the burden on the healthcare system. Case management has been

shown to reduce costs associated with frequent use of services and improve provider and patient satisfaction and quality of life (Baker et al., 2020; Giardino & De Jesus, 2022; Hudon et al., 2016). Case management is an effective and promising intervention to offer frequent users, as it has been shown to improve management of patients' care and save unnecessary and excessive costs (Baker et al., 2020; Hudon et al., 2017). Participants listed other benefits of decreased wait times, less dental issues presenting in the ED, providing more patient resources, and reducing healthcare costs.

Research Question 3

The third research question was: In what ways and to what extent do physician's assistants, nurses, nurse practitioners, and medical assistants perceive are the barriers or facilitators to creating the role of an oral health case manager to increase interprofessional collaboration between primary health care and dental professionals within a primary care office in Massachusetts? There have been previous attempts at integration methods and pilot programs, but implementation rates have remained low. There are various reasons for these low rates, including barriers created by legislation, a lack of health policies that allow for the delivery of oral health services, and a lack of a standardized system that is effective (Harnagea, Lamothe, Couturier, Esfandiari, et al., 2018).

The probable findings from this study reinforce previous literature as participants noted some of the same integration barriers (Adeniyi et al., 2020; Ahern et al., 2021; Akl et al., 2021; Alsalleh et al., 2022; Atchison & Weintraub, 2017; Atchinson et al., 2018; Atchison et al., 2019; Cardenas et al., 2023; Christian et al., 2020; Connell et al., 2019; D'Souza et al., 2022; Gauger et al., 2018; Harnagea, Lamothe, Couturier, & Emami, 2018; Hollaar et al., 2023; Janto et al., 2022;

Kleinman et al., 2021; Northridge et al., 2020; Poudel et al., 2022; Rawlinson et al., 2021). Participants cited the barriers of regulatory issues, insurance, money, the separation of medical and dental, patient hesitation, and the appointment and office workflow. Some of the integration barriers faced by previous studies include lack of clarity on function and scope of other professionals, lack of support at political and national level for expanding roles, fear of new territory and professional identity, power imbalance between professionals, poor communication, the separation of medical and dental insurance and electronic health records, financial issues (e.g., funding, reimbursement structures and policies) (Adeniyi et al., 2020; Ahern et al., 2021; Akl et al., 2021; Alsalleh et al., 2022; Atchison & Weintraub, 2017; Atchinson et al., 2018; Atchison et al., 2019; Cardenas et al., 2023; Christian et al., 2020; Connell et al., 2019; D'Souza et al., 2022; Gauger et al., 2018; Harnagea, Lamothe, Couturier, & Emami, 2018; Hollaar et al., 2023; Janto et al., 2022; Kleinman et al., 2021; Northridge et al., 2020; Poudel et al., 2022; Rawlinson et al., 2021).

Recommendations for Practice

Medical and Dental Integration

Many health conditions have a bi-directional link and relationship with oral health (Bui et al., 2019; Janto et al., 2022; Kapoor et al., 2022; Kleinman et al., 2021; Laniado et al., 2021; Migliorati & Madrid, 2007; Ruscio, 2020; Siddiqi et al., 2022). In addition to the bi-directional links between these health connections and oral health, they can also share risk factors, i.e., hygiene, diet, weight, smoking, and alcohol use (Kleinman et al., 2021; Migliorati & Madrid, 2007; Prasad et al., 2019). Several studies found medical providers to lack awareness of the oral-systemic link (Ahern et al., 2021; Christian et al., 2020; Desai et al. 2021; Kleinman et al., 2021; Koike et al., 2022; Kumara et al., 2022; Laniado et al., 2021; Maharani et al., 2019; Makoni et

al., 2022; Migliorati & Madrid, 2007; Peterson, 2014; Siddiqi et al., 2022). However, this research study found that all participants were aware of the oral-systemic link and collectively listed 17 different categories of links.

Aligning with previous research by Laniado et al. (2021) and Makoni et al. (2022), this research study found that most participants said they have not had a patient with an oral-related chief complaint or an oral-related side effect. Previous studies found that most providers rarely or never examine a patient's oral cavity or inquire about a patient's dental health. Based on the findings, practice recommendations include incorporating oral health into medical care. Kleinman et al. (2021) state that this calls for greater efforts toward integrating oral-systemic education during the delivery of care. This is important as participants in this research study described the importance of oral health and how oral health is commonly overlooked. Participants listed additional benefits of improving patient and preventative care with improved education, resources, recommendations, and services. Participants also described how the creation of this role would make things easier for patients, how patients and healthcare providers would benefit from the education and specialized expertise this new role would provide, and how helpful it would be to patients who are medically complex or do not have a dental home. These findings show that medical and dental integration should exist because oral health is commonly overlooked, there are many bi-directional links and common risk factors, and there would be a multitude of benefits. Based on the findings, practice recommendations include incorporating oral health into medical care.

Advocacy

There have been previous attempts at integration methods and pilot programs, but implementation rates have remained low. There are various reasons for these low rates, including

barriers created by legislation, a lack of health policies that allow for the delivery of oral health services, and a lack of a standardized system that is effective (Harnagea, Lamothe, Couturier, Esfandiari, et al., 2018). Participants of this study noted some of the same integration barriers, with three participants mentioning regulatory issues. Based on the findings, recommendations in practice include advocacy efforts in regulations and legislation, funding, and insurance. Some of the integration barriers faced by previous studies include lack of clarity on function and scope of other professionals, lack of support at political and national level for expanding roles, fear of new territory and professional identity, power imbalance between professionals, poor communication, the separation of medical and dental insurance and electronic health records, financial issues (e.g., funding, reimbursement structures and policies) (Adeniyi et al., 2020; Ahern et al., 2021; Akl et al., 2021; Alsalleh et al., 2022; Atchison & Weintraub, 2017; Atchinson et al., 2018; Atchison et al., 2019; Cardenas et al., 2023; Christian et al., 2020; Connell et al., 2019; D'Souza et al., 2022; Gauger et al., 2018; Harnagea, Lamothe, Couturier, & Emami, 2018; Hollaar et al., 2023; Janto et al., 2022; Kleinman et al., 2021; Northridge et al., 2020; Poudel et al., 2022; Rawlinson et al., 2021). Participants cited the barriers of regulatory issues, insurance, money, the separation of medical and dental, patient hesitation, and the appointment and office workflow. Based on the findings, recommendations in practice include advocacy efforts in regulations and legislation, funding, and insurance.

Oral Health Case Manager

Case managers are members of the healthcare team who educate, advocate, plan, coordinate, and provide referrals or facilitate care (Baker et al., 2020; Case Management Society of America [CSMA], n.d.). Case managers collaborate with various healthcare providers to optimize the outcome for patients. Patients who do not have case managers often overutilize

emergency services, causing larger expenses for both the patient and the healthcare system, or patients underutilize primary ambulatory services and do not achieve their healthcare needs and goals (Giardino & De Jesus, 2022; Hudon et al., 2017). For example, studies have shown that over 80% of patients who frequently use emergency services have chronic conditions that could be addressed by primary ambulatory care (Hudon et al., 2017). Additionally, there is a high number of documented emergency visits among patients with chronic conditions, specifically experiencing dental problems (Kelekar & Naavaal, 2019; Wei et al., 2022). Patients who come from low-income households and do not have private dental insurance are less likely to have had a dental visit within the past year. Medical visits, including emergency services, may be the only opportunity to provide dental education, advice, and referrals (Wei et al., 2022). Case management has been shown to reduce costs associated with frequent use of services and improve provider and patient satisfaction and quality of life (Baker et al., 2020; Giardino & De Jesus, 2022; Hudon et al., 2016). Case management is an effective and promising intervention to offer frequent users, as it has been shown to improve management of patients' care and save unnecessary and excessive costs (Baker et al., 2020; Hudon et al., 2017). Based on the findings, the creation of an oral health case manager is recommended in practice. The creation of an oral health case manager is an innovative care model that could integrate and optimize coordinated care. Participants were asked their thoughts on the proposal for the implementation of an oral health case manager. Six participants expressed that they thought the implementation of an oral health case manager was a good idea, three stated they thought the implementation would be helpful, and one participant said the new role would be valuable.

Documentation

There have been previous attempts at integration methods and pilot programs, but implementation rates have remained low. One of the reasons is that there is little documentation on the models used in these programs, regarding the context of the integration approach and what is successful and unsuccessful (Harnagea, Lamothe, Couturier, Esfandiari, et al., 2018). Even though the majority of participants in this study were aware of the oral-systemic link, several studies found medical providers to lack awareness of the oral-systemic link (Ahern et al., 2021; Christian et al., 2020; Desai et al., 2021; Kleinman et al., 2021; Koike et al., 2022; Kumara et al., 2022; Laniado et al., 2021; Maharani et al., 2019; Makoni et al., 2022; Migliorati & Madrid, 2007; Peterson, 2014; Siddiqi et al., 2022). Some of the clinical integration barriers faced by previous studies include lack of clarity on the scope and function of other professionals, lack of support for expanding roles, power imbalance between professionals, poor communication, and the separation of medical and dental insurance and electronic health records (Adeniyi et al., 2020; Ahern et al., 2021; Akl et al., 2021; Alsalleh et al., 2022; Atchison & Weintraub, 2017; Atchinson et al., 2018; Atchison et al., 2019; Cardenas et al., 2023; Christian et al., 2020; Connell et al., 2019; D'Souza et al., 2022; Gauger et al., 2018; Harnagea, Lamothe, Couturier, & Emami, 2018; Hollaar et al., 2023; Janto et al., 2022; Kleinman et al., 2021; Northridge et al., 2020; Poudel et al., 2022; Rawlinson et al., 2021). Based on the findings, recommendations for practice include that any further program implementation needs to be thoroughly documented.

Recommendations for Future Research

Future research could include conducting similar studies in other locations in the United States to gain perspective from other states. As previously noted, there are low implementation rates of previous attempts at medical and dental integration methods and pilot programs due to a lack of documentation and a multitude of barriers (Harnagea, Lamothe, Couturier, Esfandiari, et

al., 2018). A suggestion for future research would be to examine the barriers and address how to overcome them. These noted barriers include regulatory issues, a lack of health policies that allow for the delivery of oral health services, and a lack of a standardized system that is effective (Harnagea, Lamothe, Couturier, Esfandiari, et al., 2018). Some of the integration barriers faced by previous studies include lack of clarity on function and scope of other professionals, lack of support at political and national level for expanding roles, fear of new territory and professional identity, power imbalance between professionals, poor communication, the separation of medical and dental insurance and electronic health records, financial issues (e.g., funding, reimbursement structures and policies) (Adeniyi et al., 2020; Ahern et al., 2021; Akl et al., 2021; Alsalleh et al., 2022; Atchison & Weintraub, 2017; Atchinson et al., 2018; Atchison et al., 2019; Cardenas et al., 2023; Christian et al., 2020; Connell et al., 2019; D'Souza et al., 2022; Gauger et al., 2018; Harnagea, Lamothe, Couturier, & Emami, 2018; Hollaar et al., 2023; Janto et al., 2022; Kleinman et al., 2021; Northridge et al., 2020; Poudel et al., 2022; Rawlinson et al., 2021).

Participants in this study were asked about the implementation of an oral health case manager. Six participants expressed that they thought the implementation of an oral health case manager was a good idea, three stated they thought the implementation would be helpful, and one participant said the new role would be valuable. Future studies should implement an oral health case manager and conduct research on the outcomes of the role. As previously noted, there are low implementation rates of previous attempts at integration methods and pilot programs due to a lack of documentation and a multitude of barriers. A suggestion for future research would be to thoroughly document the implementation process, cost, successes and hardships, and statistical data on addressing the oral-systemic link and achieving healthcare needs and goals.

Study Summary

Even though all of the participants in this study were aware of the oral-systemic link, several studies found medical providers to lack awareness of the oral-systemic link (Ahern et al., 2021; Christian et al., 2020; Desai et al., 2021; Kleinman et al., 2021; Koike et al., 2022; Kumara et al., 2022; Laniado et al., 2021; Maharani et al., 2019; Makoni et al., 2022; Migliorati & Madrid, 2007; Peterson, 2014; Siddiqi et al., 2022). Furthermore, participants in this study expressed that oral health is commonly overlooked and medical-dental integration faces barriers created by legislation, finances, a lack of health policies that allow for the delivery of oral health services, and a lack of a standardized system that is effective (Harnagea, Lamothe, Couturier, Esfandiari, et al., 2018).

Despite the barriers, participants listed many benefits such as improving patient and preventative care with improved education, resources, recommendations, and services. Participants also described how the creation of this role would make things easier for patients, how patients and healthcare providers would benefit from the education and specialized expertise this new role would provide, and how helpful it would be to patients who are medically complex or do not have a dental home. Additionally, participants discussed the benefits of improving interprofessional collaboration and lessening the burden on the healthcare system. Case management has been shown to reduce costs associated with frequent use of services and improve provider and patient satisfaction and quality of life (Baker et al., 2020; Giardino & De Jesus, 2022; Hudon et al., 2016). Case management is an effective and promising intervention to offer frequent users, as it has been shown to improve management of patients' care and save unnecessary and excessive costs (Baker et al., 2020; Hudon et al., 2017). Participants listed other

benefits of decreased wait times, less dental issues presenting in the ED, providing more patient resources, and reducing healthcare costs.

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Appendix A

Interview Protocol

Introduction: Hello and thank you for agreeing to participate in this interview today. My name is Flora Bedinger, and I am a doctoral student at Northcentral University conducting my dissertation research.

This interview is expected to last approximately one hour. I will be taking notes during our discussion to make sure I have complete information. Your responses will be held in confidence and emailed to you for you to review a summary of the interview to ensure that my documentation accurately reflects your responses. This review will take you 20-30 minutes.

Consent: I would like to review the consent letter with you before we begin the interview [I will read the entire phone interview informed consent].

Do you agree to participate in the study?

Participant: Yes _____ or No_____

Lead into the Interview: Thank you. I am interested in learning your perceptions on implementation of an oral health case manager. This information will be confidential, and your individual answers will not be shared with anyone. Your perspectives and experiences are important to understanding the perceptions of physician assistants, nurses, nurse practitioners, and medical assistants on the implementation of an oral health case manager to increase interprofessional collaboration between health care and dental professionals within Massachusetts.

Do you have any questions before we get started?

Demographic Questions:

1. What is your current occupation within the healthcare field?
2. What is your current job title?
3. How long have you been working in your current healthcare occupation?
4. Where did you receive your training or education for your current healthcare occupation?

Interview Questions:

5. What experiences have you had with patients presenting concerns related to their oral health?
6. What observations have you made regarding oral health issues that may be connected to patients' medications, diseases, or other health conditions?
7. Describe your understanding of the connections between oral health and overall systemic health?
8. What specific connections between oral health and systemic health are you familiar with, and how did you learn about them?
9. How do you envision the role of an oral health case manager, such as a Registered Dental Hygienist, collaborating with medical teams to provide oral health recommendations, contributing to patient care in a primary care setting in Massachusetts?
10. Describe potential challenges that may arise when integrating an oral health case manager into a primary care setting?
11. Describe the factors that could support the successful integration of an oral health case manager into a primary care setting?
    a. *Then probe by inquiring about their experiences and/or examples.
12. How might patients perceive and experience the introduction of an oral health case manager in their primary care setting?
    a. Discuss factors that might influence their acceptance or challenges with this role?
13. What are the potential impacts, both positive and negative, for healthcare providers working with an oral health case manager in a primary care setting?

14. How might the integration of an oral health case manager affect primary care offices and the broader healthcare system, considering both opportunities and challenges?
15. What potential benefits could the introduction of an oral health case manager bring to a primary care setting?
16. How could the presence of an oral health case manager enhance the healthcare experience for patients in a primary care setting?
17. Please explain how an oral health case manager might support or improve the work of healthcare providers in a primary care setting?
18. How might the integration of an oral health case manager contribute to the goals and operations of primary care offices and the broader healthcare system?

Conclusion: Thank you for taking the time to meet with me today and to share your perspectives and experiences.

Debriefing questions:

1. Do you have any questions or concerns?
2. Is there anything you would like to add or clarify about any of answers?
3. What is your email address? I will send you a summary of the interview to ensure that my documentation accurately reflects your responses.

Appendix B

IRB Approval Letter

9388 Lightwave Ave.
San Diego, CA 92123
irb@nu.edu

Notice of Exemption

September 15, 2025

To: Flora Bedinger

Project Title: Perceptions of Healthcare Professionals on Implementation of an Oral Health Case Manager: A Qualitative Case Study
NU IRB Number: IRB-FY25-26-233
Determination: Exempt from further review 45 CFR 46.101 Category 2.(ii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:
Any disclosure of the human subjects' responses outside the research would not reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, educational advancement, or reputation; or

Status: Active - Research activities may begin as of September 15, 2025

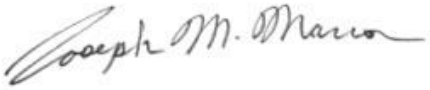
Dear Flora Bedinger:

The study referenced above has been reviewed by the National University IRB. The IRB has determined your research is exempt from further review under 45 CFR 46.104, which means you will not need to renew your study and may begin your study effective immediately. However, if you find the need to change your study in any way, you will need to submit a modification to the IRB prior to implementing the changes. This will allow the IRB to determine whether or not the study still meets exemption criteria.

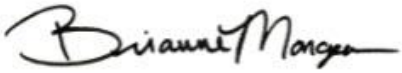
Please review your Post Approval Responsibilities here: Approved Documents Guidelines

For any questions regarding your protocol, please reach out to the IRB at irb@nu.edu.

Sincerely,



Dr. Joseph Marron, IRB Chair



Dr. Brianne Mongeon, Director, HRPP & IRB

Jenessa Eberhardt, Associate Director, HRPP & IRB

Appendix C

Recruitment Email/Letter

My name is Flora Bedinger, and I am a doctoral student at National University. I am conducting a research study on the interprofessional collaboration between primary health care and dental professionals within Massachusetts.

I am recruiting individuals who meet all of these criteria:

1. You are employed in Massachusetts.
2. You are employed as a physician assistant, nurse, nurse practitioner, or medical assistant.
3. You are employed in a clinical setting that is affiliated with a larger comprehensive, collaborative, integrated health system.

If you decide to participate in this study, you will be asked to do the following activities:

1. Participate in a phone or Zoom interview for approximately one hour.
2. Review interview summary via email for 20-30 minutes.

During these activities, you will be asked questions about:

- Your education and current occupation.
- How you perceive the implementation of an oral health case manager.
- The barriers or facilitators of creating the role of an oral health case manager.
- The benefits of creating the role of an oral health case manager.

If you are interested in participating in this study, please contact me at F.Bedinger0804@o365.ncu.edu.

Thank you for considering participating in this voluntary research!

Flora Bedinger

Appendix D

Recruitment (Phone Interview/Zoom Call) - Social Media Post

My name is Flora Bedinger, and I am a doctoral candidate at National University. I am conducting a research study on the perceptions of healthcare professionals on the implementation of an oral health case manager into a primary care setting.

I am recruiting individuals who meet all of these criteria:

4. You are employed in Massachusetts.
5. You are employed as a physician assistant, nurse, nurse practitioner, or medical assistant.
6. You are employed in a clinical setting that is affiliated with a larger comprehensive, collaborative, integrated health system.

If you decide to participate in this study, you will be asked to do the following activities:

3. Participate in a phone or Zoom interview for approximately one hour.
4. Review interview summary via email for 20-30 minutes.

During these activities, you will be asked questions about:

- Your education and current occupation.
- How you perceive the implementation of an oral health case manager.
- The barriers or facilitators of creating the role of an oral health case manager.
- The benefits of creating the role of an oral health case manager.

Thank you for considering participating in this voluntary research!

Flora Bedinger

F.Bedinger0804@o365.ncu.edu

Image description:

- A person sitting at a desk with a computer and a phone call

Appendix E

Field Testing Email

Hello, my name is Flora Bedinger, and I am a doctoral candidate at National University. I am conducting a research study on the perceptions of healthcare professionals on the implementation of an oral health case manager into a primary care setting.

I will be recruiting individuals who meet the criteria of being employed in Massachusetts, employed as a physician assistant, nurse, nurse practitioner, or medical assistant, and are employed in a clinical setting that is affiliated with a larger comprehensive, collaborative, integrated health system.

Participants who agree to participate in the study, will be asked to participate in a phone or Zoom interview for approximately one hour and then review interview summary via email for 20-30 minutes. During the phone or Zoom interview, participants will be asked questions about their education, how they perceive the implementation of an oral health case manager, the barriers or facilitators of creating the role of an oral health case manager, and the benefits of creating the role of an oral health case manager.

I am field testing my interview protocol before officially conducting my research, and I am wondering if you could review it and provide me with any feedback. The interview questionnaire is below:

Demographic Questions:

1. What is your current occupation within the healthcare field?
2. What is your current job title?
3. How long have you been working in your current healthcare occupation?
4. Where did you receive your training or education for your current healthcare occupation?

Interview Questions:

5. What experiences have you had with patients presenting concerns related to their oral health?

6. What observations have you made regarding oral health issues that may be connected to patients' medications, diseases, or other health conditions?
7. Describe your understanding of the connections between oral health and overall systemic health?
8. What specific connections between oral health and systemic health are you familiar with, and how did you learn about them?
9. How do you envision the role of an oral health case manager, such as a Registered Dental Hygienist, collaborating with medical teams to provide oral health recommendations, contributing to patient care in a primary care setting in Massachusetts?
10. Describe potential challenges that may arise when integrating an oral health case manager into a primary care setting?
11. Describe the factors that could support the successful integration of an oral health case manager into a primary care setting?
    a. *Then probe by inquiring about their experiences and/or examples.
12. How might patients perceive and experience the introduction of an oral health case manager in their primary care setting?
    a. Discuss factors that might influence their acceptance or challenges with this role?
13. What are the potential impacts, both positive and negative, for healthcare providers working with an oral health case manager in a primary care setting?
14. How might the integration of an oral health case manager affect primary care offices and the broader healthcare system, considering both opportunities and challenges?
15. What potential benefits could the introduction of an oral health case manager bring to a primary care setting?

16. How could the presence of an oral health case manager enhance the healthcare experience for patients in a primary care setting?
17. Please explain how an oral health case manager might support or improve the work of healthcare providers in a primary care setting?
18. How might the integration of an oral health case manager contribute to the goals and operations of primary care offices and the broader healthcare system?