

ABSTRACT

UT-PACT: A Case Study to Explore Participants' Impact of a Baccalaureate/MD Program

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The University of Texas Partnership in Advancing Clinical Transition (UT-PACT) was an initiative with the goal of facilitating a better integration of undergraduate and professional skills studies in preparation of students for careers as physicians with reduced student indebtedness, timely entrance into the medical workforce, and professional identity formation of being a servant leader. The University of Texas at Dallas (UTD) and the University of Texas Southwestern Medical School (UTSW) were the partnering institutions forming the UT-PACT program. This accelerated program focused on training that leads to a Bachelor of Arts (BA) degree and a Doctor of Medicine (MD) degree in just seven years, rather than the traditional eight years. Because both institutions are relatively close to one another, the UT-PACT leadership of both campuses fostered a highly interactive program, introducing clinical skills training at the end of the first year of the program and early professional identity formation throughout the entire program. Students transitioned to the medical school in their fourth year of the program after graduating from UT Dallas with a BA in Biology. Unfortunately, due to

high turnover at the UT Systems' uppermost level and budget cuts, the UT-PACT program admitted its last Cohort in the Fall of 2016. That class graduated from UT Dallas in the Spring of 2019. They began their medical school journey at UT Southwestern debt-free in August of 2019, just as the six cohorts before them. Due to the timing of the cancelation of this program, there is no evidence as of yet that attests to the success of the UT-PACT program.

In this study, I utilized an a priori theoretical framework that seeks to determine the effectiveness of the UT-PACT program as described by its participants from two graduating Cohorts. The findings shed light on whether more partnerships are needed to produce doctors at a faster pace, with less debt, and more skills. This study provided a voice to those who have participated in the UT-PACT program as to their perception of whether the program helped advance their career as a physician or not.

Keywords: UT-PACT, accelerated programs, combined programs, medical education, medical education reform, funding medical education

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Impact of a Baccalaureate/MD Program

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LIST OF ABBREVIATIONS

AAMC: Association of American Medical Colleges

AMA: American Medical Association

BA: Bachelor of Arts

BS: Bachelor of Science

COA: Cost of Attendance

GPEP: General Professional Education of the Physician

IRB: Institutional Review Board

OSCE: Objective Structured Clinical Examination

MD: Doctor of Medicine

PA: Physician Assistant

PACT: the UT-PACT program abbreviated even further

PBL: Problem-Based Learning

RIF: Reduction in Force

SP: Simulated Patients

TA: Teaching Assistant

TAMS: Texas Academy of Math and Science

TBL: Team-Based Learning

TIME: Transformation in Medical Education

UTD: The University of Texas at Dallas

UT-PACT: The University of Texas Partnership in Advancing Clinical Transition

UTSW: The University of Texas Southwestern Medical School

WHO: World Health Organization

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This educational voyage has been a dream of mine for quite some time, but it was not my time to do it—until now. Therefore, I would like to publicly thank many people who believed in me and helped me turn this dream into reality. First, to my awesome mentors, Drs. Tony Talbert and Brooke Blevins. Dr Talbert, you are a true scholar and researcher. Your edits and encouragement helped me complete my dissertation and give voice to my students. I learned so much from you. Dr. Blevins, you swooped in and saved the day. For that, I will be eternally grateful. You are an asset to all students at Baylor. Second, to the entire Ed.D. program’s faculty, staff, and fellow Cohort 3 students, and to the Writing Center, your dedication to Baylor students and your professionalism is top-notch. Although we were miles apart, I never felt disconnected from any of you. Next, to Dr. Neil Shanks who was one of my very first professors in this program. You taught me the value and contribution qualitative data brings to the field of research. Fourth, to two special individuals whom I admire greatly, Dr. Eugene Jones and Dr. Richard Scotch. Words cannot express how much you two have influenced me. Your leadership, mentorship, and friendship have been instrumental in propelling me through my career and through this journey of growth and self-actualization. Lastly, my deepest appreciation goes out to my UT-PACT family of students and colleagues. I would especially like to thank the 12 PACT students who answered my call to participate in my study. It was an honor to showcase your voices in my dissertation.

DEDICATION

To my beautiful children
John Jason Boles, Jr., and Brighton Julio Boles
All I do is for you, and you are my world

To the rest of my magnificent Cuban, American, and Mexican Families
Besides God, nothing is more important to me than you, and I love you all

CHAPTER ONE

Background and Needs Assessment

I am honored to be this year's recipient of the Ho Din Award, presented by the Southwestern Medical Foundation to the medical student who embodies "the spirit of medical wisdom and human understanding." I am grateful it has provided me an opportunity to speak about issues dear to my heart and profession. At commencement, Dr. Victor J. Dzau, president of the National Academy of Medicine, spoke about the incredible achievements being made in medicine, such as gene therapies, stem cell therapies, and more. He called on us as new physicians to recognize that the future of medicine entails balancing the use of these cutting edge, expensive therapies while ensuring that no patient is left behind in our medical system. My charge is to strive to be efficient, yet genuine; composed, yet amiable; and wise, yet approachable. I recognize that many people have struggles outside of the hospital that greatly affect the reasons they are patients, and I will take the extra few minutes to talk about what those may be.

—Bethany Werner, *Dallas News*

Introduction

The quote above is from Bethany Werner, MD, a recent graduate of the University of Texas Partnership in the Advancing Clinical Transition (UT-PACT) program. Dr. Werner was the 2019 Recipient of the Ho Din Award, an award that the Southwestern Medical Foundation presents to honor a medical student embodying the physician's ideals of knowledge, understanding, and compassion. In another article about Werner, she stated,

Ho Din stands for the spirit of medical wisdom and human understanding... The Ho Din award is awarded to one medical student annually from the graduating class, and it is presented by the Southwestern Medical Foundation. To me, The Ho Din symbolizes all of the hard work and just treating my patients with the utmost compassion. (Gonzalez, 2019, para. 2)

What makes this event more remarkable is that Dr. Werner is a member of the inaugural class of the UT-PACT program.

The year 2010 marked the centennial of Abraham Flexner's (1910) report to the Carnegie Foundation that revolutionized American medical education. Despite many successes over the years, this 100-plus-year-old model has failed to keep pace with society's needs and the accelerating changes in the nature of healthcare delivery (Weston, 2018; Willetts & Lazarus, 2018). As a result, calls for reform at all levels of physician education, from premedical through medical school, residency, and continuing education, have continued to mount, and numerous national organizations have provided blueprints for the same (Bai, 2020; Weston, 2018). While some medical schools have modernized their teaching methods, developed innovative curricula, and offered combined premedical-medical programs, the basic structure and nature of physician education have remained largely unchanged for decades (Kolachalama & Garg, 2018). The increasing complexity of the roles that physicians play in healthcare delivery requires a new set of skills and fundamental knowledge in addition to a foundation in essential biomedical and clinical sciences (Bai, 2020; Kolachalama & Garg, 2018).

Rethinking the nature and structure of physician education is a critical step in addressing the nation's healthcare needs for the coming decades (Kolachalama & Garg, 2018). The UT-PACT program is an innovative program aiming for the development of a dynamic educational system, both undergraduate and medical, that can adapt to the ever-changing modern world. The overarching goal of the UT-PACT initiative is to increase the effectiveness and relevance of physician education while shortening its duration and thereby reducing its cost and producing more humanistic physicians.

The problem of focus for this study was determining the general effectiveness of one combined baccalaureate-MD program. Specifically, the goal of this study was to

understand an accelerated, combined baccalaureate/MD program to determine its general effectiveness in terms of the program's fidelity, cost-saving, and time conservation. I used a qualitative descriptive study to investigate the overall preparedness of UT-PACT students, as expressed in their words, to shed light on the cost-effectiveness and production of better-trained physicians that could remedy the costly training of physicians.

Statement of the Problem

Medical education is a long, arduous, and costly process (Khan et al., 2017; Wesley et al., 2018). The typical progression of a medical student begins with a 4-year undergraduate program, followed by another 4-year medical school program (Khan et al., 2017; Wesley et al., 2018). After graduating from medical school, a doctor begins residency, which consumes another four to seven years (Khan et al., 2017). Unfortunately, as a student moves up into the medical education ladder, free funding for school usually lessens, resulting in the common choice to assume insurmountable student loan debt, especially for newly graduated physicians practicing as interns in the field. Youngclaus (2017) claimed that the cost to attend medical school has steadily increased since the late 2000s. This increase includes different cost components, such as tuition and fees, student loan debt, and other attendance-related expenses such as housing costs, medical supplies, and books. In 2016, 76% of medical school graduates incurred a median debt of \$190,000 resulting in a monthly repayment plan ranging from \$1,500 to \$2,800 (Youngclaus, 2017).

The delivery of medicine to different facilities and different patients in need is faced with new challenges, such as the emergence of new and advanced technologies and

changes to policies that are fundamentally altering the American healthcare industry (Bai, 2020; Miller et al., 2020). Although the delivery of medical education has not dramatically changed in recent years (Kolachalama & Garg, 2018), the doctors' expectations of their patients have changed dramatically. Previous scholars have suggested that the modernization of curricula for medical schools and residency programs must occur to meet the changing health care demands and the new disrupting forces that are currently in place to shape the industry (Bai, 2020). With the issues of costly education in the medical field together with the clamor for meaningful and appropriate reforms in this field, medical students and professionals have yet to see the changes that are aligned to the status of medical practice in the United States (Kolachalama & Garg, 2018). Since 2020, leaders of U.S. medical schools have collaborated on innovative curriculum reforms in the curriculum within their field (Schwartz et al., 2018); however, there has been little deviation from the reforms made over one century ago through the Flexner report (Bai, 2020). Different aspects remain to be changed to be more appropriate to the current demands and status of the medical field in the United States (Schwartz et al., 2018).

The UT-PACT program is one in which leaders in medical education institutions have developed to address the need for a more appropriate curriculum or track for medical students. The proponents of the UT-PACT program established this program to address the issues of the costly and lengthy training of physicians who are better trained to meet the needs of their patients. The goal of UT-PACT was three-fold: (a) to reduce the redundancy in the curriculum by eliminating one year of undergraduate education, (b) to provide students with scholarships to lessen the financial burden of becoming a

physician, and (c) to teach them to become empathetic, independent, servant leader professionals (University of Texas, 2015).

Different key persons and groups of medical education leaders have attempted to revise or modernize medical education. Despite these modernization and reform attempts, major pedagogical or structural changes to medical education have yet to occur. This delay in reforms has caused a negative impact on both future physicians and their patients (Bai, 2020; Kolachalama & Garg, 2018). I identified the need for a study investigating the innovative training of students in the UT-PACT program to shed light on the need for medical education reform by highlighting the program's fidelity, cost-effectiveness, and time conservation. The perceived impact of the UT-PACT program in terms of the program's fidelity, cost-effectiveness, and time conservation—according to the students who underwent the program—remains unknown, which served as the focus of the literature review and gap identification that guided the current study.

Literature Review

The problem of focus for this study was that the perceived impact of the UT-PACT program in terms of the program's fidelity, cost-effectiveness, and time conservation, according to the students who took part in the program, remains unknown. To address this problem, it was necessary to understand the history and current state of medical education curriculum in the United States. To understand where medical education is today, it is important to know its origins and its slow maturation throughout the years. By knowing how medical education began and where it is now, one can see how very little it has changed from inception to modernity.

Literature Search Strategy

In conducting this literature review, I identified essential information in the existing literature to determine the articles and documents to be included. I then conducted a systematic literature review. The purpose of a systematic literature review of the existing literature was to gather important research-based literature as a springboard to frame my study while also establishing the need for such a study. By exploring existing information within the research literature, including both seminal and novel articles, I was able to organize my own study using a more purposeful and methodical approach that was easy to understand and follow.

My search began by brainstorming key words and phrases and establishing which databases or information systems would be most appropriate in providing the most accurate information to shed light on the need for my study. The methodology for searching the literature included using keywords across these identified databases, and was necessary for identifying the relevant published literature. The primary databases that I used include for this literature search were Emerald Insight, SAGE Publications, Google Scholar, and Science Direct. I used these databases to look and select relevant resource material for the topic of this research. The documents that I selected included journal articles, dissertations, and case studies, with a focus on peer-reviewed journal articles.

I sorted articles by themes and concepts from using the following key search words: *medical education, medical curriculum, cost of education, educational reforms, UT-PACT, cost-effectiveness, adult learners, and time conservation*. By combining the abovementioned key terms, I was able to establish a connection between my research problem, the theoretical framework of andragogy, and the research phenomenon for the

study. Thereby, providing me with the relevant literature to conduct a comprehensive literature review.

The contents of this literature review include historical information and discussion of the status of the medical education curriculum in the United States. I divided the literature review into different themes: (a) evolution of medical education, (b) resistance to change, (c) innovations in medical education, (d) combined accelerated programs, (e) the adult learner's motivation to learn, and (f) financing medical school. At the end of this section, I provide a conclusion of the literature review.

The Evolution of Medical Education

The first medical school began operations in 1765 when the United States consisted of just 13 colonies. Today's University of Pennsylvania was originally named the College of Philadelphia by its founders, John Morgan and William Shippen Jr., who were educated as physicians in Europe (Fee, 2015). Wars caused major disruptions to medical education. By World War I, often called the Flexnerian revolution, medical education became affiliated with universities, enabling faculty to produce original investigations and students to learn in an active laboratory environment and engage in clinical work. The development of the Flexner (1910) report was the beginning of modern medical education and the creation of teaching hospitals (Ludmerer, 1999).

At its inception, medical education had three main tenets: education, patient care, and research. These three tenets occupied certain eras in time. For example, in the 1930s, the United States was the leader in medical research. After World War II, teaching took center stage. By the mid-1960s, clinical medicine received the most reverence. In all of these eras, medical education evolved with the creation of many medical school programs

(Ludmerer, 1999). Ludmerer (1999) stated that in the 1990s, what was good for medical schools was not necessarily as good for medical students or their education as physicians; as a result, patients suffered the consequences.

Because changes in education tend to correlate to changes in society, changes in medical education must adapt in the same way. As Ungaretti et al. (2015) stated, even though patients are recipients of the medical benefits of the environment from which they live, medicine is often slow to catch up with the changing demands of society. Furthermore, a delicate balance must exist between teaching basic medical science with teaching the practical medical skills needed to practice medicine. In other words, practical medical education and theoretical medical education need to go hand-in-hand (Ungaretti et al., 2015).

The Civil War caused many problems for medical faculty and medical students alike, in that both of them were sent off to fight in the war. With hardly any students left, medical faculty whose livelihood depended on the matriculation dollars of these students began to dwindle (Fee, 2015). Slawson (2012) argued that early medical education was considerably more robust than usually appreciated. To completely understand its development, it is necessary to realize that the medical establishment pushed for medical education: not the higher learning academic institutions. Medical education pioneers created medical schools in response to a lack of medical hospitals in certain areas. The lack of medical uniformity resulted in the birth of the American Medical Association (AMA) in 1847 by Dr. Nathan S. Davis (Fishbein, 1947). Another important organization that revolutionized medical education was the creation of the World Health Organization (WHO) in 1945.

Medical education has evolved significantly since its beginnings in the late 1700s. The greatest breakthrough in medical education happened during the publication of the Flexner report. This report has brought about a radical change in the structure and beliefs related to the academic development of physicians; however, the release of the Flexner report was more than one century ago. Researchers have claimed that the field of medical education has drastically changed since 1910 (Bai, 2020; Kolachalama & Garg, 2018), yet the delivery of medical education has not changed sufficiently to cope with the developments in society and technology through the years (Bai, 2020). Nevertheless, changes have occurred in medical education, albeit insignificantly. Leaders in the field of medicine have yet to present and implement the necessary changes to medical education.

Resistance to Change

While the practice of medicine has dramatically changed over the years to reflect new diseases, medical interventions, medical discoveries, and technological advances, the education of its workforce—primarily the training of physicians—has not changed much to keep up with the innovative practice of medicine (Bloom, 1988). Thomas (1987) stated that the medical practices seen in areas such as New York or Boston just sixty years ago are significantly different from those of today. In August of 1988, the World Federation of Medical Education tried to determine what and how medical education should change. Both the AAMC and the AMA agreed that medical schools' decisions reflect their financial situation more often than their educational philosophy. Research and specialty medicine have taken priority in educating future physicians, thereby turning medical education into more of a medical corporation (Kuske et al., 1985).

Enabling change to the medical education curriculum involves adequate preparation and ground settings, wherein proponents of change expect that people will welcome and accept the new set-up (Cerimagic & Hasan, 2018). Jason (2018) further claimed that by nature, human institutions such as medical institutions are usually resistant to change. This nature is evident in the opposition to reforms and innovation in the field of medical education (Jason, 2018).

Unlike other researchers such as Bai (2020) and Kolachalama and Garg (2018), who stated that significant change is absent in the field of medical education, Wartman (2019) claimed that the medical education of the past decades has attempted to improve curriculum in order to maintain relevance to current practices. Wartman (2019) explained that some curricular reforms include such innovations as community-based programs, flipped classrooms, and various types of small-group learning environments. The integration of novel technologies, such as simulations, have also contributed to changes in medical education curricula (Wartman, 2019). These reforms and changes remain questionable in terms of their scale of effectiveness and impact, whether incremental or substantial, for changing the medical education paradigm (Wartman, 2019).

In essence, researchers have concurred in their claims that change or reform is still lacking in the curricular aspect of medical education (Bai, 2020; Kolachalama & Garg, 2018; Wartman, 2019). Over the past decades and century since the Flexner report, resistance to change has been evident in medical education (Cerimagic & Hasan, 2018). This resistance is the main contributing factor to the lack of needed reforms in the curriculum and different aspects of education of physicians in the medical field.

Nevertheless, to some extent, innovations have occurred in medical education, including problem-based learning and team-based learning.

Innovations in Medical Education

Problem-based learning (PBL) and team-based learning (TBL) were two major pedagogical changes that schools have incorporated to reform medical education. To ensure that medical students were using deductive problem-solving skills to effectively diagnose patients, medical schools began using PBL. PBL is very labor-intensive and requires a great deal of upfront planning. In PBL, a trained facilitator, who leads small groups, has the task of working through a problem. The role of the facilitator is to guide the group, but not to teach or answer questions. The facilitator allows the students to answer their own questions by asking them questions to get to the answer. This takes a great deal of training and preparation for each case or problem that the group is studying (Burgess et al., 2017). PBL began in North America in 1969 at McMaster University in Toronto, but it did not catch on to the United States until ten years later in 1979 at the University of New Mexico (van Berkel et al., 2010). PBL incorporates real medical problems or real medical case scenarios, in which the students brainstorm together to try to solve them. PBL was a welcome change, in which medical school students took a more active role in their learning, rather than passively sitting in a lecture type class. PBL quickly spread in medical education because this model of learning was a successful tool to produce better physicians (MacDonald, 1997). Harvard's medical school was in the midst of a long-term evaluation of PBL when they decided to halt the investigations based solely on its effectiveness just after one semester (Ungaretti et al., 2015). Many

researchers, including Duch et al. (2001), Schmidt et al. (2006), and Koh et al. (2008), have documented PBL's successful pedagogy in a detailed and comprehensive manner.

The next pedagogical curricular change to reform medical education was the incorporation of Team Based Learning (TBL). TBL originated in 2000 at Baylor College of Medicine (Hong & Rajalingam, 2020). Like PBL, TBL is a learning pedagogical approach that incorporates active learning from the students, in which they engage in group discussions with one or two instructors as facilitators. In TBL, the onus is on the student to report to class by being prepared by having completed the work of previously assigned questions. Once in class, the group answers these same questions and engage in discussions regarding the questions and answers so that the team members arrive at a final answer. Again, TBL can be very effective, but it is also very labor-intensive upfront. Many medical schools currently use TBL, but because it is relatively new, there are not as many published articles regarding its effectiveness as there are with PBL (Hong & Rajalingam, 2020).

Harden and colleagues introduced Objective Structured Clinical Examination (OSCE) into medical education in 1975. The OSCE tests students on curricular goals associated with history taking, clinical examination skills, medical procedures, and protocols, ordering and reading test analyses, and effective patient communication skills. OSCEs are also often associated with Simulated Patients (SP). Both OSCEs and SPs are best accomplished if a medical school has a clinical skills laboratory. OSCEs are stations, which test the student over a particular clinical or medical task in a setting as real to true life as possible. This approach helps the student master such things as reading a lab report, an encounter with a simulated patient in which history taking and physical

examination may occur, the delivery of bad news to a patient, and counseling a patient. Facilitators or instructors usually time and video record these tasks to provide constructive feedback to the student. Most OSCEs are timed and based on real clinical situations and lab reports. If constructed properly, OSCEs can be an effective union of scientific knowledge and clinical action. It is common to conduct OSCEs in a series of rooms with different situations in a circuit-like fashion so that all students receive the same assessments (Harden & Gleeson, 1979). Simulated patients are healthy people who play the role of a patient in these OSCE scenarios. Sometimes SPs have scripts, and sometimes they are just bodies upon which the medical students practice their physical examination skills.

PBL and TBL are two of the most prominent models of learning that were useful in the evolution of medical education (Hong & Rajalingam, 2020; Ungaretti et al., 2015); however, documentation for these learning models, especially TBL in medical education, is lacking in recent literature (Hong & Rajalingam, 2020). These two approaches need to be a topic of more research in current literature, to establish the significant change that it contributed to the field of medical education. Another major change to medical education is the partnership between undergraduate institutions and medical schools to form combined accelerated programs. Combined accelerated programs work together to remove redundancy from the educational process, thereby graduating participants faster than the traditional route.

Combined Accelerated Programs

As of October of 2020, according to the PrepScholar website, there are a total of forty-three BA/MD and BS/MD programs in the United States. Combined programs

began in 1961 at Northwestern University Medical School, now called the Northwestern University Feinberg School of Medicine and Boston University School of Medicine. By 1992, there were thirty-four combined programs in total. By the year 2000, that number grew to fifty-three; by 2011, there were eighty-one (Norman & Calkins, 1992). Proponents of combined accelerated programs created these programs in the 1960s to mitigate the declining applicant pool to medical school.

Lewis Thomas, a graduate of Princeton University and Harvard Medical School, authored a 1978 essay that is infamous as being one of the most provocative on the issue of medical education reform. Thomas (1978) laid out his three-pronged approach, which consists of the following central themes: impact of medical schools on undergraduate education, the student selection process for medical school admissions, and a radical reform proposal for pre-medical education. Thomas was a firm proponent of the importance of liberal arts education in the development of a well-trained, caring physician. Gunderman and Kanter (2008) cited that Thomas posed more questions than he answered in this ground-breaking article but noted that his ideas are still relevant today. Thomas purported physicians need to be free thinkers who can see things outside the confines of science, that medicine is a healing form in which lifelong learning must be a willing way of life, rather than an obligation (Thomas, 1978). Proponents developed accelerated combined baccalaureate programs with five basic goals. First, these programs provide a more direct pipeline allowing bright, talented high school graduates a faster point of entry into medical school. Second, these programs make obtaining an MD degree more affordable. Third, by adding more humanities type courses into a heavily saturated scientific medical curriculum, they create better physicians. Fourth, these programs strive

to attract a more diverse student population to the field of medicine and therefore representing more of the population. Lastly, such programs tackle the current needs of an ever-changing nation and/or regional healthcare environments such as community healthcare issues, equitable access to healthcare for all, and primary care physician shortages. Furthermore, these programs are likely to continue because they are attractive to students and address pressing issues in medicine, both locally and nationally (Norman & Calkins, 1992).

Zavlin et al. (2017) conducted a study on medical education in Germany in comparison to the United States. One main distinction is the cost of education. In Germany, the majority of medical universities are using taxes for funding; hence, tuition is free. Most U.S. medical universities are private, and it is common for students to have medical student loans amounting to \$200,000 (Zavlin et al., 2017). In the United States, Zavlin et al. also documented the possibility of BS/MS or BS/MD programs, which enables a student to achieve a double degree in a shorter amount of time than when both degrees are taken up separately. Moreover, with the transition to group learning sessions, such as PBL, students in U.S. medical schools have the opportunity to learn more in a faster and more efficient manner. Zavlin et al. claimed, however, that additional research is necessary to understand the other effects and possible negative implications of these new learning formats to medical students.

Combined baccalaureate/MD programs are enticing to talented, intelligent students who already know that they wish to become physicians. Often, these students are granted conditional acceptance into medical school as graduating high school seniors, thereby alleviating the stress of the medical application process often fittingly referred to

as “pre-med syndrome.” This conditional acceptance is especially attractive, given the competitiveness of entering medical school (Eaglen et al., 2012). While appealing to students, it is also beneficial to the partnering institutions as well as the public at large. These programs strive to address issues such as decreasing physician shortages, reducing medical education expenses, streamlining entry into the physician workforce, and emphasizing soft skills taught in liberal arts classes to produce more humanistic physicians.

Concerning combined accelerated programs, the UT-PACT program was a program with the goal of developing a dynamic educational system for both undergraduate and medical levels that adapts to the changing modern world. Through the UT-PACT program, a student could increase the effectiveness and relevance of their physician education while shortening the duration of schooling, thereby reducing the cost and producing more humanistic physicians. In essence, UT-PACT was a form of a combined accelerated program in the medical education field; however, the perceived impact of the UT-PACT program in terms of the program’s fidelity, cost-effectiveness, and time conservation, according to the students who underwent the program, remains unknown. This gap was the focus of the exploration in the current study.

Based on existing research, the medical education field in the United States has reached high application levels of students, for example, 53,000 applications in 2016 (Zavlin et al., 2017). Due to the influx of students in the medical education field, catering to the needs of these students is important to ensure the quality of education and quality of living for these learners. The next section includes a discussion of adult learners because medical students are often considered as adult learners. It is necessary to

understand the motivation and needs of these types of learners in order to develop effective program reforms that cater to these learners' needs.

The Adult Learner's Motivation to Learn

Adult learning is analogous with the term *andragogy*, which is the art and science of helping adults learn. In contrast, *pedagogy* is the art and science of teaching children (Knowles, 1984). Adults are more likely to have internal motivation than external motivation when it comes to what drives them to learn (Knowles, 1984; Merriam et al., 2006). Internal motivation refers to the personal driving factors that promote learning that may not be obvious at an external glance. Examples of these internal factors are self-esteem, job satisfaction, and quality of living (Knowles, 1984; Merriam et al., 2006). Additionally, unlike children, adult learners often have specific goals they want to achieve; hence, these older learners tend to be more interested in subject related learning that offers instantaneous applicability to their professional or personal lives, in comparison with younger conventional learners (Roths et al., 2017).

The developmental needs of the adult learner support motivation to learn. For instance, Knowles (1973) asserted that the adult learner joins an acquisition community because he or she is seeing some deficiency in managing with present problems. Furthermore, Knowles asserted that people become more eager and ready to learn something when they face the need to learn it in order to cope better with newly encountered tasks or problems.

To effectively teach adults, one must first know how adults learn best and how to facilitate that learning. The adult learner typically prefers autonomy (Merriam et al., 2006); therefore, the sense of independence and flexibility that comes with taking online

courses is appealing to such students. Adult learners are goal-oriented; therefore, these types of students expect relevant and high-quality instruction. These adult learners are also practical, have experiences and knowledge they can draw upon to gain new knowledge, and require the need to feel respected (Merriam et al., 2006). Additionally, they want the coursework they are completing to be relevant, and they realize that they must continue their learning outside of a formal environment so that they can function at work and home (Merriam et al., 2006).

Cook and Artino (2016) discussed five concepts that deal with the motivation for adult learners to learn medicine, where these concepts differ and identify key considerations for future research. The five contemporary motivation theories are expectancy-value, attribution, social-cognitive, goal orientation, and self-determination. Evidence exists to prove the fact that adult learners are motivated to learn differently than their younger counterparts (Cook & Artino, 2016; Louws et al., 2017). Adult learners, therefore, are prime candidates for such accelerated programs combining baccalaureate and medical education, in that they have the resiliency to endure a more grueling, condensed curriculum to achieve their goal of becoming a physician (Cook & Artino, 2016).

When considering performance measures, there seemed to be lower reported rates of attrition between accelerated students to traditional students (Cook & Artino, 2016). The students in accelerated, combined programs seemed to perform comparably to their counterpart students in traditionally routed medical school programs (Loftus et al., 1997). This relationship most likely has an association with a high level of support given to these students who enter into combined, accelerated programs straight out of high school.

It is possible to determine, therefore, that accelerated programs combining baccalaureate and medical education are effective and that the student participants in these programs are just as motivated—if not more so—than their normally routed medical school counterpart students, despite their younger age.

There is a significant difference between andragogy and pedagogy. The common conceptualization of pedagogy is general teaching, but it specifically relates to the art and science associated with the teaching of children. Furthermore, besides focusing on children, pedagogy is very teacher centric. The UT-PACT students are adults, and therefore, have different needs than those of child learners. Andragogy, in turn, is the art and science of facilitating the learning process of adult students. With andragogy, the adult learner is the focus, and the teacher adapts themselves to these students and their intrinsic or extrinsic motivational factors (Pew, 2007).

Adult learners are motivated to learn in very different ways than nonadult learners. Brennan (2006) defined motivation as the amount of effort one is willing to exert to reach a goal. Adult learners—particularly medical school students—tend to display a great deal of grit. According to Angela Lee Duckworth (2016), “grit represents passion and perseverance for long-term goals” (p. 55). This author developed a Grit Scale, which is comprised of passion and perseverance; medical school students would probably score highly on such a scale. Medicine is a calling to which one can equate passion, and the perseverance a student must display to become a physician can be measured far beyond simply graduating from medical school. It is possible to measure grit through hours of case preparations and treatment plans, hospital shifts, continuing medical education training, the sheer power of holding others’ lives in one’s hands, and

similar challenges. Perhaps there is no ‘grittier’ occupation than that of a physician. Grit is all about effort; in many cases, the care of a patient is a team effort in which each physician oversees one aspect of the care that the patient receives, a collaborative effort of many gritty individuals who share a common goal of treating or healing the patient.

Medical students are mainly considered as adult learners, having finished a baccalaureate degree (Premkumar et al., 2018). Premkumar et al. claimed that medical institutions promote self-directed learning, wherein medical students learn based on personal initiative. Under self-directed learning, the medical student has the primary responsibility for planning, implementing, and evaluating the effort (Premkumar et al., 2018). Premkumar et al. suggested that students are more motivated to practice self-directed learning when faculty explained a topic very well and promoted interactive sessions through productive questioning. When achieving high assessment scores becomes the motivating factor, however, self-directed learning becomes less of a priority for medical students (Premkumar et al., 2018). Nevertheless, treating medical students as adult learners is useful in ensuring that proper motivational factors are in place to promote learning for these types of students.

One demotivating factor for medical students is finances. Medical school education is long and costly (Asch et al., 2020). Unfortunately, as students progress through medical school or medical education, financial aid becomes less available to them. Although loans are available, most graduates find it difficult to begin their careers as doctors with significant debt, as starting a medical practice is very costly. In the next section, I present and discuss the financial aspects that students must consider when pursuing medical education.

Financing Medical Education

The higher one climbs the educational ladder, the fewer forms of debt-free aid (e.g., grants) are available to finance said education (Marcu et al., 2017). Avoiding accruing student loans is almost impossible for today's medical school graduates. Student loans seem the only manner in which to fund higher educational needs because working while attending medical school is almost impossible to accomplish concurrently.

Marcu et al. (2017) listed six traditional pathways available to medical school students: (a) self-financing, (b) federally guaranteed loans, (c) public service forgiveness programs, (d) National Health Service Corps, (e) Armed Forces Health Professions Scholarship Program, and (f) earning a degree from the Uniformed Services University of the Health Sciences (Marcu et al., 2017). As MDs and PhDs, these scholars were acutely aware of how expensive obtaining an MD degree can be and the long-term effects of lost earning potential due to being a perpetual student. These different pathways are important to acknowledge because they would not exist if financing medical school was not challenging. These options are great solutions for some, but they are obviously not appropriate for everyone. For example, to receive the benefit of some of these pathways, one would need to enlist in the armed services. While monetarily helpful, the economic savings may cost more in time or service by the recipient. Policymakers, therefore, should devise more options to make medical school more affordable and accessible for all students; this will enable schools to attract a more diverse population of future physicians to the healthcare workforce that mirrors the patient populations they will treat.

Wood et al. (2018) conducted a systematic review of literature about medical education students published from 2007 to 2010. They determined that 47% of the studies reviewed centered on educational costs. Their literature review, however, only included

academic research (i.e., \$19,000). Moreover, these figures are not recent and do not reflect the total costs for pursuing a medical degree as a physician.

In a recent study, Youngclaus (2017) claimed that the cost of attendance (COA) for medical school students continues to increase. This author indicated that the majority of medical school graduates owed roughly six figures in student loans, with monthly payments of thousands of dollars beginning right after they finish their residency program. These compelling figures reveal an upward trajectory, meaning that medical school costs will likely continue to rise, producing more medical school graduates beginning their careers in a very high debt bracket.

Zavlin et al. (2017) provided figures for the cost of attending medical school in the United States. The cost for tuition, fees, and health insurance is at least \$34,000 per year for residents studying in public medical schools, while their nonresident counterparts require at least \$58,000. These figures do not include living expenses, which may differ depending on the location where one is studying (Zavlin et al., 2017). This scenario is the reason for massive educational loans that medical students incur as they pursue their goal of becoming a physician in the United States.

Van Rossum et al. (2018) conducted a study focused on financing medical education. In most western countries, such as Germany, public funds pay for a part of postgraduate medical education expenses (Van Rossum et al., 2018; Zavlin et al., 2017). In the United States, however, most medical students obtain loans to fund their education, which is very expensive (Zavlin et al., 2017). Van Rossum et al. proposed a time-variable curriculum to address the issue of high costs associated with pursuing post-graduate medical education. In this program, the educational activities of the program areas,

wherein students have already gained the necessary competencies, may be shortened effectively. Van Rossum et al. suggested that through time-variable structures, it is possible to shorten post-graduate medical education programs while maintaining educational quality.

In relation to the study of Van Rossum et al. (2018), the concept of the UT-PACT program also conserves costs through time reduction of the medical education program. The perceived impact of the UT-PACT program in terms of the program's fidelity, cost-effectiveness, and time conservation, according to the students who underwent the program, remains unexplored in the existing literature. This gap was the focus of the current study.

Literature Review Conclusion

The Flexner report in 1910 was the beginning of modern medical education and the development of teaching schools in the United States (Weston, 2018; Willetts & Lazarus, 2018). This seminal report was the major turning point in the field of medical education (Weston, 2018). Despite the significant successes of medical education over the years, the contents of the centennial-aged model have failed to keep pace with society's needs and the accelerating changes in the nature of healthcare delivery (Weston, 2018; Willetts & Lazarus, 2018). Therefore, simply stated, reforms in medical education are overdue (Bai, 2020).

Despite claims that reforms are necessary in medical education, changes have occurred in the curriculum and teaching practices for medical students. The application of PBL, TBL, and combined accelerated programs are among the changes that occurred in the medical field (Hong & Rajalingam, 2020; Ungaretti et al., 2015; Zavlin et al., 2017).

These changes were key instruments to improving the issues of high costs of resources of time and money when pursuing a Doctor of Medicine degree and medical practice (Hong & Rajalingam, 2020; Zavlin et al., 2017). There is a need for additional studies in order to fully understand the changes that policymakers must implement in order to fully address the issues in medical education curriculum in the United States.

Although the stakeholders of the medical education field have seen some changes to the way physicians are trained, there is still a long way to go to keep pace with the practice of medicine. While some methods have withstood the test of time, others have become notably outdated. Change is good, no matter what field the change is in, as it signifies growth. Medicine keeps evolving and changing and therefore so should the educational process of teaching students to become physicians. In a field where peoples' lives are a priority, caution must be taken when incorporating curricular changes, but it could be equally as dangerous to remain stagnant. There must be forward movement for growth and change to occur.

UT-PACT is a program that aimed to improve the medical education curriculum. This program addressed issues of time-costly education through shortening and combining courses that enabled students to gain more skills effectively and efficiently. Moreover, this program also aimed to reduce the cost of medical education. The perceived impact of the UT-PACT program in terms of the program's fidelity, cost-effectiveness, and time conservation, according to the students who underwent the program, remained unknown until the conduction of this study. This gap was the focus of the problem that I addressed in this current study. Through the theory of andragogy, I was able to understand the learning concepts that apply to medical students, enabling me to

link this theory to UT-PACT and the implication of the program to medical students (Collins & Stockton, 2018).

Theoretical Framework

The lens through which I conducted this study was Knowles's (1984) theory of andragogy. The adult learner is the central theme of the theory of andragogy. The existence of adults who are also learners or students is the driver for the development of Knowles's theory of andragogy. Knowles claimed that because adults presume responsibility for decision-making, adults are more self-directed. It is for this reason that adult-oriented education programs, such as those in the medical field, must foster the self-directed nature of the adult learning process.

The main assumptions about learning based on the theory of andragogy are the following: (a) adults want to know the reason for needing to learn something, (b) adults like to use experiences to learn, (c) adults see learning as a way to solve problems, and (d) adults' best learning scenario is when they perceive that a topic has value (Knowles, 1984). Moreover, adults learn best when they can see the immediate value of what they are learning (Knowles, 1984). Knowles further purported adult learners take responsibility for their own learning and assume more responsibility for their own learning because they are more self-directed learners. Andragogy can be more simply understood as the importance of focusing on the process rather than the content when teaching or instructing adult learners (Malik & Khaliq, 2017). Based on the theory of andragogy, strategies that involve case studies, simulations, role-playing, and self-evaluation are more useful for adult learners than classroom lectures and conceptual reading assignments (Balakrishnan, 2020; Kamışlı & Özönur, 2017).

Previous researchers have used andragogy continuously in their studies to assist in exploring the learning patterns and behavior of adults (Kamışlı & Özönur, 2017). I chose this theoretical model for the current study because of its focus on adult learners, as they comprise the UT-PACT program. Moreover, these theories align with the research questions of this study.

Based on the basic assumptions of andragogy, adult learners learn best through experience and when the perceived value of the topic or concept to be learned is high (Knowles, 1984). Concerning medical education students, some scholars have claimed that experiential learning is important for medical students (Bai, 2020; Miller et al., 2020). In fact, according to Flexner's (1910) seminal report, the inclusion of medical students in a learning hospital setting, where scientific concepts of medical education may be experienced in a real-life clinical setting, is important for the development of necessary skills for future physicians under the medical education program. Moreover, Knowles maintained that adult learners take responsibility for their own learning and assume more responsibility for their own learning because they are more self-directed learners. This description is parallel to the nature of students in the medical education setting, in which learning is often self-directed and experience based.

The theory of andragogy has been used in many studies in the medical field (Dasgupta, 2020; Rabii, 2019). Dasgupta (2020) used the theory of andragogy in the medical education context, claiming that medical students, as adult learners, learn with motivation diagnosing their own needs, leaving them to formulate their own learning requirements and aim. In another study, Rabii (2019) highlighted that, under andragogy, the preoperative education of physicians exhibits the learning attribute of adult learners,

wherein problem-focused education is the focus, and this learning process builds upon their experiences. When conducting the current investigation of BS-BA/MD programs, understanding the assumptions and claims made in the theory of andragogy was necessary to understand how medical students, as adult learners, perceive the impact of UT-PACT in terms of fidelity, cost-effectiveness, and time conservation.

The theory of andragogy is related to the research questions, as the concept of adult learning includes the appropriateness of self-directed learning and experience-based learning. In medical education, students are encouraged to practice PBL, self-directed learning, and experience-based learning, which are similar to the concepts of within the theory of andragogy. Moreover, UT-PACT also applies concepts of self-directed learning and experience-based learning in the changes implemented for medical education.

Andragogy is related to the current research questions which focused on adult learners in the form of medical students.

Conclusion: Purpose of the Study

Based on the research questions, the purpose of this qualitative descriptive case study was to describe the perceived impact of the UT-PACT program in terms of the program's fidelity, cost-effectiveness, and time conservation, according to the students who underwent the program. Because qualitative research designs are particularly impactful when researchers wish to showcase their participants' own voices, this method was chosen over quantitative or mixed methods measures (Creswell & Poth, 2018).

Through this descriptive case study, I sought to address the following three research questions:

RQ1: What perceived impact does the UT-PACT program have on the UT-PACT students' comprehensive preparation to become physicians?

RQ2: What perceived impact does the UT-PACT's cost-effectiveness have on UT-PACT students' perception of their overall preparedness to become physicians?

RQ3: What impact does the UT-PACT's time conservation have on the UT-PACT students' perception of their overall preparedness to become physicians?

The focus of this study was to evaluate the impact of a program such as UT-PACT that applies the needed innovation and reform in the field of medical education. The problem that I investigated in this study was that the perceived impact of the UT-PACT program in terms of the program's fidelity, cost-effectiveness, and time conservation—according to the students who underwent the program—was unknown. The UT-PACT program was an accelerated, combined baccalaureate/MD program between the University of Texas at Dallas and UT Southwestern Medical School. Both University of Texas System schools are in Dallas, Texas, in fairly close proximity to one another. Both institutions have good rankings: UT Dallas, for example, has a rank of 65 out of all United States public institutions. Moreover, both schools are well-respected institutions. While accelerated baccalaureate/MD programs are not novel, the UT-PACT program was a new version of such programs (Drees & Omurtag, 2012).

In my effort to seek a way to revamp the delivery of medical education, I studied the PACT students through their medical school journey to illuminate different pathways that can be both cost-effective and time saving while still producing humanistic physician leaders. I collected data through structured and semi-structured interviews virtually through Zoom meetings. I analyzed data using NVivo 12 Pro to extract common themes and trends (Bonello & Meehan, 2019). In the next chapter, I present the complete details of the methodology that guided this study.

CHAPTER TWO

Methodology

Introduction

The purpose of this qualitative descriptive case study was to describe the perceived impact of the UT-PACT program in terms of the program's fidelity, cost-effectiveness, and time conservation, according to the students who underwent the program. When a researcher seeks to explore the voices of individuals involved in a phenomenon, the most appropriate methodology is a qualitative research design. To achieve the intended purpose of this research, I used a qualitative descriptive case study design. I developed the following research questions to guide this study:

RQ1: What perceived impact does the UT-PACT program have on the UT-PACT students' comprehensive preparation to become physicians?

RQ2: What perceived impact does the UT-PACT's cost-effectiveness have on UT-PACT students' perception of their overall preparedness to become physicians?

RQ3: What impact does the UT-PACT's time conservation have on the UT-PACT students' perception of their overall preparedness to become physicians?

By using "what" rather than "how" type questions, the UT-PACT participants fully described their perceptions that were bounded by their phenomenon of being a part of this UT-PACT experience (Creswell & Creswell, 2018). Case studies enable researchers to answer "what" type questions. Therefore, the application of a case study, using "what" style questions, was deemed appropriate for the purposes of this study.

In this chapter, I discuss the details of the methodology and the research design I used. This chapter also includes an explanation of the procedures and steps that I

implemented to address the research questions of the study. Further, I present the researcher perspective and positionality, theoretical framework application, research design and rationale, site selection and participant sampling, data collection procedure, data analysis procedure, validation strategies, ethical considerations, assumptions, and limitations of the study. I conclude the chapter with a summary and synopsis of the important information provided in this chapter and provide a transition to Chapter Three.

Researcher Perspective and Positionality

The investigator's perspective is fundamental to any qualitative research process (Creswell & Poth, 2018). To understand why I chose this area of research, it is important to know a bit about me and my background. The University of Texas recruited and hired me during the planning phases of the UT-PACT program. At that time, I was an assistant professor in the department of physician assistant (PA) studies in the School of Health Professions at UT Southwestern Medical Center, where my primary duty was teaching a self-developed longitudinal Medical Spanish curriculum. I was also the PA school's director of admissions, a role in which I had many other responsibilities. Due to a reduction in force (RIF), the Medical Center had eliminated my position because PA students were not required to know medical Spanish to graduate from an accredited PA program.

Concurrently, my colleagues at UTSW were simultaneously developing the UT-PACT program. When they heard of my layoff, they knew I would be a good fit for their UT-PACT leadership team, and I was hired in October of 2010. While many members of the PACT faculty leadership left for other obligations or assignments, I stayed on until the seventh and last cohort graduated UTD in the Fall of 2019. This was our last cohort

because of the elimination of the UT-PACT Program due to budget cuts by the UT System. As a member of the UT-PACT leadership, I wore many hats, including administration and instruction. As a result, I was very intimately involved with every aspect of the UT-PACT program, as well as with all of its constituents, including faculty, administration, and students. Ultimately, I was the longest-serving member of the UT-PACT team from inception to termination.

During the time I spent being part of the UT-PACT leadership team, I learned a great deal about the benefits of such programs. A program like UT-PACT can be effective in reducing the number of years of training required for a physician as well as in alleviating the overall indebtedness by providing the PACT participants with full scholarships for their undergraduate education. The PACT program also aims to train physicians to be more humanistic, altruistic, and servant leaders. What I wanted to know, however, was something only the PACT students could tell me: I wanted to hear about the perceived impact of the UT-PACT program from the perspective of the PACT students themselves.

My educational background served me well during my engagement in the UT-PACT program. Both my undergraduate and master's degrees were from Texas A&M University in College Station, Texas. My undergraduate degree was in health education, where I learned a great deal regarding health disparities and the long, costly process to train adequate medical personnel. While not a physician myself, I have a clear, unbiased view of the medical education process, which has enabled me to assess its strengths and weaknesses from a more pragmatic stance. The UT-PACT leadership recruited me specifically because of my background to perform the duties as the Coordinator of the

UT-PACT program, Faculty Liaison between the two partnering institutions, Academic Advisor to the PACT students, Faculty Instructor of many of our specialty courses, and my many other obligations and duties. My role as a seasoned educator and a champion for medical education reform and change facilitated the successful completion of the UT-PACT program which consisted of seven cohorts.

The PACT students knew me well, and I was able to use this relationship to gain the information needed to conduct my study. As a trusted member of the UT-PACT inner circle, I easily attained the epistemological assumption, but I did not allow my closeness to the UT-PACT students to cloud the findings. As stated earlier, I was very involved with the UT-PACT program from start to finish. I led information sessions to attract potential students to apply. I interviewed potential UT-PACT candidates and was on the selection committee who ultimately chose the 20 students per cohort. I served on the PACT leadership in many other ways as well. I was the program coordinator for the UT-PACT program, but I also served as the students' professor for certain courses such as their freshman experience class, Medical Spanish, and Professional Identity Formation I-III courses.

I also led groups of PACT students on a month-long medical Spanish internship program to Spain which I created. I performed many administrative duties for the PACT students. Because this program is accelerated, the order in which students matriculated for classes was essential to their graduation occurring in the specified three years; therefore, I served as their academic advisor to ensure that they took the appropriate classes at the appropriate times. In the end, the PACT students had more face time with me than any other PACT leadership faculty member, making me a vital part of their time

in the UT-PACT program. Furthermore, I built personal relationships with each student, resulting in a larger-than-normal sample size for a qualitative study.

Due to this unique relationship, closeness, and bond with the UT-PACT students and the UT-PACT program, my intention behind all decisions when planning and implementing this study was to protect the integrity of the UT-PACT program and its constituents. I completed the study activities with the protection and integrity of the students, faculty, both institutions, and the field of medicine at the forefront of each decision. Due to this intimate nature of my positionality and the uniqueness of the UT-PACT program, I devised my own interview questions (see Appendix A). Preexisting tools were not specific enough to this group or the goal of this study; thus, while I examined and studied several such instruments, I did not use any existing instruments.

Theoretical Framework Application

I used the theory of andragogy as the lens to frame my study. The theory of andragogy informed the data collection and analysis process as I sought to understand how UT-PACT students perceived the impact of the UT-PACT program in terms of the program's fidelity, cost-effectiveness, and time conservation. I incorporated the three aspects of the UT-PACT program alongside the Theory of Andragogy into the three research questions of the study. Based on the theory of andragogy, an adult learner has six principles to learning: (a) need to know, (b) intrinsic motivation, (c) problem-centered learning, (d) readiness to learn, (e) learner's experience, and (f) self-directed learning (Knowles, 1984). The interview questions were informed by the six principles of andragogy. The interview questions were designed to access how the theory of andragogy played a role in the impact of the UT-PACT students' perception of the UT-PACT

program. The learner principles of andragogy also informed the data analysis process and helped me to code the data based on the six principles. During data collection and analysis, I used the assumptions and concepts in the theory of andragogy to help explore participants' experiences and perceptions of the UT-PACT program. The relationship between the theory of andragogy, research questions, data collection, and data analysis are presented in Figure 2.1.

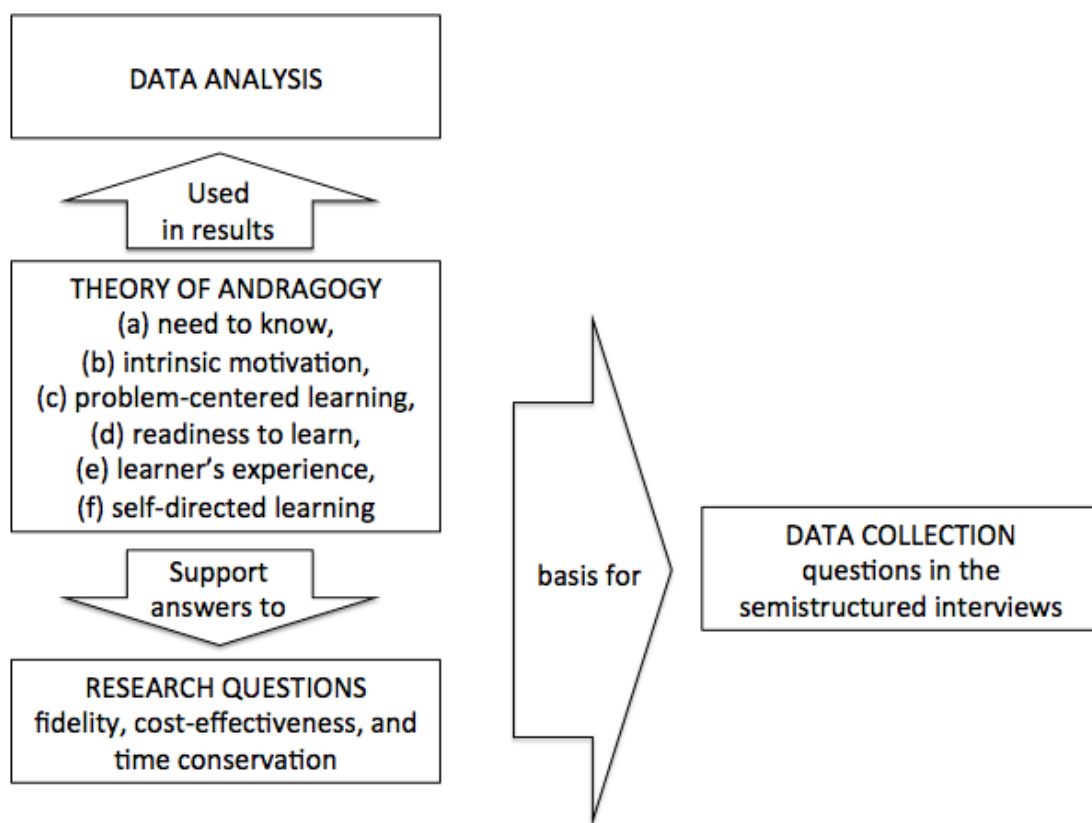


Figure 2.1. Theoretical framework in data collection and analysis.

Research Design and Rationale

The nature of this study lent itself well to a qualitative descriptive case study wherein I selected two cohorts or samples of students who completed an accelerated, combined baccalaureate/MD program called the UT-PACT program. Yin (2017) stated

that descriptive case studies are rich in descriptive language, which can provide clarity and explanation and allows for a better understanding of the phenomenon. The information that I sought was only obtainable by interviewing the PACT students themselves. The participants' thick, rich descriptive answers provided insight into the research questions.

A case study design is suitable when the researcher intends to investigate a contemporary phenomenon within its real-life context and explore the underlying systems and strategies to gain an in-depth holistic view of the research problem (Yin, 2017). Moreover, scholars use case studies when the purpose of the research is to understand an individual, a group of individuals, or a specific event or phenomenon (Yin, 2017). The UT-PACT students, who were the data source for this study, provided details of their perceptions based on the real-life context of the UT-PACT program in a way that only this specific group of individuals could describe. Polit and Beck (2008) stated that case studies, which are based around a phenomenon, allow for profound investigations and great insight into an issue (Polit & Beck, 2014). Therefore, I determined that a descriptive case study was the most appropriate research stance for this investigation.

I also considered other research designs for this study. Researchers commonly use phenomenology when studying a phenomenon through a deep exploration of participants' lived experiences (Moustakas, 1994). The focus of the current study, however, was on the perceptions of UT-PACT students regarding the impact of the program on their preparedness of becoming physicians, instead of the lived experiences of these individuals. Another design consideration was grounded theory, which is appropriate for researchers who seek to develop a theory through systematic data collection and analysis

(Glaser & Strauss, 2017). Grounded theory was inappropriate for this study, however, because the research purpose did not warrant the development of theory from the collected data. I also considered narrative inquiry, which involves the use of data on events in the proper order (Clandinin, 2016). The purpose of this study, however, was not to explore the phenomenon of implementing the UT-PACT program through the narrative stories of medical students in the program; thus, a narrative design was also inappropriate. I found these alternative research designs to be unsuitable for this study; therefore, a case study was the most appropriate design for this research.

Program Description and Participant Sampling

The UT-PACT program was developed by the University of Texas System to change the landscape of the delivery of medical education. The partnering institutions of the UT-PACT program were the University of Texas at Dallas and UT Southwestern Medical School. By eliminating a year of students educational training, providing financial support for undergraduate education, and developing students professional identity, the UT-PACT program sought to revolutionize the outdated way of delivering medical education. Each year between 2011–2017, the leadership faculty of UT-PACT, including faculty from both UT Dallas and UT Southwestern Medical School, interviewed the top applicants and selected twenty to participate in each cohort. The UT-PACT program welcomed its first cohort in the Fall of 2011 and its last cohort in the Fall of 2017.

Securing a total of twelve students to participate in my study gave me a good representation of Cohorts One and Two of the UT-PACT program. My participants consisted of five students, three females and two males from Cohort One and seven

students, five females and two males, from Cohort Two. Their gender distribution was congruent to the female to male ratio of not only their respective cohorts but of all seven cohorts. Their ages ranged from 24 to 26 years old. Also noteworthy was their ethnicity with most participants being Asian/Indian which also mirrored the ethnicity of their respective cohorts and of the total ethnicity of all seven cohorts. Of the twelve, only three were Caucasian. Out of the twelve only two had incurred educational debt. Again, all students were from the state of Texas, most of whom graduated from public Texas high schools and came from a family of physicians. Table 2.1 shows an easy to view chart of the demographics of the twelve participants.

After carefully considering the different qualitative sampling strategies that Creswell and Creswell (2018) presented, I used purposeful criterion sampling. Most qualitative studies utilize criterion-based purposive sampling, and my study was no different (Creswell & Creswell, 2018). Through purposeful criterion sampling, I selected participants from Cohort One and Cohort Two of the UT-PACT program. I intentionally chose these two cohorts because, of the seven cohorts, the first two share the same criterion. Participants were bounded by cohort, such as that two cases were used for this study, Cohort One and Cohort Two. These two cohorts represented the participants grouped through their similar experiences in the UT-PACT program. All participants were medical school graduates from the UT-PACT program. More so, all participants were currently practicing medicine as part of their respective residency programs. These two groups shared the criterion experience of completing their undergraduate and medical degrees as students in the UT-PACT program and were therefore knowledgeable about the phenomenon that I wished to further understand. The chosen groups of students

in the UT-PACT program possessed both the knowledge and the experience that I aimed to explore in greater detail.

While the student participants were involved in two separate cohorts, the students were homogeneous in their status as UT-PACT students. As opposed to participation in a traditional medical school model, the student participants all completed the UT-PACT program. Due to the nature of the cohort system in place in the UT-PACT program, this sample was naturally occurring, and the participants were members of Cohorts One and Cohort Two of the UT-PACT program.

To recruit the participants to my study, I sent mass emails to the first two cohorts through the UT-PACT Cohort Facebook pages as well as other social media outlets. I also had most of the students' phone numbers and email addresses. I followed up my media posts with a text message to capture more participants who may not use social media. Fortunately, I had several means of reaching out to these two cohorts. To ascertain credibility in this qualitative inquiry, I established a rationale for the choices made. This rationale accounted for things such as positionality and biases. Merriam and Merriam (1998), experts in qualitative research in education, explored potential issues of validity, reliability, and ethics in their textbook. They also considered case studies, which further provided me with a clear directional pathway of data collection and analysis (Merriam & Merriam, 1998).

I assigned pseudonyms to all participants to protect their anonymity. I recorded and transcribed all the interviews. I compared and coded all the interviews to see what similarities and discrepancies existed. The patterns that emerged were key points of interest in the data analysis of interviews. I examined and reexamined all data so that

effective coding could take place and assigned colors to these similarities and discrepancies. I was vigilant to see where there was overlap and what—if any—central themes seemed to be present from my findings. To ensure validity and reliability, I remained as transparent as possible by utilizing the best ethical practices. I received Institutional Review Board (IRB) approval from both institutions before any interaction began.

Data Collection Procedures

To help promote the participation of the first two cohorts of the UT-PACT program, I used purposeful criterion sampling by informally posting on the UT-PACT Facebook pages to introduce the study and to ask for their participation. I also sent an individual email to each student in these two cohorts ($n = 40$) asking for their voluntary participation in the study. I chose the first two cohorts because the students had completed the UT-PACT program by graduating from UTD with their undergraduate degree and from UT Southwestern with their MD degree. They are now bona fide residents who see and treat patients. The email contained a link for them to sign up for an interview slot. I also allowed them to tell me what date and time worked best for them. Twelve students responded and made arrangements to answer my questions.

I conducted both structured and semi-structured interviews. Using semi-structured interviews are common for qualitative research because it allows for in-depth data collection through follow-up questions (Roulston & Choi, 2018). These semi-structured interviews took place virtually via Zoom for all students who were in residency programs outside of the Dallas/Fort Worth area or lived locally in the Dallas/Fort Worth area due to stay-at-home mandates during the COVID-19 pandemic. In consideration of the COVID-

19 pandemic, virtual interviews were also an option to ensure social distancing to all participants. Other researchers have begun using online interviews for data collection due to the COVID-19 pandemic; hence, the basis for using this process in this study was justified (Archibald et al., 2019; Gray et al., 2020). The Zoom meetings were ideal for those UT-PACT participants who resided outside of the Dallas/Fort Worth area for their residency program. I believe UT-PACT students participated because of the convenient format of Zoom to unite people from varying locations. Furthermore, all participants were accustomed to Zoom because they had all used it in their medical school training due to the cancelation of live instruction due to COVID-19.

Due to scheduling constraints and patient loads, four participants requested I send them the interview questions via email so they could record their responses on their own time and send back to me. The breakdown of semi-structured and structured interviews as well as the demographics of the UT-PACT sample is found in Table 2.1. It is notable that all four of the structured responses came from recently graduated from medical school Cohort Two participants. Perhaps this is because they were new to their residency programs, had less disposable free time, and had less control over their schedules due to on call schedules and the like. I feel that these three reasons can be added to the scheduling and patient load issues they reported preventing them from being able to participate in Zoom interviews.

The semi-structured interviews ranged from one to three hours in length, depending on the length of participants' answers and the extent of our dialogue. We spent some of that time catching up to establish a safe and comfortable interview environment.

Table 2.1

Demographics of the Sample

Participant	Cohort	Ethnicity	Gender	Loan Debt	Age	Specialty
Participant 1	Two	Asian	Female	No	24	Internal Medicine
Participant 2	Two	Caucasian	Female	No	24	Anesthesiology
Participant 3	Two	Asian	Female	No	24	Family Medicine
Participant 4	Two	Asian	Female	No	24	Internal Medicine
Participant 5	Two	Asian	Female	Yes, 22k	24	Emergency Medicine
Participant 6	Two	Caucasian	Male	No	24	Internal Medicine
Participant 7	Two	Asian	Male	No	24	Surgery
Participant 8	One	Asian	Female	No	25	Ear Nose Throat
Participant 9	One	Asian	Male	No	26	Cardiology
Participant 10	One	Caucasian	Female	Yes, 60k	25	Obstetrics/ Gynecology
Participant 11	One	Asian	Female	No	25	Pediatrics
Participant 12	One	Asian	Male	No	25	Ear Nose Throat

After securing the consent of each participant to record the semi-structured interview, I video-recorded the interviews. The participants were aware of the voluntary nature of this interview and that they could discontinue their participation at any time with no repercussion or animosity. Videorecording of data collection has been performed in other qualitative studies as well (Gray et al., 2020; Khalil & Cowie, 2020).

Continuing in my advocacy for my students, all interviews began with warm-up or “catching up” type questions. I sought to ensure that all participants felt as comfortable as possible while speaking about their PACT experiences by holding interviews in familiar, safe, comfortable surroundings. In the first part of the interview, I delivered an introduction to prepare each participant for the data collection session. I reviewed the topic of the interview and the flow of participation to manage the expectations of participants. After the introduction, I used the interview guide to ask the prepared

questions. Whenever needed, I asked follow-up questions to collect a deeper explanation of the participants' experience. Through the follow-up questions, I further investigated the initial answers of the participants. After I finished asking all the questions from the interview guide, I reminded the participant about the process of member checking and thanked the participant for their time.

It is important to note that, as I collected the data, I immediately began to analyze it. I did not wait until I collected all data to perform analysis. This data collection and analysis was an ongoing cyclical process, which is a best practice when conducting a qualitative study (Creswell & Poth, 2018).

Data Analysis Procedures

I followed Creswell's data analysis spiral closely to analyze the collected data, beginning with the very first piece of data collected and ending with reporting the findings. I conducted pattern matching dependably, which consisted of coding, categorizing, and theming the data as I conducted the interviews and discussions with participants. I followed the steps of qualitative analysis, which consisted of the following steps.

Managing and Organizing the Data

I labeled each interview according to date, time, place, and alias of the PACT participant. I encoded all these details into a document that I created to take notes and record observations. I wrote notes during the interview and then transcribed the same notes into a document, which I then saved to my personal computer and onto a thumb drive. I recorded the Zoom interviews and saved each file on my personal computer, as

well as a thumb drive. I stored the thumb drives containing the interview notes and Zoom recordings in a portable safe in my house, accessible only to me.

Reading and Memoing the Data

I organized the data by transcribing all spoken and written text from the 12 participants. I read the transcripts through several times to pick up themes, which I then coded. I used heavy memo writing and note taking in order to not lose any nuanced data. During the process of data collection, I read and memoed each interview (Tesch, 1990). I read each interview transcript at least two times, with the goal of improving my own familiarity with the major points from the data. During the first round of reading, I knew the participants' answers to each question. In reading the data for the second time, I identified relevant words, phrases, and sentences that were aligned with the research question of the study. For example, "preparation", "ready", "time conservation", or "debt-free" were commonly used in their responses to my interview questions. The goal of this step was to determine the relevant descriptive texts that addressed the research questions of the study. I initially started by examining responses by cohort, but realized that the responses from participants across cohorts were markedly similar. Therefore, I first engaged in cross-case analysis, examining commonalities across all participant responses, and then used within-case analysis to explore the distinctions between the two cohorts within each theme.

Classifying and Interpreting the Data

I developed a several step coding scheme. Based on the initial list of descriptive texts, I developed a scheme of classifying the data through codes. Texts with similar meanings were given the same code, and each code directly addressed one of the research

questions. If there was a need to add to the existing codes, I added these new codes. In the third step, I grouped similar codes to form themes. I then labeled the themes as a direct answer to the research questions of the study. I used NVivo 12 Pro software to validate the emerging themes. I then presented these themes in visual format.

I further divided the themes into subthemes. Major themes were from codes developed from the majority of the participant data. Minor themes were from the remaining themes. I then described the themes in relation to the research questions.

Representing and Reporting the Data

I reported the data narratively by themes and subthemes. I first laid out applicable information collected from Cohort One and then followed that up with pertinent information from Cohort Two. Next, I provided a closing paragraph to summarize the data analysis of each of the themes. I followed this schema for all four themes. I also presented the information in the form of figures for a visual perspective of the results at the end of each theme presented.

Issues of Trustworthiness

To improve trustworthiness, Miles and Huberman (1994) suggested addressing confirmability, dependability, credibility, and transferability. In terms of confirmability, I used methods that were effectively described, and I adequately stored the data to make it available for further reanalysis. The presented data supported the conclusions, and I put in place measures to control for bias, especially interrater bias. I compared competing and rival conclusions to the conclusions established in this study and contrasted the same to competing and rival conclusions. Regarding dependability, I used trustworthy participants. The participants viewed me as trustworthy as well, which accounted for the

high number of respondents ($n=12$). It was possible to replicate the data collected from the interviews because only I was collecting the data. I made sure to follow the same protocol for each interview. I used the same protocol for data collection and data analysis. I performed coding by hand and tested the results against NVivo 12 Pro to ensure the patterns seen were correct.

To ensure the methodical processes of the study were consistent, coherent, and reasonable, I measured for dependability. I documented all research procedures meticulously to ensure their replicability by me or future researchers. I collected data in appropriate settings and times using a sample of UT-PACT students who truly represent the UT-PACT program with a mixture of male ($n=4$) and female ($n=8$) participants. Their average age was 24.4 years old. Furthermore, I conducted coding and quality checks several times during data collection and data analyses to confirm the agreement.

An authentic portrait of the voices of the UT-PACT students was credible—not only to the UT-PACT students as a whole, but also for readers of this study. I collected thick, rich data from the interviews by using the UT-PACT research participants' own words to describe their experiences. I created a table describing each participant for an at-a-glance look (Table 2.1). Furthermore, some questions allowed for each participant to corroborate each other's provided information. I linked these data points to the *a priori* theory of andragogy in how they relate to how adults learn.

Ethical Considerations

Before any study can be conducted, one must contact their university's IRB to secure necessary approvals. IRB approval from the university that I attended was not necessary, because the results of this study are not generalizable to a larger population.

The sole focus of this study was on the UT-PACT students; therefore, I was cleared to begin my study.

The biggest ethical considerations that I addressed were the comfort and anonymity of my participants. Because participants are busy practicing physicians, I was mindful of the time I was taking away from their families, themselves, but more importantly, the time I was taking them away from patients under their care. I established a safe virtual environment in which to conduct the interviews and allowed the research participants to withdraw at any time for any reason.

Furthermore, the IRB from all participating institutions approved the study protocols before I initiated contact with the two cohorts of the UT-PACT program. I made consent forms available to each participant, who read and signed the same. I emailed a copy of this consent form, signed by the participant and by me, to the participant. A copy of each remains on a thumb drive for my records.

To further promote anonymity, I assigned each participant a numeric code. Participants were also aware that they could drop out of the study at any time for whatever reason, no questions asked, and that if they did decide to withdraw their participation, their standing in the UT-PACT program would not be affected in any way. All participants enthusiastically and happily consented to and completed the entire study. Not one participant left the study early.

Limitations and Delimitations

There can be many limitations and delimitations associated with conducting a qualitative case study. Some limitations were out of my control and therefore could not be avoided. Specifically related to case studies, limitations included the fact that I could

not make causal references, as those relationships can only be established in quantitative studies (Creswell & Miller, 2010). The reason for this is that qualitative researchers cannot and should not rule out alternative explanations.

Another limitation was that statistical generalizability to traditional medical programs was not possible for this study. I used a purposive criterion sample of the UT-PACT students rather than a random sample of traditional medical school students; therefore, the results cannot be statistically generalized to larger populations of traditional medical school students. Nevertheless, a case study concerns itself with a particular group, and in this case, the theoretical generalizability was specific to students in accelerated programs. Statistically generalizing the results of this study to another group not under study, such as to traditional medical school programs, is not typically what a qualitative researcher is trying to achieve.

Unlike limitations, I had control over the delimitations. The first delimitation was the choice of the problem under investigation. By choosing this problem, I implied that I rejected other similar problems. As previously noted in the limitations, while a case study research design is not intended to make claims of statistical generalizability as defined by a positivist paradigm, this study provides in-depth explanations and meanings of the results as compared to other accelerated baccalaureate/MD programs of the same size and nature in the state of Texas. By applying this interpretivist paradigm as a delimitation of this study, theoretical generalizability and trustworthiness (Lincoln and Guba, 1985) have been established. Similar to the interpretivist theoretical generalizability and trustworthiness, my own philosophical framework also delimited this study. From an

ontological lens, my view of reality is that medical school is too long and too costly. Epistemology drove the methods that I used to derive, collect, and analyze the data.

Assumptions

There is a need to identify the assumptions underlying any investigation; without assumptions, research would be irrelevant (Leedy & Ormrod, 2010). In this study, there were several assumptions that I addressed. The first assumption was that the length and cost of medical education is a problem. As the researcher, I assumed that the participants were answering the interview questions honestly and that they truly represented the view of UT-PACT participants. The philosophical framework of andragogy also created limits to this study. I addressed the justification that each one of these assumptions is probably true in the research protocol.

Conclusion

The purpose of this qualitative descriptive case study was to describe the perceived impact of the UT-PACT program in terms of the program's fidelity, cost-effectiveness, and time conservation, according to the students who underwent the program. To address the purpose of the study, I conducted a qualitative descriptive case study. I collected data from medical school graduates under the UT-PACT program using virtual Zoom interviews and written responses. I analyzed the collected data using pattern matching. In Chapter Three of this study, I present the findings from the data collection process, including a detailed report of the data that I collected during the virtual Zoom interviews and written responses.

CHAPTER THREE

Results and Implications

Introduction

Patients' expectations for their doctors are becoming increasingly high; however, the delivery of medical education has not dramatically changed in recent years to meet this growing demand (Kolachalama & Garg, 2018). Researchers have purported the modernization of curricula for medical schools and residency programs must occur to meet the changing health care demands and the new disrupting forces currently in place to shape the industry (Bai, 2020). Despite efforts made by the leaders of U.S. medical schools, there has been little deviation from the reforms made over one century ago through the Flexner report (Bai, 2020; Schwartz et al., 2018). More significant change is needed to meet the current demands and status of the medical field in the United States (Schwartz et al., 2018).

Education institutions developed the UT-PACT program within the University of Texas System to address the need for a more appropriate curriculum or track for medical students. The proponents of the UT-PACT program established this program to address the issues of the costly, lengthy training of physicians to meet the needs of their patients. The goal of UT-PACT was three-fold: (a) to reduce the redundancy in the curriculum by eliminating one year of undergraduate education, (b) to provide students with scholarships to lessen the financial burden of becoming a physician, and (c) to teach them to become empathetic, independent, servant leader professionals (University of Texas, 2015).

The purpose of this qualitative descriptive case study was to describe the perceived impact of the UT-PACT program in terms of the program's fidelity, cost-effectiveness, and time conservation according to the students who underwent the program. Rethinking the nature and structure of physician education is a critical step in addressing the nation's healthcare needs for the coming decades (Kolachalama & Garg, 2018). The UT-PACT program is an innovative program aiming to develop a dynamic educational system, both undergraduate and medical, that can adapt to the ever-changing modern world. The overarching goal of the UT-PACT initiative is to increase the effectiveness and relevance of physician education while shortening its duration, thereby reducing its cost and producing more humanistic physicians.

The problem of focus for this study was determining the general effectiveness of one combined baccalaureate-MD program. The research questions addressed by this research study were as follows:

RQ1: What perceived impact does the UT-PACT program have on the UT-PACT students' comprehensive preparation to become physicians?

RQ2: What perceived impact does the UT-PACT's cost-effectiveness have on UT-PACT students' perception of their overall preparedness to become physicians?

RQ3: What impact does the UT-PACT's time conservation have on the UT-PACT students' perception of their overall preparedness to become physicians?

Chapter Three provides an overview of the results from the data collected. Demographic information of the sample is provided first, followed by a review of the analysis approach. The results of the thematic cross-case analysis are then presented including examining the differences between Cohort One and Cohort Two. A final discussion of the overall findings and implications of this study concludes this chapter.

Data Collection and Analysis Processes

The total sample population included 12 participants who were members of Cohorts One and Two of the UT-PACT program. The first cohort was composed of five individuals: three females and two males. The second cohort was composed of seven individuals: five females and two males. This is representative of the male to female ratio of all seven cohorts of the UT-PACT program. Each UT-PACT participant provided their written informed consent to participate in the study and was aware that they could withdraw from the interview at any time without any negative consequences or repercussions.

I recorded and transcribed each interview. Next, I uploaded all interview transcripts to NVivo 12 Pro for organization and analysis. I organized the data by participant and gave each participant a pseudonym. There were 12 interviews in total, eight semi-structured interviews and four structured interviews. Due to time constraints, four participants answered my interview questions on paper rather than through a Zoom meeting. The average number of pages for a transcript was 10.6 pages. Table 3.1 displays characteristics of the interviews.

I transcribed the interviews and imported the documents into the NVivo 12 Pro software for analysis. Although, I planned to conduct within-case analysis of the two cohorts during the analysis process, after reading through all of the participant transcripts and performing early stages of cross-case thematic analysis of the transcripts, I realized there were few distinctions between the two cases. Therefore, I utilized cross case thematic analysis to identify relationships and potential themes across all 12 participants related to the perceived impact of the UT-PACT program in terms of the program's fidelity, cost-effectiveness, and time conservation according to the students who

completed the program. After exploring the common themes across all 12 participants, I did explore the slight variations that existed between the two cohorts of students. In the results section, I present data related to the four themes that emerged through cross-case thematic analysis as well as articulate how these themes were experienced by each cohort of students.

Table 3.1

Interview Transcript Characteristics

Participant	Cohort	Number of Pages	Type of Interview
Participant 1	Two	11	Semi-Structured
Participant 2	Two	3	Structured
Participant 3	Two	10	Semi-Structured
Participant 4	Two	6	Semi-structured
Participant 5	Two	4	Structured
Participant 6	Two	3	Structured
Participant 7	Two	3	Structured
Participant 8	One	14	Semi-structured
Participant 9	One	15	Semi-structured
Participant 10	One	18	Semi-structured
Participant 11	One	25	Semi-structured
Participant 12	One	15	Semi-structured

I applied Braun and Clarke's (2006) six-step framework for thematic analysis. First, I read the transcripts thoroughly to gain familiarity with the data collected. While reading through the transcripts, I generated initial codes and labeled the relevant data with these codes. Next, I searched for emerging themes that arose from these initial codes and then reviewed the emerging themes and refined them after considering all the codes.

Cross Case Thematic Analysis

Four themes arose from this iterative, qualitative analysis: (a) physician preparedness, (b) traditional program comparison, (c) cost-effectiveness, and (d) program duration. Each theme encompassed several subthemes that I present and discuss in detail in the following section (see Figure 3.2). I start off with a general explanation of each theme. I then describe how this theme was experienced by participants in Cohort One and Cohort Two. Each thematic description ends with a summary that describes how the themes connect to the theoretical framework and research literature. In addition, I provide a visual representation of the theme and subthemes.

Cross Case Themes			
Physician Preparedness	Traditional Program Comparison	Cost Effectiveness	Program Duration
<ul style="list-style-type: none">• Readiness• Benefits of the program	<ul style="list-style-type: none">• More prepared• No more prepared	<ul style="list-style-type: none">• Impact on debt• Financial implications	<ul style="list-style-type: none">• Scheduling appropriateness• Education duration

Figure 3.2. Cross case themes.

Physician Preparedness

The first theme, physician preparedness, was composed of two subthemes: readiness and benefits of the program. This first theme relates to participants' descriptions of how the program made them ready for their careers as physicians. Participants also described the program's benefits and measures they believe can be taken to sustain these benefits. This theme was composed of two subthemes: readiness and benefits of the program (see Figure 2.3). Tied to the theory of andragogy, these concepts

provide the framework for this study because of its focus on adult learner traits (Knowles, 1984). These subthemes include the reports from participants about the regulations of medical health records and how well they believed the staff followed these guidelines. I will provide examples of quotes that motivated these subthemes in the following sections.

Theme 1: Physician Preparedness	
Readiness	Benefits of Program
<ul style="list-style-type: none"> • Quality undergraduate and medical education • Conditional acceptance lessened stress • Professional identity formation • Relationship building 	<ul style="list-style-type: none"> • Early clinical exposure • Patient interview skills • Physician/faculty mentorship • Interpersonal skills • Focused curriculum • Debt-free entrance to medical school

Figure 3.3. Theme 1: Readiness and benefits of program, subthemes.

Readiness. Most participants ($n=9$) shared how they felt the UT-PACT program adequately prepared students to become physicians. Two participants in Cohort One shared that they felt ready to become physicians after participating in the UT-PACT program. For example, Participant 10 shared,

Just reflecting on the PACT program, I feel like it was one of the biggest blessings that I've had in my entire education. Being able to have that early clinical exposure, the scholarship as an undergraduate student and then getting to go to such a fantastic medical school, I feel like it has set me up to be the type of doctor that I want to be.

Here, Participant 10 purports the intimate nature of the UT-PACT program in

terms of faculty mentorship and early clinical exposure. One of the tenets of the UT-PACT program was to offer a more personalized, tailored pathway to becoming a physician which included mentorship from faculty from both the undergraduate institution as well as the medical school. Furthermore, each summer the PACT students were paired with a UTSW faculty member where they rotated through the various UT Southwestern Hospitals. This early exposure provided the students with first-hand experiences of the art and science of patient care. They witnessed medicine from the perspective of both the physician and the patient while witnessing how the medical team works synchronously to better serve the patient.

Similarly, Participant 11 also reported,

Yes, in that it provided a framework for me to consider dilemmas and issues under the schema of professionalism for my career. It also provided me earlier exposure to specialties and prevented early burnout by facilitating an easier pre-medical experience than the traditional route.

Participant 11 mentions the importance of seeing all the different facets of patient care by being exposed to various medical specialties and subspecialties and the role of various medical personnel. Once a medical school student graduates from medical school, their medical journey does not end. They are then accepted into a residency program for further, more specialized training. By exposing the students early on to different specialties, they are better equipped to choose such a specialty that aligns better with their clinical aspirations, lifestyle, and goals.

The participants in Cohort Two also shared their opinions on how prepared they were to become physicians. Participant 4 further commented on the specific ways that the program helped them with work:

I would say yes, my time as part of UT-PACT did help me get to where I am today. This program facilitated making connections at UTSW early on, helped hone my interests in medicine/pediatrics through many summer clinical opportunities, and provided me with some lifelong friends along the way.

Participant 4's comments highlight the importance of early exposure through summer clinicals which facilitated the PACT students' decision on which specialty to pursue. It was during this time that Participant 4 knew they wanted to secure a pediatrics residency and ultimately did. In the program, we also emphasized the importance of relationships whether that is doctor/nurse, doctor/patient, doctor/doctor to name a few. Strong relationships instill trust and confidence, both of which are important to any professional endeavor.

Participant 5 similarly stated, "Yes, the UT-PACT program was extremely helpful. Knowing that I was going to UT Southwestern saved me the stress of applying to medical school, and I was able to focus my time in getting acquainted with UTSW faculty instead." Applying to a high-stakes program such as medical school is very stressful. Once accepted into the UT-PACT program, the students gain provisional acceptance into UT Southwestern Medical School, allowing them to dedicate their time to other undertakings such as extracurricular activities, music, sports, and more. Lastly, Participant 6 identified numerous ways in which the UT-PACT program helped them:

The UT-PACT program has been helpful to me on my path to becoming a physician because it enabled me to develop better time-management, academic, and clinical skills. The focused, challenging curriculum, excellent mentorship, and hard-working classmates who were keen on becoming physicians helped me stay motivated to become a physician.

Due to the accelerated nature of the UT-PACT program, students needed to exercise excellent time management skills to maintain the overall 3.5 grade point average imposed on them through the program. Participant 6 indicates how the comradery of their cohort

helped motivate fellow students to stay focused and stay to course to finish strong. Once again, this participant alludes to the importance of relationship building through both faculty mentorship and peer-to-peer mentorship.

Despite the largely positive reports of the program helping prepare the participants, one participant from Cohort Two noted a negative of the program. Participant 3 reported the following: “No, because, in general, the relationships I formed through the program were limited, and I inadvertently became more complacent with socializing because UT Dallas was relatively narrow as far as diversity of student population.” The student population of UT Dallas is primarily comprised of Asian students and the cohorts of the UT-PACT program mirrored this. The PACT students were in many classes together due to the scope and nature of the classes and curriculum. This view is consistent with current research that discusses the modernizing of medical literature (Bai, 2020; Kolachalama & Garg, 2018). Many authors report push back for the modernization of medical education, and firmly believe in the more formal, arduous disciplined experience for medical students. However, these reports are largely inconsistent with the overall finding of this study and emerging literature that highlights the need to reconceptualize medical education to meet the current standards and practices of the medical field.

Benefits of the program. Most participants ($n = 9$) indicated that there were several benefits of participating in the UT-PACT Program. In Cohort One, Participant 10 mentioned that several activities helped their development as an aspiring physician. This participant stated the following:

I think also beginning to learn how to do patient interviews. That’s the stuff that is the bread and butter of being a med student and the bread and the butter of being a

doctor and that fact that we were able to do that as undergrads it just was, like I said, it just fills your cup. It's like what you want to do with your life. And so the fact that we were able to get to learn that stuff I feel like was really great.

Because the UT-PACT program emphasized the art of medicine as well as the science of medicine, we provided students with training in soft skills such as patient interviewing skills, what questions to ask and when to ask them, how to gain the trust of the patient, interpersonal communication, active listening, and the like.

Participant 11 also identified this early exposure as beneficial, “Yeah, I think the clinical exposure through undergrad. I just remember thinking that had I been an undergrad student trying to get that same exposure, it would have been super difficult.” Gaining clinical experience to apply to medical school can be challenging for an undergraduate student due to privacy laws and lack of experience. By being a member of UT-PACT, the students did not have to secure those activities on their own. They were provided for them in as part of the program. Participant 12 also reported, “the financial stuff, definitely honed in on the softer skills like you said, and made us good people, personable people.” Not having to worry about the financial implication of training to become a physician was a huge attraction for students to the UT-PACT program. The PACT scholarship paid for their entire undergraduate education allowing them to save for the medical school component of their educational journey to becoming a physician. This also opened their eyes to how expensive it is to become a physician.

In regards to Cohort Two, Participant 6 shared a few benefits: “There were three main areas that I really benefitted from through this program: a focused curriculum, the mentorship that I had from UTD and UTSW faculty, and the community that I had with my fellow UT-PACT students.” This participant's views directly tie into the theory of

andragogy. Knowles (1973) asserts that learners join a larger community as they continue their education in adulthood. Furthermore, this is consistent with the findings of this study as the importance of community within UT-PACT became prevalent across the identified themes. The sense of community with Cohort Two was also expressed by Participant 4. This participant noted the following:

I appreciated having a small Cohort to bond with, as some of the students I met through PACT in the first week of UTD are still some of my best friends and a much-needed support system now through medical school and beyond.

Many PACT students lived together as roommates because they knew each other well and helped each other study. They were each other's support system. In addition to the list of benefits that the UT-PACT program afforded UT-PACT students, participants also shared their beliefs about measures taken to sustain these benefits. For example,

Participant 1 commented,

Guaranteed UTSW acceptance was a huge deal to me. I had my eyes set on UTSW since 11th grade and it saved me a lot of stress from applying to med school. Developing relationships with UTSW faculty with regards to research/shadowing during undergrad was the biggest benefit.

Not surprisingly, the most attractive feature of the UT-PACT program was the provisional acceptance into UT Southwestern Medical School as a college freshman. Not having to worry about getting into medical school allowed them more time to explore other interests and develop strong relationships with their mentors and faculty members from the partnering institutions.

Participant 2 revealed,

Benefits of the UT-PACT program centered on alleviating financial burden, saving time in length of education, and having insured admission to medical school. These benefits allowed for the exploration of other areas of interest that we might not have been able to have under traditional pre-med curriculum.

This participant listed exactly the goals of the UT-PACT program. Again, not having to spend time, money, and energy to apply to medical school, lessened a great deal of stress for the PACT students allowing them to focus on what really mattered to them.

Similarly, Participant 3 reported that duration should be maintained: “Continue with keeping it less than eight years and maintaining a relatively loose expectation of professionalism for undergraduates.” Interestingly, this participant felt the PACT program had “loose” expectations on professionalism when most of our attrition was due to unprofessional acts rather than grade requirements. For example, one student from Cohort Two was dismissed because of stealing deodorant from a university store which was stunt imposed on the student to become a member of a fraternity. Participant 5 highlighted the importance of staff support, “seven-year program, great mentors (Dr. Scotch, Cristina González, Dr. Duncan), summer classes at UTSW. Definitely select people who care about students and their well-being to run the program! UT-PACT did a great job with that!” The UT-PACT program truly gave its participants a sense of family. With cohort sizes of just 20 students, these PACT participants had very much personalized attention to aid them not just academically but also socially. We had an annual holiday party and other activities such as my faculty-led Medical Spanish and Immersion Program to Spain to engage the students as a unit. Similarly, Participant 7 shared, “Making sure that physicians at UTSW still have interest in working with college students while also sustaining the registration independence that UTD afforded the program.” The UT-PACT program was truly a collaborative joint venture between UT Dallas and UT Southwestern Medical School. The faculty leadership from both institutions spent a great deal of time with the students from all seven cohorts throughout

their seven-year trajectory in the program. Due to the accelerated nature of the UT-PACT program, several undergraduate curricular changes were made such as specialty readings courses, a one semester organic chemistry class (as opposed to the traditional two semester organic chemistry sequence), including medical/health topics in core curriculum classes such as government, and the like. These participants raised several benefits of the UT-PACT program and proposed multiple methods that the program can include to maintain these benefits. The culmination of these subthemes highlights the importance of individualized educational experiences and how the UT-PACT program helped maintain students' motivation. This theme is relevant to the theory of andragogy that denotes adult learners are better students when the education reinforces their self-determination and person-centered learning (Knowles, 1984).

Summary of physician preparedness theme. In summary, the participants frequently referenced physician preparedness. This theme addressed the first research question by demonstrating the UT-PACT program's perceived impact on students' comprehensive preparation to become physicians. This theme was composed of participant testimony of the program's effectiveness in preparing them to become physicians. Participants in both Cohorts One and Two expressed opinions that contributed to this theme of preparedness. Participants also shared the benefits they gained from the program and suggested methods to sustain these benefits for future generations, further corroborating the need for medical education reform. Current research supports this theme as well as the need to better prepare physicians throughout medical education. For example, Kolachalama and Garg (2018) noted that medical education curriculum has remained unchanged over several decades, despite major

changes in patient expectations and the demands of medical practice. Similar reports noted that while medical school is arduous and involves many years of training, physicians should learn the most recent practices pertinent to being an effective physician (Khan et al., 2017; Wesley et al., 2018). This is consistent with the identified theme of the novel UT-PACT program that helped to better prepare seven cohorts of students to serve as physicians in today's changing medical environment.

Traditional Program Comparison

The second theme was traditional program comparison, which was composed of participants detailing the success of the UT-PACT program over a traditional medical school program. This theme included participant reports of whether they believed the UT-PACT program was better than a traditional program. Participants shared whether they thought the program prepared them to be physicians. Two subthemes emerged here as well: more prepared and no more prepared than their regular routed medical school counterparts (see Figure 3.4). I provide examples of quotes that describe this theme in the following section.

More prepared. Most participants ($n=10$) from both Cohorts shared their opinions about the program's effectiveness compared to a traditional program. In regards in Cohort One, Participant 9 believed that the UT-PACT program was effective in preparing them to become a doctor. This participant shared the following:

I think it definitely was an effective program in my path to becoming a doctor...I think because of that ability to have those experiences outside of medicine, I think that really added to my medical education later. Having that aspect of the humanity side of things, being able to do a lot of stuff with music, and all the extracurricular organizations that I was a part of, it really played into my wellness later on in medical school, because I was able to keep in touch with those activities and still have that outlet.

Theme 2: Traditional Program Comparison	
More Prepared	No More Prepared
UT-PACT Students may possess: <ul style="list-style-type: none"> • Time for personal growth • No medical school application • Less stress/medical school uncertainty • Focused medical activities • Mentorship from faculty at both institutions 	Regular Routed Students may possess: <ul style="list-style-type: none"> • More varied healthcare experiences: Scribes or EMT • More tenacity by going through medical school application process

Figure 3.4. Theme 2: More prepared and no more prepared, subthemes.

Participant 9 mentioned the freedom the UT-PACT program afforded its students to explore other interests and the impact this had on mental stability and overall health. Similarly, Participant 12 compared the UT-PACT program to a traditional program, saying they would have completed it, “I probably would have, I just would have been so much more tired.” Both participants shared that while the UT-PACT program is accelerated in nature, not having to prepare an application to medical schools, travel to interviews, and the like, freed up time for them to peruse other avenues which allowed them to further develop as well-rounded individuals who have likes and interests outside of medicine. Applying to medical school is an all-consuming process where many aspiring applicants get lost in just doing what looks good to medical school admissions committees. Ironically, medical school admissions committees like to see that applicants

do have other interests outside of medicine. Often, it is these outside interests that help applicants get accepted into medical school and physicians relate better to their patients.

Nine of the participants from both Cohorts believed that UT-PACT was better than a traditional program. Specifically, to Cohort Two, Participant 2 mentioned, “I do believe it has been more effective in preparing me to become a doctor because it allowed me opportunities that I would never have received as a traditional pre-medical student.”

This participant went on to list the specific program elements that they appreciated:

“Such opportunities include rounding with second year medical students during clerkships, experiencing TBL’s during undergrad and taking classes geared towards medical school such as professional communication.” Similarly, Participant 3 reported:

The program helped provide me with an opportunity to frame my undergraduate education under a medical-minded framework, saved me from significant stressors and burnout triggers that take place in undergrad, and allowed me more time to explore my own hobbies without the need for building extracurriculars.

Participant 5 voiced strong approval of the staff that helped make the program a success:

“YES! The mentors, ability to connect with UTSW faculty and research, and the mental peace of mind are all invaluable.” Participant 6 also noted,

Through the rigorous coursework and relevant classes to medicine as well as the constant guidance and mentorship I received throughout, I think the UT-PACT program prepared me for the medical school curriculum and becoming a physician more effectively than the traditional process would have.

Therefore, all the above-mentioned participants valued their time in the UT-PACT program and felt it was more effective than a traditional program. While some may have valued one aspect over another, by being selected to participate in the UT-PACT, these participants felt they were better physicians for having trained in this unique educational experience.

No more prepared. In contrast, only three participants believed they were no more prepared for becoming physicians than their peers who completed traditional programs. This finding is consistent with some authors, such as Bai (2020) and Kolachalama and Garg (2018), who prefer a more traditional program. For example, Participant 1 reported,

I don't think I'm more prepared than my peers, especially since others had experience with scribing, EMT etc. that I didn't have. The summer experiences were really fun, but I don't think it gave me extra confidence in clinical skills, and I'm not different from the average med student. Others had to work extra hard to be competitive applicants to get into UTSW. I did, however, have a leg up when it comes to research experiences and building connections with faculty, which I wouldn't have had as a traditional applicant.

Participant 1 is alluding to the downside of such accelerated programs in the fact that many things are preprogrammed for the participants, placing the onus on the program rather than the student. The tenacity, grit, and stick-to-it-ness traditionally routed medical students must possess to make themselves desirable to medical school admissions committee is both formidable and admirable.

Similarly, Participant 4 said,

I do not see myself as having a significant advantage over any other person in my medical school class solely because I was in PACT. I think we all earned our spots here at UTSW and I continued to learn and grow with everyone in my class.

Here, Participant 4 is referring to the fact that once in medical school, UT-PACT students were equal to normally admitted students. The innovations of the UT-PACT program occurred at the undergraduate level. Therefore, there were no distinctions between PACT students and regular medical school students. This was by design in that we did not want the PACT students to feel singled out once they were in medical school. Participant 3

believed that some peers in the UT-PACT program were maybe different from traditional programs because of their parents. This participant shared,

My cohort definitely affected my cumulative view of the world of medicine. Unfortunately, the majority of my class and beyond were evidently not interested in the practice or art of medicine, but rather forced by their parents to do something they were not necessarily prepared for.

Stereotypically, and very reflective of the student population at UT Dallas, most of the UT-PACT students are children of Indian physicians. Their destiny to become a physician has long been inculcated into some of our PACT students. Simply put, it was expected of them by their parents to become physicians and no other occupation would have been acceptable by their parents. Despite these three participants raising some beliefs that the UT-PACT program was not more effective than a traditional program, the overwhelming feeling from most participants was that they were more prepared for a career in medicine because of their involvement in the UT-PACT program. Bai (2020) and Kolachalama and Garg (2018) reported a clear need to revise and update medical school literature that focuses on helping doctors connect with their patients better. These modernized views of medical student behavior illustrate the changes found in emerging expectations of patients. Current authors report that patients seek more friendly, personable doctors that employ a more humanistic approach to medicine (Bai, 2020; Kolachalama & Garg, 2018). The participants of this study noted that the UT-PACT program's altered structure can help create physicians that have a person-centered approach to their practice.

Summary of comparison of traditional programs theme. In summary, the traditional program comparison theme included information about participants' specific

opinions regarding the UT-PACT program compared to a traditional program. This theme addressed the first research question by exposing the UT-PACT program's perceived impact on the UT-PACT students' comprehensive preparation to become physicians. Current research emphasizes how the modernization of medical school curriculum can influence physicians' preparedness (Bai, 2020; Kolachalama & Garg, 2018). This is noted in the current study, as participants in Cohort One were generally in agreement that the program was effective in preparing them to become physicians. In contrast, participants in Cohort Two had more mixed opinions. Some felt better prepared, while others felt a traditional program would have prepared them as effectively. Again, it is important to emphasize that no new programming was done for these PACT students while in medical school. Their curriculum was the same as their traditionally routed medical school counterparts.

Expectations of doctors have changed dramatically, and traditional programs are time-intensive and costly (Bai, 2020; Kolachalama & Garg, 2018; Youngclaus, 2017). Likewise, emerging reports indicate that medical programs need to shift the traditional paradigm to reflect the modern workplace by providing a reasonable time commitment (Bai et al., 2020). Furthermore, reducing the length of medical training will also help reduce the associated costs, both noted as concerns for medical students. This theme highlighted the stark differences between the current medical program structure and UT-PACT, which can pave the way for innovating the medical education system.

Cost-Effectiveness

The third theme, cost-effectiveness, highlighted participants' reports of the financial impact of the UT-PACT program. This theme was composed of two subthemes:

the impact of the program on debt and financial implications of the program (see Figure 2.5). These subthemes developed from participants' rich and varied responses to the questions regarding the program's financial impact. It is well known that traditional medical education programs are expensive and as a result, are often inaccessible to many prospective students (Khan et al., 2017; Wesley et al., 2018). These subthemes include the varied beliefs that participants have regarding how the UT-PACT program influenced their educational finances. I provide examples of these subthemes through quotes that motivated these subthemes in the following sections.

Theme 3: Cost Effectiveness	
Impact on Debt	Financial Implications
<ul style="list-style-type: none"> • Undergraduate scholarship • More time to focus on studies • Entering medical school debt-free • Financial freedom 	<ul style="list-style-type: none"> • Time to save for medical school • Less financial stress on self and family • Time to earn money by working in labs or as TAs

Figure 3.5. Theme 3: Impact on debt and financial implications, subthemes.

Impact of program on debt. Most participants ($n=11$) provided descriptions of the impact of the UT-PACT program on their level of debt. For example, Cohort Two member, Participant 1 detailed how scholarships helped limit their debt. This participant shared,

Since I had the National Merit Scholarship (as did ten students in my cohort), the financial impact was not different than if I had gone to UT Dallas without the

PACT program...it feels great going into med school with no debt accumulated from undergrad.

Participant 1 showcased the intellectual prowess of the UT-PACT students stating that National Merit students receive a scholarship regardless; therefore, it is no doing of the UT-PACT program that their undergraduate education was financed. Notwithstanding of cohort, all participants were grateful to the financial freedom they received based on their academic merit.

Participant 4 of Cohort Two described a similar situation: “I personally received a full-ride for my undergraduate education at UT Dallas through National Merit. I also am a St. David’s Neal Kocurek Scholar, through which I receive \$7,500 per year through medical school as well.” Participant 5 also voiced their appreciation for this type of scholarship, stating, “Because I was a National Merit Scholar, I received free tuition from UTD and even a housing stipend.” National Merit participants of the UT-PACT program did not require the UT-PACT program financial support because they were offered more funding because of their National Merit status and other outside scholarships they had secured. In essence they were being paid to be a student. These students quite possibly made a profit by attending UTD and UTSW which are both state or public intuitions. Because of the level of intellect these students possessed, many had additional merit based outside funding.

Financial implications of the program. Most participants from both cohorts ($n=11$) described what the financial implications of participating in the UT-PACT program were. Some participants from Cohort One noted the importance of saving money in undergraduate school so that medical school cost was less daunting. For

example, Participant 10 said, “I just am so grateful for the position I’m in.... Because I had the UTD scholarship, my parents were able to put the money that I had that they saved for me for college towards medical school.” As standard with the PACT scholarship, the students also received a stipend. Many students set aside part or all of that stipend to help fund medical school expenses knowing the scarcity of free money available for professional school candidates.

Participant 11 further commented,

It was really good, just because undergrad is paid for which is super key... So I think it’s been really helpful, because I know a lot of people who take out loans for undergrad, then they have medical school debt on top of that, then that’s sort of, that’s impossible.

It is important to note that participant 11 also shared that some fellow medical school classmates deliberately chose a higher paying specialty rather than a field that excites them as a strategic, swifter way to pay off their educational loan debt.

Participant 10 also reported,

The UT-PACT program gave me the opportunity to graduate from undergraduate school debt free. Although I am currently paying for medical school/ living expenses fully through loans, I would have incurred double the debt than I currently have if not for the PACT program.

Out of the 12 participants of this study, only two had outstanding loans as depicted in Table 2.1. Participant 9 also shared this sentiment: “Basically, the financial award process we had allowed us to focus on all the information that we’re plugging in is accurate and you know to do the best of our capability.” Alleviating the financial burden to become a physician was another goal of the UT-PACT program.

Some participants described being able to participate in other valuable activities because they did not have to work to pay for school. For example, Participant 10 from Cohort One, said,

The peace of mind and just like this freedom to be able to focus on other activities and volunteering and just be like a whole person. I was able to play volleyball and just physical wellness, which was a huge factor for me. I feel like that is very freeing to realize because it's very stressful. Applying to med school and the fact that so many people don't get in or have to apply multiple times, the fact that I was able to check boxes and of course I tried to put the effort into those boxes in undergrad. However, the fact that I was able to do other things was really great for my mental well-being in college.

Participant 10 was able to play collegiate volleyball and was recognized as a scholar athlete. Had Participant 10 been a traditional medical student, playing volleyball would have most likely taken place in the recreational leagues rather than a competitive one because of all the other activities that must be done to get into medical school.

Furthermore, Participant 9 also noted the ability to participate in other activities was a result of the UT-PACT program funding. This participant said,

Yeah. I mean, I think that pretty much it for the most part. I guess, other things like doing summer internships or research and things like that and if you're going to a program that's out of the city or out of the state, expenses would be incurred from that part of things. But that wasn't really required for us, just the extra cost of staying in Dallas for the summer sessions, which really wasn't that bad at all.

It is important to note to graduate UT Dallas in the prescribed three years, PACT students were required to do summer clinicals which were classes which were part of their degree plan and therefore all part of the PACT scholarship. Some participants were unsure if there was an impact of saving money with the program on their medical pursuits. For example, Participant 1 said, "I am not sure that money I saved by the program has influenced my preparedness to be a doctor, as I feel that is more determined by school curriculum, clinical experiences, etc." Participant 3 similarly did not perceive an impact: "No significant impact was had other than costing me a bit more money than my alternative college offer." Both Participants 1 and 3 would have gone to medical school with or without financial incentives from the PACT program or any other means.

In contrast, several participants reported a significant influence of saving money with the UT-PACT program on their future pursuits. For instance, Participant 8 stated, “Because the UT-PACT program covered tuition and included a \$3,000 stipend per semester, I was able to focus on my coursework and extracurricular activities rather than being forced to find a job to cover my expenses.” Therefore, the financial help provided by the UT-PACT program lessened some stress and generally allowed PACT students to focus their attention on other things. The cost of medical school is substantial as new doctors are recruited (Youngclaus, 2017). For this reason, the cost of medical education is likely a source of stress for many medical students and prospective students of medical programs. The expense of medical school is likely to be the reason for the lack of diversity in medical school classes which does not reflect the total diversity of the U.S. population.

Other participants believed UT-PACT participation influenced their futures by reducing their stress levels. Similarly, Participant 2 of Cohort Two noted, “I think worrying about financial burden significantly impacts stress/focus levels when preparing for any sort of academic requirement necessary in the medical path. I think reducing that burden has significantly improved my preparedness to becoming a doctor.” Participant 5 also reported, “Definitely allowed for less stress so that I could focus on my academics much more.” In addition, Participant 7 mentioned, “It significantly increased my preparedness to become a doctor because that was one less aspect of life that I had to worry about or significantly plan for.” Overall, these participants were grateful for their time in the UT-PACT program and the financial opportunities.

Summary of cost effectiveness theme. This theme frequently referenced addressed the second research question regarding students' perceptions about cost effectiveness. This question was answered by demonstrating the perceived impact of UT-PACT's cost-effectiveness on students' perception of their overall preparedness to become physicians. This theme was composed of several examples of how the UT-PACT program financially impacted participants. Participants shared how the program alleviated the burden that can often come with a medical career and focused on extra-curricular activities and school activities. They also voiced appreciation for the program for its affordability. The cost of medical school is substantial, which is both a deterrent to prospective medical students and a cause of great distress of current and former medical students (Wesley et al., 2018; Youngclaus, 2017). Therefore, the affordability of the UT-PACT program was noted across the interviews as both a way to alleviate the stress of medical education and increase access to medical education. Participants in Cohort One were more positive about the cost-effectiveness of this program and how it provided them with opportunities to do other activities. Participants in Cohort Two had more mixed feelings. Due to the newness of the UT-PACT program, Cohort One was our weakest cohort in that their applicant pool was significantly smaller than that of any other cohort of the seven cohorts of PACT students. Therefore, Cohort One came in with less additional outside funding. Cohort One truly appreciated the financial assistance the UT-PACT program afforded them. There were more valedictorian, salutatorian, and National Merit scholars in Cohort Two, all of whom received additional monetary compensation for being a part of the group that corresponded to them.

Participants described how they felt UT-PACT impacted their level of debt. For instance, the cost of education is a major element of preparedness in the literature (Khan et al., 2017; Wesley et al., 2018). For this reason, many new physicians may prioritize their income following the completion of their degree, rather than patient care. Further, the cost of medical education leading to work in medicine is of major concern when considering pursuing a medical degree. Suppose there was a reduction in the costs associated with medical education. In that case, it is possible that more students, including those from more diverse backgrounds, would enroll in medical education programs, and new physicians would be less inclined to place their income above the needs of their patients. If there were more diversity in medical school students, they would more closely mirror the diversity represented in the United States.

Time Conservation and Scheduling Appropriateness

The fourth and final theme, time conservation, was composed of two subthemes: scheduling appropriateness and influence of the program on education duration. These subthemes conveyed information regarding how participants felt about the length of the program (see Figure 3.6). Participants also commented on whether they felt their classes (whether UT-PACT specific or normal classes) prepared them well enough for their positions as physicians. This theme represents participants' opinions regarding the effectiveness of the class schedules in preparing participants for their medical careers. While traditional programs are time-intensive (Wesley et al., 2018), participants of this study opined about the program's influence on their education duration. I provide examples of quotes that motivated this theme in the following section.

Theme 4: Program Duration	
Scheduling Appropriateness	Education Duration
<ul style="list-style-type: none"> • Speciality classes • Summer clinicals • No registration stress • Lockstep graduation process 	<ul style="list-style-type: none"> • Early entry to workforce • Less time, less debt • More time for family planning • Deciding where to live and work

Figure 2.6. Theme 4: Scheduling appropriateness and education duration, subthemes.

Scheduling appropriateness. Most participants from both cohorts ($n=10$) shared their opinions about the appropriateness of the class schedules in preparing them. The consensus from participants in Cohort One was that UT-PACT prepared them well for their future medicine careers. There were, however, conflicting views on the scheduling. For example, Cohort One Participant 12 shared,

I think the scheduling was great. Honestly, a lot of colleges are very frivolous, I think, when it comes to being in medicine, unless it's helping you develop that grit or not take things for granted. But a lot of the extra courses I would have taken, I don't think would've affected me as a physician.

While favorable to PACT's scheduling of courses in that PACT students received preferential early registration dates, Participant 12 is referring to some of our novel reading courses PACT students were obligated to take as not being essential for their professional development as a physician.

In contrast, Participant 9 reported,

I think the time conservation didn't really have a tremendous impact on my preparedness, but I think the rigor of undergraduate academics did have somewhat have an impact. I think at UT Dallas, going through all the courses... And maybe this was because I was doing this so much extra stuff and not really doing a lot

academically, science academically-oriented stuff, I felt like when I started off that school, it was a pretty steep learning curve, a big adjustment to go from being an undergrad and having a relaxed schedule to going to a medical school schedule and studying all the 24/7 kind of a thing. So, that adjustment was a little bit of a challenge, but I don't think the time constraint really played into the preparedness.

Participant 9 brought up the steep learning curve that is associated with the transition of high school to college to medical school. Had there been more time, digesting the amount of material needed to study in medical school may have been easier. Again, it is important to note that the time conservation component only occurred in the premedical phase of the UT-PACT program. Humorously, there is popular analogy about learning in medical school is like drinking from a fire hose. There is no way you can retain it all. The time conservation aspect of the UT-PACT program was the least of the attractive features of being a member of the UT-PACT program.

Participants in Cohort Two also shared that they felt UT-PACT prepared them well. Participant 2 succinctly said, "I think scheduling under the UT-PACT program was appropriate for me." Not having to think about what classes to take and in what order freed the students to be able think about other things. Participant 5 mentioned, "The UT-PACT program was definitely appropriate! A lot of the curriculum required as prerequisites in undergraduate isn't really used in medical school, so more time with the curriculum wouldn't have made a difference." Participant 3 took it a step further, claiming that an even shorter program would have worked. This participant noted, "I could have even gone with two years of undergraduate, given the fact that undergrad is almost entirely superfluous for medical education." Both Participants 5 and 3 noted that what is needed to satisfy the requirements for an undergraduate degree are not necessarily relevant to what is needed to do well in medical school. Many do not realize that an

undergraduate degree is not needed to be considered for medical school. However, most medical schools find it favorable for a potential medical school candidate to have earned a degree because it demonstrated that the student can start and successfully finish a program.

Other participants believed the program was appropriate and mentioned additional activities they completed that helped them. For example, Participant 1 stated,

I think PACT gave us everything we needed to be a good medical student. However, I do see some benefits in taking years off to do EMT, scribing, research years, and master's degrees as these students have better research output. They have additional skills, such as knowledge about statistical coding, that set them apart.

Once again, being well-rounded and well-grounded are important traits for any medical practitioner. While the PACT students may not have acquired such skills as being EMTs or Medical Scribes, the time conservation aspect of UT-PACT allowed them to explore other interests. Furthermore, their summer clinical classes provided them with comparable skills. Similarly, participant 4 reported,

I do not think added time was needed for me specifically, but I do think there were some organizational challenges for other students (mainly in terms of when to take certain classes) that may have been alleviated with added time in the curriculum.

The other students Participant 4 references are those non-PACT students (normal UTD students) who often left to fend for themselves to follow a degree plan with little or no counseling on when to take certain courses. Participant 6 also felt additional time would help in developing some areas, stating, "More time may have been beneficial to explore other subspecialties or pursue research, but for the core requirements and healthcare-related courses in our degree plan, I think the three years with clinical summers was appropriate." As in many accelerated programs, time is in short supply. The students had

full schedules with rigorous classes. They sacrificed time for the privilege of being a part of such an elite group as the UT-PACT program. The novelty of the UT-PACT program, specifically regarding the reduced length, appeared to be a prominent benefit of the program across the participants. The reduced length and associated benefits are consistent with the adult learner theory of andragogy that demonstrates how the readiness to learn and learner's experience help create a better learning environment (Knowles, 1984).

Influence of program on education duration. In addition to scheduling appropriateness, most participants ($n=11$) commented on the influence that participating in the UT-PACT program had on the duration of their schooling. Most participants in Cohort One felt that the duration of the program did not have a big impact on their decision to pursue medical school. For example, Participant 10 stated, "Yes and no. I think I would have tried to go to medical school regardless." Participant 11 also believed the program had little effect:

I think the time constraints weren't necessarily beneficial, but they weren't a hindrance either. It was just sort of what it was, I think. I think for me, my last year in PACT because I had some credit from TAMS I think. But my last year from PACT, I thought it was pretty chill for me. I remember doing research, I was just in the lab, and I was a TA or something, and then that was another credit. And then I just remember not actually going to class that much my senior year.

Both Participants 10 and 11 would have pursued a career in medicine regardless of being accepted into UT-PACT. In other words, time was not a factor for them. In contrast, Participant 12 from Cohort Two commented, "Oh, yeah, definitely. I think three years is more than enough, honestly. I feel like we could have even done it in two years. It's really just the maturity factor that comes into play there. But I think the course requirements are more than enough to do in two years." Because all PACT students are

extremely bright students, the extra course load was not as much an issue as their maturity level. After all, these are 17- or 18-year-olds who are certain they want to be doctors. Some may say they are too young to know what their true calling in life is at that age. Therefore, maturity was the topic of many planning meetings for the creation of the UT-PACT program and a concern for both institutions especially UTSW. The leadership of both UTD and UTSW vetted these students well in that most of our students successfully completed or will complete the program. We had relatively little attrition.

Most participants in Cohort Two reported that UT-PACT participation shortened their schooling length. Participant 3 similarly stated, “It shortened it, which is the best thing the UT-PACT program allotted me.” Placing practicing physician into the workforce quicker was the third tenet of the UT-PACT program. Modernization efforts in medical schools related to the length are likely to continue, especially if further research calls for more holistic schedules (Bai, 2020). The adjusted schedule can enhance the theory of andragogy that identifies how adult learners’ intrinsic motivation and readiness to learn create space for reduced schedules (Kolachalama & Garg, 2018; Knowles, 1984). I identified examples of the program duration theme across the interviews, for example, Participant 2 believed that the program influenced schooling duration compared to the alternative, traditional path. This participant mentioned,

The UT-PACT program definitely accelerated the duration of my education in my journey to becoming a doctor. Without being part of the program, it is very possible that I might have taken four years and an additional gap year before applying to medical school.

Because the educational trajectory for the PACT student was so prescriptive, they were not allowed to register for their own classes to ensure graduating in the three years.

Participant 4 also proposed how the shortened program influenced future decisions:

The UT-PACT program shortened the time it takes for me to earn an MD (combined undergraduate + medical school education) from eight years down to seven. This means I am able to graduate medical school at age 24, allowing me more time/options to decide where I want to go in my life. I am grateful that I could decide to finish residency before starting a family, if I so choose.

Participant 4 acknowledged how the accelerated pace of medical school aided in making decisions regarding family planning and where they wish to reside.

In contrast, other participants from Cohort Two were indifferent to the influence of this specific program feature. For example, Participant 1 shared, “It did not make a significant difference for me since I went to TAMS and would have saved a year regardless.” This particular participant did a combined high school and associates’ program. They already came into to the PACT program with a great deal of college credit. Overall, participants had an opinion on the value of a shortened program. Some appreciated the shorter length and believed it help them with other achievements. Others did not value the duration as an important program benefit. Current literature examined the value of a shortened program versus a traditional program (Bai, 2020; Kolachalama & Garg, 2018; Khan et al., 2017; Wesley et al., 2018). While emerging reports highlight the utility of adjusted program schedules, there are remnants of the notion that the standard training duration is necessary. However, the results of this study illustrated how the reduced length of the program alleviated some of the burden of medical training and helped produce more prepared physicians. Reducing the length of medical training programs will also help more doctors enter the field faster to be more readily available for patient care.

Summary of program duration theme. The time conservation theme offered participants’ opinions on the effect of the program duration on their careers. This theme

addressed the third research question by illuminating the UT-PACT's time conservation impact on the UT-PACT students' perception of their overall preparedness to become physicians. Participants shared whether they appreciated this program component or not and commented on the appropriateness of their class schedules. Participants in Cohorts One and Two shared various opinions about the influence of participation in the UT-PACT program on time conservation. Some believed the program saved them time, while others reported they would have attended a traditional program. While research is developing on the value of a shortened program (Khan et al., 2017; Wesley et al., 2018), the findings of this research uncover the unique benefits of reduced program lengths that align with the adult learner theory of andragogy. As defined in Knowles (1984), self-directed learning underscores how adults' readiness to learn and intrinsic motivation can enhance medical education. Adult learners are better able to meet the demands of medical programs when the demands are structured efficiently. Some authors argue it is time to increase access to medical education and work to condense course schedules to get doctors into the field faster (Bai et al., 2020). While this position remains debated in literature (Khan et al., 2017; Wesley et al., 2018), the results of this study further illustrate that adult learners can perform effectively in shortened educational models (Knowles, 1984). This is consistent with the theoretical framework of andragogy of this study that highlights the self-determination of adult learners who perform best when they can organize their education around their schedules. For this reason, I believe the modernization of medical education should embody the theory of andragogy to help more doctors enter the burdened medical field faster while also being better prepared to be physicians that cater to today's patients and their specific needs. I also believe that such

changes will result in an increase in the diversity of medical students and physicians, as the novel program structure will make room for the non-traditional medical school student.

Summary of Themes

The data from these interviews addressed three research questions. The analysis of these interviews revealed multiple themes that were related to these three research questions. The first theme, physician preparedness was composed of two subthemes: readiness and benefits of the program. Physician preparedness is a major concern in the literature (Dasgupta, 2020; Kolachalama & Garg, 2018; Rabii, 2019), and is closely tied with ideas of readiness to learn and intrinsic motivation found in the theory of andragogy which is the lens by which this study was conducted (Knowles, 1984). Participants described how prepared they felt to enter medical school or become physicians following their UT-PACT participation. Participants also identified several benefits of the UT-PACT program such as early exposure to the medical field and mentorship. Participants also voiced suggestions for how to maintain these benefits.

The second theme, traditional program comparison, exposed participants' opinions about the effectiveness of the UT-PACT program when compared to a traditional program. Most participants believed that the UT-PACT program was more effective than a traditional program. Some participants did not believe there was a difference between program types. Bai (2020) and Schwartz et al. (2018) provide arguments for the continued modernization of the medical school curriculum as patients' needs and expectations have continually evolved. The UT-PACT novel approach to medical training produced physicians that were better prepared to engage with today's

patients, while also reducing the stress associated with the cost and length of time devoted to training. The modernization of medical school curriculum should continue to unfold based on the high response rate of this theme, and emerging literature that consistently reports the need to innovate medical education.

The third theme, cost-effectiveness, was composed of two subthemes: impact of the program on debt and financial implications of the program. This third theme relates to participants' descriptions of how the UT-PACT program affected them financially. Participants were overwhelmingly grateful for the financial support during their undergraduate years which allowed them to enter medical school with less financial burden. Some participants believed that this financial support affected their career decisions, while others did not observe an influence of this program on their career trajectory. Khan et al. (2017), Youngclaus (2017), and Wesley et al. (2018) reveal how costly medical school truly can be, and, likely, the gratitude expressed could potentially influence these future doctors' practice. Relieving the costs associated with medical education can help doctors be more focused on the care of their patients, rather than the need to pay off their surmounting student debt. Part of UT-PACT's mission and focus is helping to recruit more humanistic doctors and providing them with affordable fees to help them enter life after school with less of a burdensome debt. The results of these students confirm that UT-PACT was successful in these efforts, and further illustrate the need for more affordable medical school options.

The fourth and final theme, time conservation, was composed of two subthemes: scheduling appropriateness and influence of the program on education duration. This theme covers participants' opinions about how appropriate the class schedules were for

preparing them for medical school and a career as a physician. Participants also reported their beliefs about the influence of a shorter program on their future endeavors. The status quo of medical programs is long and arduous (Khan et al., 2017; Wesley et al., 2018), which might hinder many prospective students from pursuing this path, especially underrepresented minority students. It is likely that by reducing the notable barriers to pursuing a medical degree, including both the cost and time commitment, more students will pursue medicine. Further, more disadvantaged students, including those from diverse low-socioeconomic status households, will be able to pursue a medical degree, and thus mirror the patient population they will most likely take into their care.

Discussion and Implications

The purpose of this qualitative descriptive case study was to explore the perceived impact of the UT-PACT program in terms of the program's fidelity, cost-effectiveness, and time conservation according to the students who underwent the program by showcasing their own words. Data analysis revealed two key findings. The first finding was that the UT-PACT students truly valued the three tenets of the UT-PACT program including the program's commitment to making them better trained physicians by providing them with an innovative, improved curriculum, by eliminating one year of their academic preparation, and by providing them with financial support for their training to become physicians. The second finding was that as adult students, UT-PACT students value the principles of Knowles' theory of andragogy. In the following section, I discuss each finding and the implications these finding have on the future of how medical education is delivered in the United States.

Finding 1: Students Value a More Focused Curriculum, Shorter Training Time, and Less Financial Burden

First, this study demonstrates the value of the key components of the UT-PACT program. Participants commented they feel better trained to be physicians. They attributed this preparedness to the innovated curriculum of the program, specifically their summer clinicals and specialty classes. They praised the effect that a shorter program duration and reduced financial burden had on their career. They remarked on their increased opportunities to pursue activities they were interested in because of the limited considerations they had to make due to this reduced time and financial burden. They suggested that future programs designed to prepare students for a medical education should prioritize these components.

Thus, the implication of this finding is that participants of this study reiterate the need for medical education reform to produce better trained and better prepared physicians who are better able to meet the new, growing demands of patients and the everchanging landscape of medicine. Perhaps this can only be attained by more intimate educational andragogic experiential learning through faculty mentorship, early clinical exposure, and overall professional development of the physician which is precisely what UT-PACT strived to do. Structuring these reforms while framing the educational experience of the training of future doctors through the lens of Knowles's (1984) theory of andragogy can be an effective way for medical school faculty to start the medical educational/curricular reform process and is described in the following section.

Finding 2: Students Value Principles of Andragogy in Their Education

This study also reveals the importance of considering principles of andragogy in medical education. The existence of adults who are also learners or students is the driver

for developing Knowles's (1984) theory of andragogy. Knowles (1984) claimed that adults are self-directed and expect to take responsibility for decisions; thus, adult learning programs must accommodate this fundamental aspect. The current study contributes to this theory by showing its tenets playing out in program design. The UT-PACT program demonstrates the application of the following components of Knowles's (1984) theory of andragogy: (a) adults want to know the reason for needing to learn something, (b) adults like to use experiences to learn, (c) adults see learning as a way to solve problems, and (d) adults' best learning scenario is when they perceive that a topic has value. The UT-PACT program demonstrates an updated approach to medical education that utilizes the tenets of Knowles's theory. Participants in this program received more opportunities for real-world experience that help them learn better ways to solve problems and understand why they learn specific content.

Therefore, the implication of the second finding of this study is that the medical training trajectory needs to incorporate more experiential learning to accommodate the learning style of adult learners. Participants in the current study emphasized how they valued the experiences they gained in the UT-PACT program because they could learn so much more from these experiences if they were real-world experiences, such as studying and interacting with real patients with real diseases. They enjoyed and valued the benefits of being a member of the UT-PACT program that their traditionally routed medical school counterparts did not receive. They specifically appreciated the early exposure to patient care through their summer clinical classes and patient interviewing techniques. They also shared that the program contained topical activities that were directly related to

the medical field and patient care. These findings support the effectiveness of the program through the lens of Knowles's (1984) theory of andragogy.

Recommendations

The primary recommendation that arose from this qualitative study is the need for flexibility in medical education program designs that align better with the andragogic learner. This study shows how the incorporation of experiential learning early on in the medical school student's journey promotes learning that produces better trained physicians, fosters relationship building, and builds professional identity formation. This will require medical education reform and can be accomplished through programing and collaborations with local clinics and hospitals and undergraduate institutions and medical schools. In thinking of the six components of andragogy, I offer the following suggestions:

1. Need to know: by ensuring what is taught has a medical relevance regardless of level of training, the student can see the applicability of why they are being taught what needs to be learned.
2. Intrinsic motivation: by allowing undergraduates to volunteer at local clinics, the satisfaction of working for the greater good of humanity can fuel them to continue to do so and can further solidify their altruistic desire to become a physician.
3. Problem-centered learning: although many medical schools currently use PBL, unfortunately, undergraduate institutions do not. PBL can be incorporated in many undergraduate classes increasing students' critical thinking skills.
4. Readiness to learn: by encouraging students to create their own learning experiences or pathways through the use of projects rather than exams, students can be prepared for all the information needed to be learned to become a physician.
5. Learner's experience: each student has assets that can be useful to others. By highlighting the learner's experiences, peers learn to value each other which can aid in connecting with future patients.

6. Self-directed learning: by allowing students the freedom to choose more courses rather than always enrolling in prescribed ones, the student can be empowered to persevere the challenges of becoming a physician.

The results of the study revealed the need for increased collaboration between undergraduate and medical school programs keeping the andragogic learner in mind to reduce the length of medical education programs and by doing so they can limit the redundancy between the undergraduate and medical school curricula. By reducing the redundancy of knowledge imparted from both undergraduate and medical school education, the cost of training a physician will lessen because less time in school means less tuition paid for by loans. Undergraduate institutions and medical schools should join forces to streamline the education of premedical students. By collaborating, as the two institutions of this study did, medical schools will know exactly what undergraduate students are learning in their college classes and will be better able to guide them through their learning of medicine while a student in their medical school. Perhaps more specialty classes at the undergraduate level can also be offered to premedical students as well.

There are also several recommendations for additional research designs that can provide further information for these research questions. This study was limited to a small participant pool in that each UT-PACT cohort only consisted of 20 students per cohort. However, in qualitative methodology, a participant sample of 12 is considered sufficient. Yet, such a small number of participants involved in such a specialized program, makes it difficult to form generalizable conclusions that are applicable to the population at large. For example, the participants in this study were all students from the first two cohorts of the UT-PACT program. Therefore, the applicability of these findings may require further evaluation when considering additional cohorts. To address this limitation, future research could be conducted on the remaining five cohorts of the UT-

PACT program upon their completion of the program. Comparison studies of the UT-PACT program with other accelerated baccalaureate/MD programs within the University of Texas System's TIME initiative or beyond could make findings more generalizable to a larger population. Furthermore, researchers can explore quantitative or qualitative methods on a larger scale to determine other outcomes that can be more generalizable.

Using a mixed methods approach or a purely quantitative approach could allow for a better side-by-side comparison of accelerated baccalaureate/MD programs compared to the traditional medical school programs. By using more quantitative measures, data can be collected and analyzed much faster and for larger medical student populations. However, the students' voices would not be heard which was paramount in the present study. More studies would allow for further evaluation of the fidelity, cost-effectiveness, and time conservation of the UT-PACT program.

Another option could be a study of participants from a different population within the UT-PACT program. For instance, the population definition can change by interviewing faculty members of the UT-PACT program. By spotlighting their experiences, perhaps change in medical education is more apt to occur given that they are leadership and have more power and authority to incite medical curricular reform. In addition, the population could expand by interviewing a comparison sample of students in a traditional program or another alternative program. This type of study population would provide a new unit of analysis and allow for a direct comparison of experiences to evaluate differences between the traditional and UT-PACT programs.

Summary and Conclusion

In addition to the future research directions this study motivates, the findings of this qualitative study have implications for practice. By conducting this study, I aimed to fill the gap within the existing literature regarding the perceived impact of the UT-PACT program in terms of the program's fidelity, cost-effectiveness, and time conservation, according to the students who underwent the program. These study participants were students who are now physicians, and by reflecting on their experience as a PACT student, they, too, see the need for medical education reform. Filling this gap advances existing knowledge regarding program designs that prepare students for a career in medicine. It may also inform policy on the design of similar programs or medical education in general. These study findings suggested that a shorter duration of school and focused activities related to medicine are valued by students and beneficial to their preparation for future schooling and training. This study also revealed the benefits that participants identified in their program participation. Many participants described how the financial support of the UT-PACT program affected their career decisions and the influence of this program on career trajectory. Given the qualitative nature of the study, I recommend that a larger, quantitative research study be conducted based on the current findings to expand the study's generalizability.

CHAPTER FOUR

Distribution of Findings

Executive Summary

The purpose of this qualitative descriptive case study was to describe the perceived impact of the UT-PACT program in terms of the program's fidelity, cost-effectiveness, and time conservation according to the students who underwent the program. A descriptive case study design was employed to explore the experiences of individuals who had completed the UT-PACT program. Medical education is a long, arduous, and costly endeavor (Khan et al., 2017; Wesley et al., 2018). Unfortunately, as a student advances through their medical education, free funding for school usually lessens. As a result, the common choice is to assume insurmountable student loan debt, with 76% of medical school graduates incurring a median debt load of \$190,000, resulting in a monthly repayment plan ranging from \$1,500 to \$2,800 (Youngclaus, 2017). The focus of this study was to evaluate the impact of a program such as UT-PACT to determine if the program helps alleviate these concerns. Three research questions posed for this study to achieve the intended aim. These research questions were as follows:

RQ1: What perceived impact does the UT-PACT program have on the UT-PACT students' comprehensive preparation to become physicians?

RQ2: What perceived impact does the UT-PACT's cost-effectiveness have on UT-PACT students' perception of their overall preparedness to become physicians?

RQ3: What impact does the UT-PACT's time conservation have on the UT-PACT students' perception of their overall preparedness to become physicians?

The UT-PACT program is a program that leaders in the University of Texas System have developed to address the need for a more appropriate curriculum or track for medical students. The goal of UT-PACT is three-fold: (a) to reduce the redundancy in the curriculum by eliminating one year of undergraduate education, (b) to provide students with scholarships to lessen the financial burden of becoming a physician, and (c) to teach them to become empathetic, independent, servant leader professionals (University of Texas, 2015). Previous research has not evaluated the UT-PACT program to determine whether this reformed medical education program provides innovative training of students. In the current research study, I aimed to address this gap and to shed light on the need for medical education reform by highlighting the program's fidelity, cost-effectiveness, and time conservation.

Overview of Data Collection and Analysis Procedures

The present study used a qualitative descriptive design to explore student's perceptions of the UT-PACT program. According to Tschirhart et al. (2019), a descriptive design allows researchers to provide detailed accounts of experiences and perceptions. I used purposeful criterion sampling to recruit participants in the first two cohorts of the UT-PACT program. According to Etikan et al. (2016), purposive sampling is an appropriate method of participant recruitment and selection when identified limitations are associated with recruiting a specific subset of the population. In this case, a purposive sample was necessary to ensure that students had undergone the UT-PACT program. Twelve students responded to email invitations to complete interviews and signed up for an interview time. I interviewed these participants using structured and semi-structured interview formats. I conducted the interviews over Zoom. Consent was

obtained from each participant to record the interview. All interviews were recorded and transcribed following the completion of the interview.

I read and analyzed the interview transcripts thoroughly. I entered all data in the software, NVivo 12 Pro, for analysis. Data analysis occurred while data collection was ongoing. I performed a cross-case thematic analysis of the transcripts in order to identify themes that arose from the data. According to the students who underwent the program, these themes were associated with the perceived impact of the UT-PACT program in terms of the program's fidelity, cost-effectiveness, and time conservation. I used Braun and Clarke's (2006) six-step framework for thematic analysis. The answers to the interview questions were thematically analyzed using NVivo 12 Pro software. I organized the findings with the research questions in mind. Analysis was conducted on each cohort independently, and I reported the results from each cohort independently. Additionally, I made comparisons between cohorts in a synthesis section following each theme description.

Summary of Key Findings

This research aimed to explore how students perceive their experiences in the UT-PACT program, specific to the fidelity, cost-effectiveness, and time conservation. These aims are necessary to explore in medical education, given the extensive barriers that cost and the length of a program pose for prospective students of medical education programs (Wesley et al., 2018). Further, there is a resistance to change across medical education programs where the status quo for lengthy and costly programs has remained the same for decades (Khan et al., 2017). It is, thus, unsurprising that the four themes identified during the analysis process were related to the deviation from the traditional medical education

process, including (a) physician preparedness, (b) traditional program comparison, (c) cost-effectiveness, and (d) program duration. These themes arose in consideration of the three research questions for this study.

The first theme, physician preparedness, addressed the first research question by demonstrating the UT-PACT program's perceived impact on students' preparation to become physicians. Results of the analysis highlighted that students left the program feeling better prepared to serve as a physician, which contradicts students' perceptions in traditional programs. For instance, Dyar et al. (2018) found low rates of perceived preparedness among a class of students who graduated from a traditional medical program. However, the present study found that all students graduated the program with the perception that they were better prepared to be physicians. This theme was composed of two subthemes: readiness and benefits of the program. Participants opined about the effectiveness of the program in preparing them to become physicians. Participants also shared the benefits they gained from the program's unique model. In this way, the participants suggested methods for the UT-PACT program to sustain the long-term benefits for future generations.

The second theme, traditional program comparison, included reports of participants' views of the UT-PACT program compared to a traditional program. This theme addressed the first research question by revealing the UT-PACT program's perceived impact on the UT-PACT students' comprehensive preparation to become physicians. There were differing opinions between the two cohorts interviewed. Participants in Cohort One indicated the program was effective in preparing them to become physicians. In contrast, participants in Cohort Two had more mixed opinions.

Some felt better prepared, while others felt a traditional program would have prepared them just as effectively. However, Kolachalama and Garg (2018) revealed that the evolving needs of patients and changes in patients' expectations will require physicians to change their practices and as a result, their educational training. While medical school programs have remained stagnant in their approach, the changes in patients' needs call for changes in the way doctors treat patients (Wesley et al., 2018). For this reason, while traditional medical programs have a long history of creating informed physicians, there is a growing need for programs to adapt to the evolving needs of patients to create more well-rounded physicians.

The third theme, cost-effectiveness, addressed the second research question by demonstrating the perceived impact the UT-PACT program's cost-effectiveness has on UT-PACT students' perception of their overall preparedness to become physicians. The participants highlighted the reality that a cost-effective medical education improved their ability to pursue medical education and reduced their stress during the program.

Youngclaus (2017) detailed that due to the extreme costs of traditional medical school programs, affordable options might help streamline more humanistic candidates in the medical field. While affordability was one of the goals of UT-PACT, it goes without saying that an affordable program model will be of interest to many prospective students, including underrepresented minority students. The findings of this study uncovered how the reduced costs helped alleviate the immediate financial burden of students. However, it also helped the physicians focus more on patient care after completion. This theme was composed of two subthemes: impact of the program on debt and financial implications. Participants offered several examples of the financial impact of the UT-PACT program

and how the feasibility of cost was related to an overall positive experience. Likewise, many European countries pay a significant portion of tuition to ensure the medical candidate is not overwhelmed with debt upon graduation (Zavlin et al., 2017). The success of these programs and UT-PACT indicate that it is prudent to reduce the costs of medical education to alleviate the financial distress. More so, reducing the costs for prospective medical school students, who cannot afford traditional programs despite exceptional qualifications, can increase access to the medical field.

The fourth and final theme, program duration, addressed the third research question by demonstrating UT-PACT students' perception of their overall preparedness to become physicians in a shortened program. Participants revealed the extent to which they appreciated the program duration, and how this influenced their ability to pursue a medical education. However, participants in both Cohorts One and Two had mixed opinions. Some participants believed the program did save them time, which was a notable advantage of the program. That notwithstanding, other participants reported they would have attended a traditional program. While they appreciated the shortened duration, they would have attended a traditional program if not for their participation in UT-PACT. This theme is consistent with the work of Van Rossum et al. (2018), who found that a shortened schedule can have a significant effect on the cost and future savings of physicians. However, given the novelty of shortened program models, there remains a need to further explore the efficacy of reduced programs. The themes of this study pioneer these efforts by demonstrating that medical education programs can be condensed safely and produce qualified and well-rounded physicians who are more in tuned to their patients' needs.

Informed Recommendations

The primary recommendation that arose from this qualitative study is the need for flexibility in medical education program designs that align better with the andragogic learner. The existing medical programs have been implemented in the same manner for decades, without considering how the length of the program and cost factor into a student's ability to pursue a medical education. The current medical education model is prohibitively long in duration and expensive for many prospective students. The results of this study highlight how a flexible program education, targeted to meet the primary issues with pursuing a medical education, can improve a student's experience in the program. The UT-PACT program offers a unique approach that addresses several limitations of the traditional program format. Participants in the current study, who represent the first two cohorts of the UT-PACT program, describe the benefits they gained from the UT-PACT program, including how the cost and program duration improved their ability to successfully pursue a medical degree.

The study also highlighted how the innovative program's structure helped the students feel better prepared to be a physician. In sum, the results of the study revealed the need for increased collaboration between undergraduate and medical school programs to reduce the length of medical education programs and can do so by limiting the redundancy between the undergraduate and medical school curricula. Furthermore, medical programs can reduce the expense that currently mars existing medical programs.

There are several recommendations for future research that emerge from this study. First, future research could be conducted on the remaining five cohorts of the UT-PACT program upon their completion of the program. Comparison studies of the UT-PACT program with other accelerated baccalaureate/MD programs within the University

of Texas System's TIME initiative or beyond could make findings more generalizable to a larger population. Furthermore, researchers can explore quantitative or qualitative methods on a larger scale to determine other outcomes that can be more generalizable. Using a mixed methods approach or a purely quantitative approach could allow for a better side-by-side comparison of accelerated baccalaureate/MD programs compared to the traditional medical school programs. By using more quantitative measures, data can be collected and analyzed much faster and for larger medical student populations. Another option could be a case study of participants from a different population within UT-PACT. For instance, the population definition can change by interviewing faculty members of the UT-PACT program. By spotlighting their experiences, perhaps medical education is more apt to occur given that they are leadership and have more power and authority to incite medical curricular reform. In addition, the population could expand by interviewing a comparison sample of students in a traditional program or another alternative program.

Findings Distribution Proposal

The results of this qualitative study unveiled the benefits of the UT-PACT program as described by participants in the first two cohorts of this program. In the following sections, I describe how I will disseminate the results of this study to relevant audiences, including educational leadership and program directors of medical education programs. The purpose of this qualitative descriptive case study was to describe the perceived impact of the UT-PACT program in terms of the program's fidelity, cost-effectiveness, and time conservation according to the students who underwent the program.

Target Audience

The target audience that I hope to reach with these findings is individuals who design the delivery of medical education. The redesign of medical education is motivated by the evolution of patients' expectations for their doctors (Kolachalama & Garg, 2018). Researchers have suggested that the modernization of curricula for medical schools and residency programs must occur to meet the changing demands of healthcare and the disrupting forces currently in place to shape the industry (Bai, 2020). Despite efforts made by the leaders of U.S. medical schools, there has been little deviation from the reforms made over one century ago through the Flexner report (Bai, 2020; Schwartz et al., 2018). More significant change is needed to meet the current demands and status of the medical field in the United States (Schwartz et al., 2018). In the current study, I aimed to highlight a different medical education design to address this gap.

The results of this study are useful for professionals developing medical school programs. This audience should be aware of the benefits of the UT-PACT program as described by the androgenic or adult learners completing this program. These students described the benefits of the program's specific activities that helped them develop their medical aspirations. They also believed that early exposure to medicine was extremely influential for their academic and professional success. Students in the current study also reported that the UT-PACT program generated a sense of community critical for their progression through the program upon completion.

Furthermore, the target audience of professional developing medical programs should be aware of the participants' comparisons of the UT-PACT program to a traditional program. Many participants believed the UT-PACT program was more effective than a traditional program. One example of how this program improved upon

the traditional model was offering students the ability to focus on medicine earlier on and opportunities to work with mentors. This finding aligns well with the theory guiding this research. This theory indicates that adults like to use experiences to learn (Knowles, 1984). The current study identified experiential learning as a benefit that many participants suggested. In contrast, a few participants did not feel that their preparation was any greater than for students in traditional programs. These contrasting views should inform the development of new alternative medical programs.

I also propose to reach the target audience through academic publications. The academic journal that fits the subject of this research study and the goal to inform the design of medical education programs is *Medical Education*. This journal is appropriate due to its aim and scope. Articles in this journal describe aspects of health professional education. A research article format is appropriate for the submission format for this research. The requirements for this submission are a 300-word abstract, fewer than 3,000 words for the full article, and AMA style references. Qualitative and quantitative study designs are acceptable for this journal.

Distribution Materials

I propose to distribute findings from this study to the target audience of professionals involved in the design of medical programs. The distribution of the findings can take place by sharing these results through an integrated educational program. I will import the material from this manuscript into a readily accessible presentation format to share the knowledge obtained from this study. Specifically, I will create a PowerPoint presentation that highlights the major themes from this study. The presentation will be

interactive and engaging to facilitate the learning process. The presentation will consist of key takeaways that participants can implement in their medical education program.

I can also distribute the findings from this study by way of a published manuscript. An academic journal for medical education, such as the *Journal of Medical Education and Curricular Development*, will be targeted to capture the intended audience of this study, including academic professionals and educational leaders involved in medical education program design. In this way, I can disseminate the findings to readers interested in current research on medical education models. The material needed for the proposed distribution method for both the educational presentation and published article is the present manuscript.

Conclusion

The completed qualitative descriptive study sought to describe the perceived impact of the UT-PACT program related to fidelity, cost-effectiveness, and time conservation. I used purposeful sampling to recruit students who partook in the first two cohorts of the program. The student-participants were asked to share their experiences within the program and throughout their medical education through individual, structured and semi-structured interviews. Results of the thematic analysis indicated four primary themes related to physician preparedness, traditional program comparison, cost-effectiveness, and program duration. The culmination of these findings responded to the three research questions posed for the study and highlighted the utility of the UT-PACT program to address the barriers of medical education. I made several recommendations concerning the need to make meaningful changes to the medical education program design from these results. This research highlighted the systematic approach to medical

education that has been in place for decades no longer meets the needs of andragogic students. As a result, medical programs prohibit the inclusion of many prospective students, further isolating the medical field.

For this reason, I will distribute these findings to academic professionals and university leaders involved in the design and implementation of medical education programs. The distribution of these findings will pave the way to innovate medical education programs to reduce the barriers prohibiting many students from pursuing a medical degree. In conclusion and simply put, better trained physicians make for better physicians who can better serve an increasingly complex patient population.

APPENDICES

APPENDIX A

UT-PACT Interview Questions

1. What has the UT-PACT program meant to you?
2. How would you describe the UT-PACT program in three words?
3. What impact, if any, has the UT-PACT program had on you becoming a doctor?
4. Do you owe less educational debt due to the UT-PACT program? If so, why? If not, why?
5. Besides providing you with an educational opportunity, what other benefits, if any, has the UT-PACT program provided for you?
6. How would you rate the overall effectiveness of the UT-PACT program?

Great Very good Good Somewhat good Not good

7. What disadvantage, if any, have you experienced by being in the UT-PACT program?
8. What would you change if anything about the UT-PACT program?
9. How has the UT-PACT program helped you in your success as a physician?
10. How has the UT-PACT program prepared you that a traditional pathway could not have?
11. Do you feel closer to UT Southwestern faculty as mentors by being a part of the UT-PACT program? If so, why? If not, why?
12. What has been the single most benefit of being a part of UT-PACT?
13. Do you feel accelerated baccalaureate programs are worth the extra effort?

Yes/No

14. If given the chance to redo your undergraduate and medical school years, how would you change things?
15. What advice would you give a potential pre-med who wants to be a part of an accelerated baccalaureate/MD program?

APPENDIX B

Diagram System for Coding

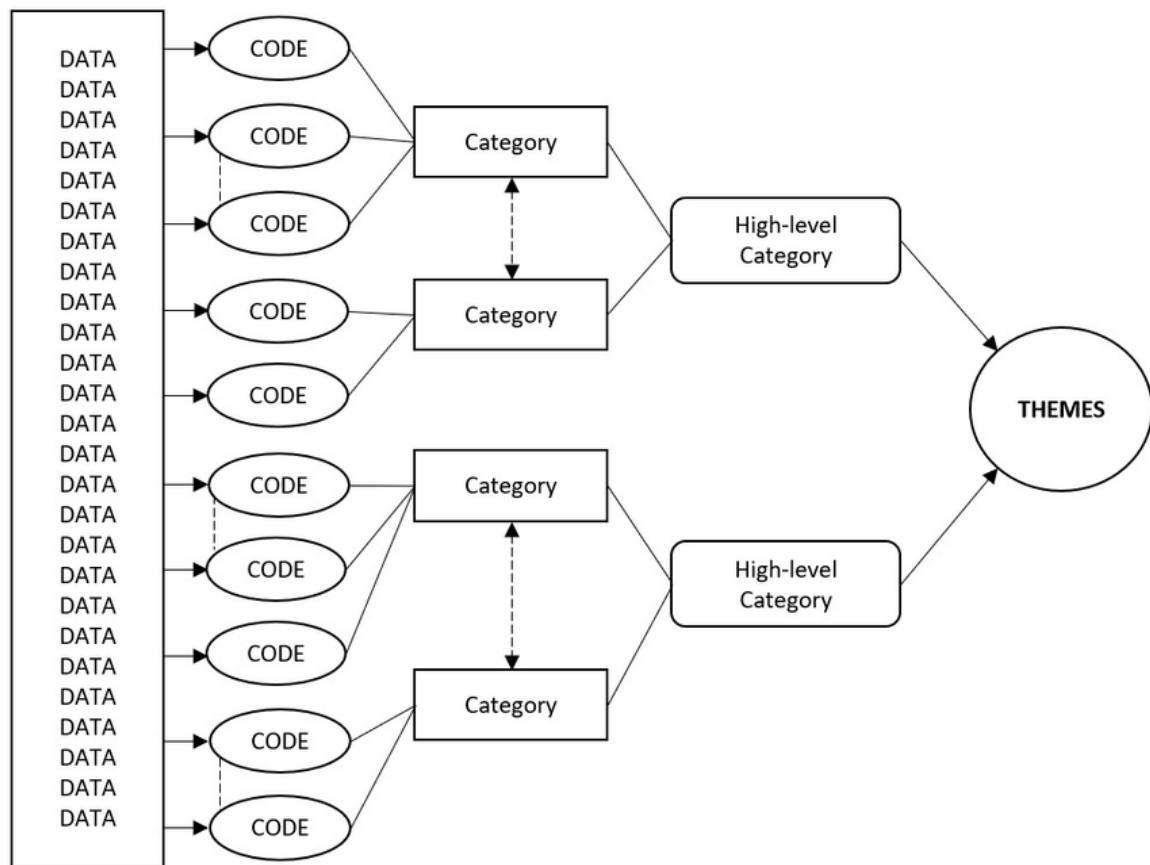


Figure B.1. Diagram system for coding. A simplified illustration of Saldaña's thematic analysis approach for recognizing themes in qualitative data (adapted from Saldaña, 2015, Figure 1.1).

APPENDIX C

Qualitative Research Flow Diagram

1. Design the qualitative study
2. Collect the qualitative data via interviews
3. Collect interview data first
4. Analyze the qualitative data qualitatively using best suited analytic approaches for research questions
5. Interpret and connect the results
6. Decide how each set of data results expand on the qualitative findings
7. Interpret how the results of both data sets
8. Merge & connect the data
9. Decide how to best combine the data to address the research objective
10. Interpret how the results answer the project's research questions and contribute to the overall objective by deciding to what extent the results advance the program objective

APPENDIX D

IRB Inquiry

Gonzalez, Cristina <[REDACTED]> Wed, Jun 3, 2020 at 10:37 AM
To: "Trevino, Jessica" <[REDACTED]>, "Holland, Deborah" <[REDACTED]>
Cc: "Talbert, Tony" <[REDACTED]>, Cristina Gonzalez Boles <[REDACTED]>

Good morning Dr Holland and Ms Trevino--

My name is Cristina Gonzalez, and I am in cohort 3 of Baylor's online EdD program in Learning and Organizational Change. My faculty mentor is Dr Talbert who is cc'd on this email.

I am writing to see whether my Problem of Practice (PoP) requires IRB approval. I will be mainly interviewing students and having them fill out questionnaires/surveys.

- Problem of Practice topic: A bounded case study of the effectiveness a combined, accelerated medical track program: Will UT-PACT students really make better physicians?

- Participant sample detail: I will be interviewing (either face to face or via Zoom and/or sending survey/questionnaires via email to a handful of UT-PACT students from the first two cohorts of UT-PACT to give them a voice on how being selected for this program impacted them.

- Data collection protocol(s): Participation is voluntary, and they may dismiss themselves from the study at any time. They will be assigned an alias and their participation or non-participation will in no way impact their status in UT-PACT. Their answers will be coded, transcribed, and recorded. Specifically, I am seeking information regarding the quality of their medical school training/experience and whether or not they are in less debt than the average medical school graduate who does not participate in such a program.

Please reach out should you have further questions or need more clarification. I tried to be as brief as possible. I am sure you receive many of these requests.

Thank you in advance for your time and I look forward to your response,
Cristina M González

Trevino, Jessica <[REDACTED]> Thu, Jun 4, 2020 at 8:57 AM
To: "Gonzalez, Cristina" <[REDACTED]>, "Holland, Deborah" <[REDACTED]>
Cc: "Talbert, Tony" <[REDACTED]>, Cristina Gonzalez Boles <[REDACTED]>


Hello Cristina,

Thanks for reaching out. This study would not qualify as human subjects research because the results would not be generalizable to a larger population since you are only focusing on individuals in the UT-PACT program. Attached is our guidance booklet that goes more into detail about determinations. If you have any questions, please email me.

Best regards,
Jessica Trevino

From: Gonzalez, Cristina <[REDACTED]>
Sent: Wednesday, June 3, 2020 10:37 AM
To: Trevino, Jessica <[REDACTED]>; Holland, Deborah
<[REDACTED]>
Cc: Talbert, Tony <[REDACTED]>; Cristina Gonzalez Boles
<[REDACTED]>
Subject: Inquiry as to if my Problem of Practice is Exempt from IRB approval

[Quoted text hidden]

 **Is This HSR Booklet - TP (2).pdf**
196K


Gonzalez, Cristina <[REDACTED]>
To: Cristina Gonzalez Boles <[REDACTED]>

Thu, Jun 4, 2020 at 9:23
AM

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From: Trevino, Jessica <[REDACTED]>
Sent: Thursday, June 4, 2020 8:58 AM
To: Gonzalez, Cristina; Holland, Deborah
Cc: Talbert, Tony; Cristina Gonzalez Boles
Subject: Re: Inquiry as to if my Problem of Practice is Exempt from IRB approval

[Quoted text hidden]

 **Is This HSR Booklet - TP (2).pdf**
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APPENDIX E

Initial Codebook

Table E.1

Initial Codebook

Name	Files	References
addressing challenging program aspects	8	8
benefits of program	9	16
challenges of program	8	10
financial implications of program on doctor preparedness	11	12
influence of program on education duration	11	12
positive impact	8	8
impact of program on debt	11	14
measures to ensure sustaining benefits	7	7
more effective than traditional program	0	0
No	2	2
Yes	9	10
other financial impacts of UT-PACT program	8	8
program help with becoming a doctor	2	2
No	1	1
Yes	9	9
scheduling appropriateness	10	11
UT-PACT program description	11	11

APPENDIX F

Final Codebook

Table F.1

Final Codebook

Theme	Subtheme	Example Quote
Physician preparedness	Readiness	“Yes. I was one of those people who knew I wanted to be a doctor from a really young age. Just reflecting on the PACT program I feel like it was one of the biggest blessings that I’ve had in my entire education. Being able to have that early clinical exposure, the scholarship as an undergraduate student and then getting to go to such a fantastic medical school, I feel like it has set me up to be the type of doctor that I want to be.”
	Benefits of program	<p>“And I remember when I got to rotate on pediatrics and I got to see some newborn physical exams. In medical school I was interested in pediatrics at one point. I actually remember watching a C-section as a PACT student and now I’m in OB/GYN. I remember certain things that they were doing and I was like, oh, my gosh. And now I’m like I do those things. I’m delivering babies. These were things I still remember when I was a PACT student. I remember old Parkland where I was and literally the walk, the hallway. I was on this hallway as a PACT student.</p> <p>So, there’s, like I said, it’s just on a road that can be very stressful and very draining for people when they’re trying to find their way and to a future medical student, I feel like those experiences were great.”</p>
Traditional program comparison		“I do believe it has been more effective in preparing me to become a doctor because it allowed me opportunities that I would never had received as a traditional pre-medical student. Such opportunities include rounding with second year medical students during clerkships, experiencing TBL’s during undergrad and taking classes geared towards medical school such as professional communication (which we learned about the research process- extremely helpful in medical school research).”
Cost-effectiveness	Impact of program on debt	“Since I had the national merit scholarship (as did 10 students in my cohort), the financial impact was not different than if I had went to UT Dallas without the PACT program. I think I would have gone to UTD anyways, and that’s because of the great scholarship. But still, it feels great going into med school with no debt accumulated from undergrad. That may not be true anymore as I hear UTD is cutting back on scholarships.”

Theme	Subtheme	Example Quote
	Financial implications of program	“The peace of mind and just like this freedom to be able to focus on other activities and volunteering and just like the whole person. I was able to play volleyball and just physical wellness which was a huge factor for me. I feel like that is very freeing to realize because it’s very stressful. Applying to med school and the fact that so many people don’t get in or have to apply multiple times, the fact that I was able to check boxes and of course I tried to put the effort into those boxes in undergrad. But, the fact that I was able to do other things was really great for my mental wellbeing in college.”
Time conservation	Scheduling appropriateness	“I think PACT gave us everything we needed to be a good medical student. However, I do see some benefits in taking years off to do EMT, scribing, research years, and master’s degrees as these students have better research output and have additional skills like statistics knowledge, coding, etc. that set them apart.”
	Influence of program on education duration	Yes and no. I think I would have tried to go to medical school regardless. The journey is very long and for me I want to go into maternal fetal medicine which is an additional three years on top of an OB/GYN residency. So, just the thought of having seven years after medical school, then you put the four years in medical school, that’s over 10 years of my life spent specifically on a medical degree. And I think that there’s some people will say, “Well, I had a job after college,” or, “I took a gap year.” But, for someone like me, I knew what I wanted to do and I feel like when you know that that path is already so long, the one extra year... I loved college but I don’t think that because I knew what I want to do, I don’t think I missed out on anything. And I feel like I still was able to get personal experiences that I wanted even though it was three years.”

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