How an automated patient education module improves patient outcomes and informs the quality-of-care measures for providers within a minimally invasive aesthetic medicine practice.

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In partial fulfillment of the DNP degree DNP Project Requirements.

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How an automated patient education module improves patient outcomes and informs the quality-of-care measures for providers within a minimally invasive aesthetic medicine practice.

Western Carolina University | School of Nursing

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Abstract

Background: This quality improvement project was implemented to meet the needs of aesthetic patients and providers by providing automated education before the patient comes in for treatment.

Objectives: To create an automated patient education module that provides consistent, accurate, uniform information to every patient who views it, which in, turn would give providers more time to treat the patient, generating greater revenue.

Methods: Three surveys were used along with electronic health records (EHR) metrics, indicating patient check in and out times prior to and over the duration of the six-week study. Descriptive statistics were used to examine the demographics of aesthetic patients. Two-tailed Mann-Whitney U tests were run on both check-in/out times and revenue. There were 201 patient visits six weeks before the study and 316 patient visits during the study.

Results: The demographics showed expected trends. The most common treatment sought was a neurotoxin, followed by dermal filler. Most patients had at least some college education, were female, and were married. The highest age group was age 50- to 59-year-olds. The change in check-in and out times was significant (alpha value of .05, $U= 23417.5$ and $p < .001$), and appointments got shorter. Revenue made was also significant (alpha value of .05, $U= 3215$ and $p < .037$).

Conclusions: There was improvement of patient understanding before being treated. A longer study with a greater number of patients will be needed to better correlate the trends of how this impacts provider time spent with patients and practice revenue.

Chapter I

Nature of the Project

Introduction and Background

The Minimally Invasive Aesthetic Medicine (MIAM) industry continues to grow exponentially worldwide. According to the American Society of Plastic Surgeons (ASPS), 7.8 million minimally invasive injections were performed in 2020 (ASPS,2020). Neurotoxins rank first, followed by dermal fillers, in popularity among non-invasive procedures (Vedamurthy, 2018). In 2020, 3.4 million dermal filler injections, and 4.4 million neurotoxin injections were administered, and one million aesthetic laser treatments and medical-grade peels were performed in the United States (ASPS, 2020). Between 2000 and 2018, there was a 228% increase in non-surgical facial aesthetic treatments (Ramirez et al., 2021).

Medical aesthetic practices aspire to be successful. Many providers are turning to this specialty to offset the decreasing earnable income in other specialties. To facilitate this, they need to be fiscally responsible and minimize costs without compromising quality patient care. One of the expenditures associated with an aesthetic medical practice includes liability insurance for malpractice. There are risks associated with any medical procedure, and MIAM procedures are no exception. Avoiding medical litigation benefits the owners, the healthcare providers, the employees within the practice, and the patients. Not only does litigation tie up resources, but it also takes an emotional toll on those involved (Bondi & Oken, 2021).

Many new patients come into aesthetic medical practices knowing what they would like for treatment. This may or may not be appropriate for them. MIAM has a very different patient demographic than any other medical specialty. Having a knowledgeable patient is helpful because this leads to a better understanding of the procedure and the informed consent they need

to sign (Fravel et al., 2015). One way to facilitate knowledge is to provide education before the treatment (Fravel et al., 2015). Having the patient understand the treatment plan, as well as the informed consent they sign, will help decrease medical litigation, and overall malpractice costs for the office as well as defray other costs associated with dissatisfied patients (Bondi & Oken, 2021).

Problem Statement

The problem identified for this quality improvement project involves the amount of education time providers spent during the patients' treatment appointment. Long amounts of patient appointment time are spent educating patients about the aging face, products used, and available options. This education includes informed consent and reviewing any possible positive or negative outcomes associated with the procedure. Patients often come into the office having researched on Google, Facebook, Tik Tok, Snapchat, or Instagram, and they may have very unrealistic expectations of what may and may not be done for them (Hopkins et al., 2020). There is a lot of misinformation on the internet, and providers and social media influencers can say anything. There is not any verification or credentialing process, thus the public cannot know if what is being said is true. Any injector can announce that they are an expert in injections, even when their job experience does not support this. When a provider has a huge following, it creates a perception of being an expert (Gupta et al., 2019). Sometimes this is true, and sometimes this provider is being backed by the pharmaceutical companies who make the products this medical influencer is selling. There are no requirements for medical providers to disclose any incentives being provided to them to promote certain products on their business pages because no government or private insurers are being billed (Gupta et al., 2019). The parameters and laws that dictate the allowances between private pharmaceutical companies and most medical

practices in the United States that take government and private insurance, do not apply to aesthetic medical practices. The parameters and laws around anti-kickback statutes and MIAM practices are murky at best and almost nonexistent (National Academies Press, 2009). There are many reputable aesthetic providers within the industry. Ethical aesthetic providers adhere to disclosures when publishing in a peer-reviewed, evidence-based journal or when presenting a drug or product for a pharmaceutical company.

In a 2018 study by Montemurro et. al., about 95% of plastic surgery patients searched the internet and/or social media to gather information on the procedures they wanted to have done. Sixty-three percent of those patients used a social media platform as their first choice in searching for information (Montemurro et al., 2018). RealSelf is a very popular social media site. While physicians can place their profile on it for free, spending a monthly amount will move a provider up the ladder to elite status. Providers spend anywhere from $200.00 to $5000.00 + per month to get the more desirable rankings (Wischhover, 2018). Most MIAM patients think about RealSelf as a patient and physician rating and discussion board site. The impression is that these are true physician ratings. Most patients don't know that the platform is supported and paid for by the providers listed. The providers spending the most money get placed on the highest rung of the ladder. The fine print on the RealSelf website details how providers are advertising and paying for this, but few consumers read the terms and conditions before perusing the website for content. These terms and conditions allow the app to take down reviews that do not conform to its content policies that are vast and incoherently articulated (RealSelf, 2020).

There is also a misconception that injectables can correct skin discoloration and texture (Humphrey et al., 2021). Patients often use product names such as Botox® and Juvéderm® interchangeably. Botox® is a neurotoxin acting on muscle movement, and Juvéderm® is for

addressing volume loss in the skin that results from aging. This confusion, coupled with the lack of standardization within the aesthetics industry, has created a noticeable gap in the amount of factual medical education available to patients before treatment. Understanding the patient's motivation and goals for treatment is imperative and requires clear communication between the cosmetic injector and the patient (Jain et al., 2016). The consequences of not educating the patient and making sure they understand the procedure, treatment plan, and treatment goals may result in loss of patient retention due to patient dissatisfaction. The worst-case would be litigation caused by a lack of clear communication. All these outcomes would have a negative fiscal impact on the business.

Patient comprehension of medical procedures continues to be a significant problem in healthcare (Barbarite et al., 2020). Many factors may contribute to this, including patient familiarity with the medical content, patient education level, what the patient has researched on their own, whether there is a language barrier, whether the information found online is correct, and many other unnamed challenges (Barbarite et al., 2020). The current problem that needs to be addressed within clinical practice involves patient education or “re-education” of what, when, and why dermal fillers and neurotoxins are used in medical aesthetics and whether it is appropriate for the patients who want them (Warren, 2015).

Shared decision-making within MIAM is very important and helps to facilitate better communication between the patients and the healthcare provider (Ubbink, 2015). Patient education is one of the most important responsibilities MIAM injectors provide. Patients learn information differently and have many different learning styles. There is a plethora of research on how patients learn (Bastable, 2017). Just having informational brochures in the waiting room is not very effective at giving the patients the education they need, and they often don’t take the

information provided (Jansen et al., 2021). Multimodal learning is much more effective at initiating patient learning and information retention. Multimodal learning uses different senses, audio and visual, to engage the learner and promotes active learning (Bastable, 2017).

Many aesthetic practices have a full-time nurse educator working with patients before and after the first consultation, treatment, and follow-up appointments. A good aesthetic nurse educator is an extremely challenging position to employ and maintain. The other issue with having a nurse educator is that extraneous factors can affect the consultation. Sometimes patients are not compatible with certain staff personalities. This may lead to needing an alternate employee to step in and take over the patient consultation, which can create an interruption in the workflow within the office.

Within our practice, the medical providers educate all MIAM patients. Our providers spend, on average, anywhere from 2 to 3 hours daily educating patients about different treatment modalities available. This translates to anywhere from 520 to 780 hours per provider spent on patient education annually, which approximately costs $36,000 to $55,000 per provider every year in lost revenue. These numbers have been pulled from the electronic health record (EHR) metrics, that indicate patient check-in and out times and comparing those to a reasonable amount of patient treatment time. It must be disclosed that no time study has been performed within the office to indicate how long each of these procedures should take, but a consensus taken from the provider's previous jobs has created the time allotment for appointments scheduled. These time allotments were for treatment and include answering patient questions. See table 1 for current treatment times used within the practice:

Table 1.1

Procedure timetable

Procedure scheduled for:	**Time allotted:**
Botox	20 minutes
Dermal Filler in face	1 hour
Lips	45 minutes
Lipodissolve/Kybella	30 – 60 minutes depending on where
PRP	30 – 60 minutes depending on where
PDO threads	30 – 60 minutes depending on where
Laser	30-60 minutes depending on procedure
Medical Peels	30 minutes
Radio Frequency Micro-needling	30 – 60 minutes depending on where

SkinOvation Advanced Aesthetics is growing rapidly, and many new patients are being seen daily. When considering this from an opportunity cost, it does not make sense to have the provider do all the basic education for patients. Another challenge is that when different providers review the education with patients, their presentations may be very different, which may lead to confusion among patients. Patients can also be intimidated by a provider and may indicate that they understand a treatment that they really do not. This starts the provider-patient relationship on unstable ground at the very least and may lead to dissatisfaction after the treatment causing financial repercussions for the medical practice (Mangrolia, 2020). Examples include bad reviews on Google, RealSelf, or any other social media outlet. Word of mouth may not be positive, which may affect gaining new patients. The worst outcome would be litigation, which depletes the practice's resources (Bondi & Oken, 2021).

When patients understand the procedure they are receiving, they are more satisfied with their choices and overall outcomes (Warren, 2015). An automated online patient learning

module would be useful in providing additional patient education before the patient comes in for consultation and treatment. This would also provide uniformity of information given to all MIAM patients. When patients are educated on treatment choices and have a greater understanding, they have greater confidence in their chosen treatments and perceive better outcomes (Freedman et al., 2005 & Ubbink, 2015). There is a paucity of research within the medical aesthetics community regarding procedure-specific patient education, but other medical specialties have examined having patient education modules and shared patient decision aids. These studies have shown decreased patient in-clinic room visit time with greater patient satisfaction rates (Trasolini et al., 2020, and Ubbink, 2015).

Purpose of the Project

MIAM patients often come into the medical practice with preconceived ideas of treatments they believe will be appropriate for them. These are often based on what they have seen on social media or the internet. There are many forms of information online, but not everything is accurate. There is a need for accurate patient medical information in the MIAM field. A large portion of the patient's appointment time is spent educating them about what aesthetic medical treatments are appropriate. An automated patient education module viewed before the appointment will standardize the information every MIAM patient sees before the appointment. This will help the patient to ask relevant questions and participate in shared decision-making around the treatment plan. This will also increase the time the provider has to treat the patient.

Significance of the DNP Project

This DNP project will investigate the impact of an automated education module on patients and the providers who treat them. Although there has been a considerable body of

research on patient education within traditional medicine, few studies have explored patient education modules and MIAM patients. A consistent process of educating MIAM patients allows them to fully participate in care and shared decision-making in their long-term treatment plan (Ubbink, 2015). This will have positive outcomes for the patient and the medical practices that treat them. The quality of care given, and revenue saved and generated will increase.

Clinical Question

This DNP project will examine the following PICOT question: How does watching an automated educational video affect the patient's knowledge and satisfaction and impact the practice? The population is patients seeking minimally invasive medical procedures. The intervention is watching an automated online educational video/learning module. The comparison would be examining survey results and comparing time and revenue values for six weeks prior to project implementation and during the project. The expected outcome is that patients will have a better understanding of the aging face and how different aesthetic treatments will address this. They will also be more satisfied with their overall treatment plan due to a better understanding of the process of aging and how aesthetic treatments can address this. This will be reflected in the patient satisfaction scores after seeing the automated patient education module. The providers will also fill out the same satisfaction survey to determine if having the patient participate in the learning module helped with the overall visit and the amount of time the provider had to spend on education. The time frame for data collection will be six weeks. The independent variable is the automated patient education video. The dependent variables are the pre and post surveys, the satisfaction survey, the amount of time patients spend with providers, and the amount of revenue six weeks before and six weeks during the study.

Project Objectives

The objectives of this DNP quality improvement project will be to improve the process of patient education and shared decision-making. This will determine if an automated patient education module helps to improve both the patient and provider experience during the visit. The current education materials require a lot of time to review with the patient. Automating the information every patient receives before treatment will improve the patient's understanding of treatment options. This will give more time for patient treatment leading to more satisfied patients and healthcare providers.

Chapter II

Literature Review & Theoretical Framework

Literature Review

A comprehensive literature review was undertaken to research how patients learn. The databases searched were CINAHL, ERIC, PubMed, EBSCO Host, Medline Complete, Academic Search Premier, and Google Scholar. The search terms used were eLearning, health literacy, medical information, informed consent, cosmetic injectable patient, patient retention, patient satisfaction, automated learning, online learning, and online education. Inclusion criteria were as follows: Full text, English, language, scholarly/peer-reviewed journals, and books available by electronic download from 2006-2022. The Johns Hopkins nursing EBP evidence level and quality table were used to assess research articles most relevant to the PICOT question. After limiters were applied and relevant articles were chosen as evidence to support or refute the PICOT, these articles were chosen as supporting evidence for the DNP project. The theoretical underpinnings that will provide a framework for this quality improvement DNP project are taken from Donabedian's structure-process-outcome model.

Research and Evidence

The two learning theories considered during project development were instrumental learning theories and humanistic theories or facilitative learning theories. When considering the development of a patient education module, many different learning styles must be considered (Mukhalalati & Taylor, 2019). One of the most widely used learning theories is cognitive learning theory. This falls under the category of instrumental learning theory. Many other sub-theories contribute to this. Cognitive learning theory (CLT) is pervasive in education and counseling and throughout the literature (Bastable, 2017). Understanding the basic concepts of

how patients learn is important before designing any patient education program. CLT is based on what learners already know and what their goals and motivations are (Bastable, 2017). This type of learning is helpful when patients already have a foundation of knowledge to build on (Mukhalalati & Taylor, 2019). The second learning theory is a humanistic or facilitative learning theory. These theories promote the learner and focus on self-direction and self-assessment (Mukhalalati & Taylor, 2019). Both theories are excellent primers for teaching aesthetic medical patients.

Many previous studies show that adult learners learn better using different modalities (Kumar et al., 2022). These may include audio, visual, electronic, and printed educational material. The ten strongest patient education literature articles were reviewed, and some common themes emerged. Many patients liked online education, but some still liked to have this information given to them (Fravel et al., 2015 & Latenstein et al., 2020). Many of the articles compared eLearning with traditional patient learning. Most articles found that patients did not mind online learning modules, and some preferred them (Fravel, 2015). Patient satisfaction and understanding of informed consent increased, and both were rated positively. There is good evidence that implementing online video patient education material is helpful to patients and providers. In a study by Lin et al., there was a very strong correlation between video education and patient satisfaction (2018). The overarching concept in the articles is that patient knowledge improved with many different educational intervention types, which supports the importance of patient education.

There is a gap in the literature regarding aesthetic patients and how an automated video learning module would impact treatment, care, and outcomes. There is scant research looking specifically at MIAM patients and which methodologies would best suit implementation of a

video learning module. As the internet continues to grow and develop, so does the body of research. Information becomes more readily available to aesthetic providers. An aesthetic patient base is a niche group, and opportunities exist to improve the patient's experience and satisfaction with treatment. These outcomes will directly impact the providers and stakeholders of the practice.

Conceptual /Theoretical Framework

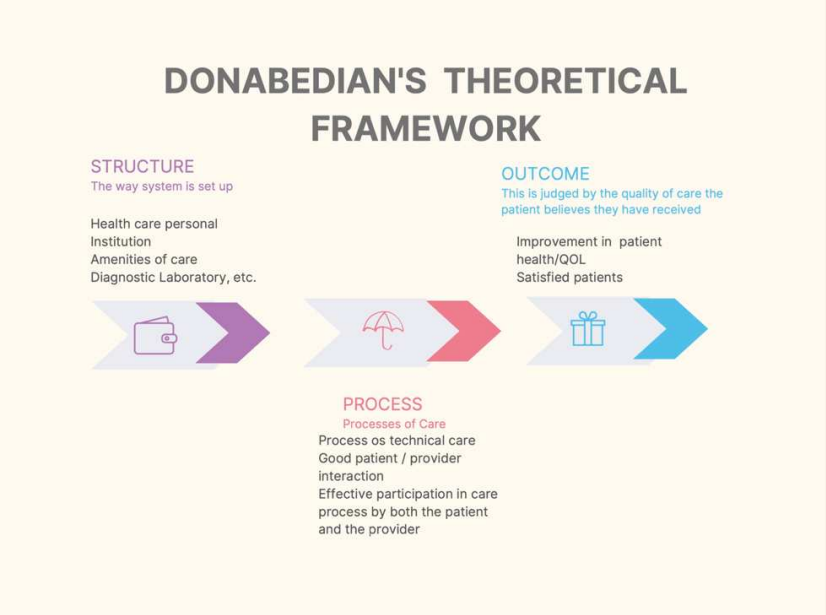
The conceptual framework will be Donabedian's Quality Improvement systems model, (DQISM). This model was developed by Dr. Avedis Donabedian. Dr. Donabedian was born on January 7, 1919, in Beirut, Lebanon (Suñol,2000). He attended the American University in Beirut, where he received a BA degree in 1940 and an MD degree in 1944. He initially practiced in Jerusalem and Beirut until 1954, when he left the country with his wife and two children and moved to Boston, MA. He attended and graduated from Harvard University with an MPH degree in 1954 (Best & Neuhauser, 2004). He taught preventative medicine at the New York Medical College from 1957 to 1961. He then moved to Michigan to teach at the school of public health at the University of Michigan. He researched and taught at the university for 28 years until he retired in 1989. He remained active and continued to lecture throughout the world, and he served the University of Michigan as an emeritus professor until his death on November 9, 2000 (Ayanian & Markel, 2016).

During this time, Dr. Donabedian created and continued to refine his formulation of measuring quality care within healthcare systems. The three main components of this conceptual framework are structure, process, and outcome (Donabedian, 1966). Dr. Donabedian believed that structure measures affect process measures, which affect outcome measures (Donabedian,

1988). See Figure 2.1. The original model was a way to evaluate the quality of care given in a healthcare setting.

Figure 2.1

Donabedian's Theoretical Framework



This model has been applied to large healthcare systems, health maintenance organizations, mental health, specialty healthcare services, nursing homes, and even small private practices (Best & Neuhauser, 2004). Throughout the literature, the components of process and outcome seem to be clearly defined because there is dynamic reciprocity between these components. The structure, however, is less clearly delineated (Glickman et al., 2007). Donabedian's structure-process-outcome framework has been adapted and successfully used to evaluate educational modules with web-based components (Tam et al., 2018).

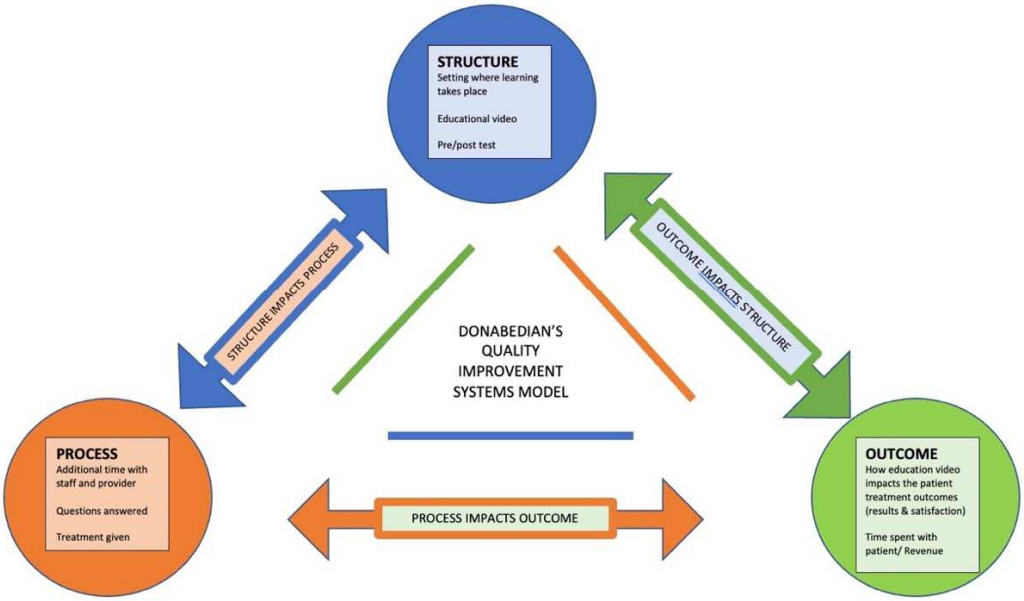
In clinical practice, the structure-process-outcome model for uniformity in patient education lays the foundation for more effective patient-centered care. The Donabedian quality improvement systems model is a good fit to help evaluate the use of a patient education module within a small medical aesthetics practice. The construct of the structure-process-outcome model works very well as a framework to evaluate the impact of an automated patient education module. Each component of this construct is interdependent with all the other components (Tossaint-Schoenmaker et al., 2021). The DNP scholarly project will define structure as the setting in which the automated patient education and treatment take place, as well as the pre/post surveys and the automated learning module. The structure also includes the equipment needed to participate in the learning module. The process involves exposing the patients to the automated module elements, which will have the greatest impact on quality outcomes (Gardner & O'Connell, 2013). This includes the learning module, the pre/post surveys, the interaction with staff, face time with health care providers, additional counseling, and treatment. The outcome is defined by how the education video impacts the patient's understanding of treatment, treatment outcomes, overall treatment time, amount of revenue made, and satisfaction. There are two types of outcomes: Technical outcomes and Interpersonal outcomes. Technical outcomes include good patient results, no adverse events, high survey scores, decreased provider time used for education, and increased revenue for the practice. The interpersonal outcomes include satisfaction with treatment, staff, and the overall treatment experience (Glickman et al., 2007). These will be validated by high patient satisfaction rate scores on post-treatment surveys. The Donabedian quality improvement systems model was chosen because the process currently used for patient education needs improvement. A previous needs assessment within the office showed

that 1/3 of provider time was consumed by patient education, leaving less time for patient treatment.

The Donabedian Structure-Process-Outcome framework (Figure 2.2) will be very suitable to help plan, implement and evaluate this new automated patient education module and the overall effects on practice. This will allow the office to evaluate its current practice against an online education module and more accurately decide which format is more effective.

Figure 2.2

Donabedian's Structure-Process-Outcome Model within a MIAM practice



Chapter III

Project Design

Methodology

Institutional Review Board was granted by Western Carolina University after being submitted for expedited review. There was to be minimal risk to patients participating. (Appendix A)

Subjects

The subjects for this study will be taken from existing and new patients who call to schedule an appointment. All patients who meet the criteria will be asked to participate (See Table 2). Participation in the study will be voluntary.

Table 3.1

Inclusion and Exclusion Criteria for Study

Inclusion Criteria	Age 18+, Male & Female, English speaking, Good physical health , No medical contraindications to dermal fillers or neuromodulators, Willingness to participate (as evidenced by patient consenting to participate in survey)
Exclusion Criteria	History of severe allergies (i.e. anaphylaxis), History of auto-immune disorders (i.e. lupus, scleroderma, and/or rheumatoid arthritis) Pregnant or breastfeeding, History of Keloid, Bleeding or clotting disorders, Facial plastic surgery within 6 months prior to treatment, Other ablative facial procedures within the past 6 months

Setting

This will be a quality improvement project within a small private minimally invasive aesthetics practice in Arden, NC. The study will use an automated patient learning module to provide patient education of minimally invasive aesthetic medicine modalities. The study will send a web link to patients. Patients may participate anywhere that they have access to the internet. A computer link will be sent to patients through the EHR explaining the study. To participate in the study, consent will be obtained electronically (Appendix B). Patients will then be asked seven exclusion criteria questions (Appendix C). If they answer yes to any of these, they will be thanked, and the module will end. Demographics are included in the pre-survey, a video module will be viewed (Appendix E), and a post-survey will be completed. These have been created and used by Dr. Schlessinger, et al., (2010), and Dr. Warren (2013). Permission has been granted to use and modify the instruments and images within this study (Appendix D - F). The patients will take the pre-survey (Appendix G), watch the video module (Appendix H), and take the post-survey before coming into the office (Appendix I). They will then receive a consultation and treatment. Then patients will be emailed a satisfaction questionnaire (Appendix J) to fill out electronically. The medical providers will also fill out this questionnaire in the last week of the study. These forms will all be on a secure electronic database: an online survey software program.

Metrics will be collected from pre- and post-surveys. These metrics will be evaluated along with data from the patient EHR database for check-in and check-out times and revenue generated. These numbers will be analyzed and discussed in the results section of the paper. This study will take place over 6 weeks.

Data Collection Tools & Measures

A practice staff member with a background in computer programming and security has created a link that will be sent through the PatientNow EHR to each patient who is eligible to participate. All the staff will be briefed on the study and shown what the patients will view through the EHR link. Any questions that patients have about how to fill out the surveys or interface with the link will be directed to our computer information technology staff person. Any questions related to content will be directed to the head investigator. Any concerns about the actual project that staff members cannot answer will be directed to WCU doctoral chair and/or mentor.

This will be a quality improvement project within a small non-invasive medical aesthetic practice. A video has been created using PowerPoint slides with a voice-over. A web link will be sent out through the EHR. This will include a standard aging face explanation. PowerPoint slides will explain dermal fillers and how they work and other slides will be about neurotoxins efficacy, duration, and goals with treatment. This video will also include brief bullets from MIAM treatments. The video will include possible side-effects and contraindications (Appendix C). A pre-survey will be administered (Appendix B) before watching the videos, and a post-survey (Appendix D) will be administered after the video. The patient has the option of stopping this at any time. The patient will be instructed that this will take anywhere from 15 to 20 minutes so that they do it at a time when it can be completed. The patient will then come into the practice for treatment with one of four health care providers. All patients will be seen back for follow-up between two to four weeks if their schedule allows. A satisfaction survey link will be emailed (Appendix E).

This study involves minimal risk to patients. These may include minimal stress or anxiety from taking the pre- and post-survey. It will take most patients 15 to 20 minutes to complete the tests and watch the module. The data will be confidential and anonymous. There is a way for it to be tied back to the patient through the EHR by email addresses, but these will not be available to anyone except the lead investigator. Email addresses are needed so satisfaction surveys may be sent to participating patients. It is completely voluntary, and there are no financial incentives for the patients or the providers participating. The practice is providing some of the resources for creating the video: a subscription to iStock photo and adobe photoshop and a link to new and existing patients. The head investigator will be available to answer patients' questions about the learning module during normal office hours. The staff will be briefed about the study. They will see what the patient sees and be instructed on how to send the web link to qualifying patients. Patient data will be collected for 6 weeks. The data will be examined, and a summative project report will be created and presented to committee members.

Interventions

Although the staff is excited about participating in this project, some challenges will occur, including the staff's increased workload at the small private practice. Communication is very important so that the staff does everything that the project proposes. Therefore, fifteen-to-thirty-minute weekly staff educational meetings will be necessary. There may be unseen challenges that will present when the project starts. See the strengths, weaknesses, opportunities, and threats. (SWOT) matrix table

Table 3.2

SWOT matrix table

	HELPFUL TO PROJECT	HARMFUL TO PROJECT
INTERNAL ORIGIN	**Strengths** • We have patient-centered care, which includes a lot of pre-treatment education • Great reputation in the community • Provider level of experience is high • Staff at the practice are very invested in the project	**Weaknesses** • Requires more work from staff to get patients signed up for the study • Will initially increase the time it takes to check out patients and get them scheduled • We may need to hire extra help for peak business times to address the increased workload of getting the patients into the study
EXTERNAL ORIGIN	**Opportunities** • Sales reps start referring patients and other providers to us for training • This may lead to the office selling the patient learning module • This will feed our provider training program • This will create other opportunities at meetings and conferences to be paid as a presenter	**Threats** • Other large practices replicating your content and selling it for themselves • Injectors who resign or leave the practice have knowledge of the content and go out and replicate the content in their new practice • Big Pharma produces something similar using much larger resources and the product is better

Project Analysis

Outcomes

The immediate outcomes that the stakeholders hope to see are improved patient satisfaction and patient retention rates in the practice. When the patients have a greater understanding of the treatment, they have greater overall outcomes and satisfaction with the procedure, the provider, and the practice. Long-term objectives the stakeholders hope for increased patient treatment times. This will coincide with less provider time spent educating patients, reflected by shorter patient check-in and check-out times and a higher amount in gross sales trending over time. Once the study is completed, other metrics that will give valuable information include the patient pre/post survey scores and patient and provider satisfaction rates.

The study's outcomes can be directly linked to Donabedian's structure-process-outcome model. If any component in this process is flawed, it will affect the other two components. In clinical practice, the structure-process-outcome model for uniformity in patient education lays the foundation for more effective patient-centered care. If the mode of facilitating the automated

learning module is inaccessible to patients, the structure is deficient and will affect the process and the outcomes. If the module cannot be viewed, it will not have the positive impact on patient and provider outcomes that it should. All three are interdependent, and all three components must be solid to be most effective and have the greatest impact on change.

Patient education monopolizes much of the patient appointment treatment time, losing revenue for the practice. A smaller number of patients are seen daily due to the time providers spend educating patients. An automated patient education module would give uniformity to each patient's education content before consultation and treatment. This will also allow patients to ask better-informed questions to the provider during consultation.

Impact on Practice

This project will impact the office by providing inciteful information about how these learning modalities will assist in helping providers cut down patient visit times. If this project is successful, videos for each modality offered at the office could also be integrated into the EHR. Creating a standardized learning module for each modality offered in MIAM practices will create social change by improving the uniformity of patient education (Ubbink, 2015). When patients are better informed, they experience more self-confidence in their treatment choices (Warren, 2013). This learning module may benefit other areas in medicine, helping to educate patients about the most common issues associated with procedures, surgery, and as far-reaching as prescribed drug side effects. Patient education strengthens the provider-patient partnership, moving the aesthetic patient from the medical model paradigm to the more inclusive nursing metaparadigm.

Summary

As the aesthetics industry continues to grow, more opportunities to interface with potential patients present themselves. Converting potential patients into actual patients involves listening to the patient, taking time to recommend a treatment plan, and providing a pathway for the patient to learn more about the procedure before they come in to have the procedure. Many patients are getting their pre-appointment information from internet searches and social media (Montemurro et al., 2018). It is important to make sure that patients have accurate information about the medical procedures.

Costs for small medical practices continue to rise. Having better-educated patients leads to patients' having a greater understanding of informed consent (Arlette et al., 2022). This increased patient knowledge will give the provider more time for treatment. The patients will feel better cared for, and because they can participate in treatment choices, they will have a better experience at the practice (Warren, 2015). This feeds into better patient retention and happier providers with less staff turnover, which is the formula for a healthy, thriving, aesthetic medical practice. The future financial impact on the practice will need to be measured. A future pilot study should be performed. Learning modules tied to the EHR would provide greater insights into patient trends and provider trends over a longer period, providing valuable insights to stakeholders.

Chapter IV

Results

The PICOT question that this DNP project examined was: How does watching an automated educational video affect the patient's knowledge and satisfaction and impact the practice? To answer the PICOT question, a series of descriptive statistics and independent samples t-tests were conducted and presented in this chapter. The data for this study consisted of three separate survey responses (pre/post survey on attitudes and knowledge, and a module satisfaction survey), as well as the amount of time each patient spent in the office and revenue generated six weeks before the study and during the study.

Prior to data analysis, the dataset was cleaned for any missing data and outliers. Additionally, the time each patient spent at the office was changed from hours to minutes for ease of analysis. Descriptive statistics were conducted on the survey responses for the pre and post surveys as well as the satisfaction survey. Means and standard deviations were calculated for continuous questions, while frequencies and percentages were calculated for the categorical questions. Finally, two independent samples t-tests originally were performed on the before and during groups for revenue and time respectively. However, the assumption of normality was violated for both tests, so two Mann-Whitney rank sum tests, a nonparametric alternative to the t-test, were run instead.

Descriptive Statistics

Prior to data analysis, descriptive statistics were calculated for the demographic questionnaire from the pre-survey. Frequencies and percentages were calculated for the variables of age, gender, ethnicity, highest level of education, annual income, work status, and marital

status. The most frequently observed category of *Age* was 50-59 (*n* = 10, 30.30%). The most frequently observed category of *Gender* was Female (*n* = 26, 78.79%). The most frequently observed category of *Ethnicity* was White/Caucasian (*n* = 25, 75.76%). The most frequently observed category of *Highest level of education* was College graduate (*n* = 19, 57.58%). The most frequently observed category of *Annual income* was 100,000 & up (*n* = 13, 39.39%). The most frequently observed category of *Marital Status* was Married (*n* = 14, 42.42%). The most frequently observed category of *Work Status* was Work outside the home full time (*n* = 16, 48.48%). Frequencies and percentages are presented in Table 4.1.

Table 4.1

Pre-Post Survey Responses

Frequency Table for Demographic Variables

Variable	*n*	*%*
Age		
18-29	2	6.06
30-39	3	9.09
40-49	9	27.27
50-59	10	30.30
60 and older	5	15.15
Missing	4	12.12
Gender		
Female	26	78.79

Male	4	12.12
Missing	3	9.09
Ethnicity		
White/Caucasian	25	75.76
Native American	1	3.03
Hispanic/Latino	3	9.09
Asian-American	1	3.03
Missing	3	9.09
Highest level of education		
Some college	8	24.24
College graduate	19	57.58
Some graduate school	1	3.03
Completed graduate school at master's Level	2	6.06
Missing	3	9.09
Annual income		
Under $20,000	1	3.03
$20,000-$39,999	3	9.09
$40,000-$59,999	3	9.09
$60,000-$79,999	4	12.12
$80,000-$99,999	6	18.18
100,000 & up	13	39.39

Missing	3	9.09
Marital Status		
Single, never married	9	27.27
Married	14	42.42
Divorced	6	18.18
Widowed	1	3.03
Missing	3	9.09
Work Status		
Student	1	3.03
Work outside the home part time	2	6.06
Work outside the home full time	16	48.48
Work at home (includes homemaker)	8	24.24
Retired	3	9.09
Missing	3	9.09

Participants in this study were asked to complete two different surveys before the beginning of the study (pre), as well as during the study (post). The survey questions for the pre survey consisted of questions relating to what procedures they have done in the past and why, while the post survey consisted of knowledge-based questions about specific procedures. Prior to hypothesis testing, frequencies and percentages were calculated and presented for each survey.

Pre survey responses

The most frequently observed category of *Have you had any past cosmetic and or aesthetics procedures* was Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau, Dermal fillers (*n* = 5, 15.15%). The most frequently observed category of *What procedures are you scheduling this appointment for* was Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau) (*n* = 12, 36.36%). The most frequently observed category of *Which one of the following explanations is the most important reason for your visit* was to make myself feel more attractive (*n* = 11, 33.33%). The most frequently observed category of *Rate your level of treatment expectation regarding your procedure* was Slight change in appearance (*n* = 14, 42.42%). The most frequently observed category of *Rate the role or influence your healthcare provider plays in assisting you in establishing treatment expectations* was Considerable (*n* = 13, 39.39%). The most frequently observed categories of *Rate your knowledge level with the procedures you are visiting with us for* 0 no experience of procedure 10 had this done before and can articulate the science behind it were 8 and 10, each with an observed frequency of 8 (24.24%). Frequencies and percentages are presented in Table 4.2.

Table 4.2

Frequency Table for Nominal Variables

Variable	*n*	*%*
Have you had any past cosmetic and or aesthetics procedures		
Facials/peels, Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau, Derma fillers	4	12.12
Facials/peels	2	6.06

Facials/peels, Laser hair removal, Photo facial (IPL), Derma fillers	1	3.03
Laser hair removal, Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau, Derma fillers	1	3.03
None	1	3.03
Facials/peels, Laser hair removal, Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau	1	3.03
Facials/peels, Photo facial (IPL), Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau, Derma fillers, Surgical	2	6.06
Photo facial (IPL), Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau, Derma fillers	2	6.06
Facials/peels, Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau	1	3.03
Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau	4	12.12
Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau, Derma fillers	5	15.15
Facials/peels, Laser hair removal, Photo facial (IPL), Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau, Derma fillers, Surgical	1	3.03
Facials/peels, Photo facial (IPL), Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau, Derma fillers	1	3.03
Derma fillers	1	3.03
Photo facial (IPL), Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau	1	3.03

Facials/peels, Laser hair removal, Photo facial (IPL), Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau, Derma fillers	1	3.03
Facials/peels, Laser hair removal, Photo facial (IPL), Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau	1	3.03
Missing	3	9.09
What procedures are you scheduling this appointment for		
Facials/peels, Dermal fillers	1	3.03
Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau), Dermal fillers	6	18.18
Facials/peels	2	6.06
Dermal fillers	4	12.12
Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau)	12	36.36
Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau), Option 7	1	3.03
Facials/peels, Photo facial (IPL), Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau), Dermal fillers	1	3.03
Facials/peels, Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau)	1	3.03
Facials/peels, Laser hair removal, Photo facial (IPL), Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau), Dermal fillers	1	3.03
Facials/peels, Laser hair removal, Photo facial (IPL)	1	3.03
Missing	3	9.09
Which one of the following explanations is the most important reason for your visit		

To make myself feel more attractive	11	33.33
Self-esteem	8	24.24
To look younger than my age/friends	5	15.15
Relax muscles, prevent deep wrinkles	1	3.03
To look as well as I can for my age	1	3.03
Coping with life changes	3	9.09
So my outer matches my inner	1	3.03
Missing	3	9.09
Rate your level of treatment expectation regarding your procedure		
Moderate change in appearance	11	33.33
No change in appearance	1	3.03
Slight change in appearance	14	42.42
Significant change in appearance	4	12.12
Missing	3	9.09
Rate the role or influence your healthcare provider plays in assisting you in establishing treatment expectations		
Considerable	13	39.39
No role/influence	4	12.12
Some	3	9.09
Major/Maximum	9	27.27
Minor/slight	1	3.03

Missing	3	9.09
Rate your knowledge level with the procedures you are visiting with us for 0 no experience of procedure 10 had this done before and can articulate the science behind it		
3	1	3.03
4	1	3.03
5	2	6.06
6	2	6.06
7	2	6.06
8	8	24.24
9	4	12.12
10	8	24.24
Missing	5	15.15

Post survey responses

The most frequently observed category of *How many nonsurgical aesthetic procedures were performed in 2020?* was 13 million (*n* = 24, 72.73%). The most frequently observed category of *As you age skin fat muscle and bone changes will occur* was True (*n* = 30, 90.91%). The most frequently observed category of *Which of the following is NOT part of the skins aging process?* was Increased oil production (*n* = 23, 69.70%). The most frequently observed category of *As we age facial fat decreases in which areas?* was Forehead, temples, and cheeks (*n* = 29, 87.88%). The most frequently observed category of *As the face loses volume what facial muscle*

change will NOT occur? was A lifting of the eyelids (*n* = 26, 78.79%). The most frequently observed category of *Which of the following is a potential positive for using a hyaluronic acid dermal filler?* was All the above (*n* = 29, 87.88%). The most frequently observed category of *Which of the following is a potential negative from using hyaluronic acid dermal filler?* was Bruising (*n* = 28, 84.85%). The most frequently observed category of *Which of the following is a potential positive from using a collagen stimulating dermal filler?* was All of the above (*n* = 26, 78.79%). The most frequently observed category of *Which of the following is a potential negative from using a collagen stimulating dermal filler?* was Allergic reaction (*n* = 29, 87.88%). The most frequently observed category of *How much dermal filler product is in one syringe?* was 1/4 of a teaspoon (*n* = 26, 78.79%). The most frequently observed category of *Neuromodulators like Botox are used for?* was Relaxing the facial muscles so that wrinkles appear less severe (*n* = 29, 87.88%). The most frequently observed category of *PDO Threads are used for?* was Lifting and tightening the skin (*n* = 30, 90.91%). Frequencies and percentages are presented in Table 4.3.

Table 4.3

Frequency Table for Nominal Variables

Variable	*n*	*%*
How many nonsurgical aesthetic procedures were performed in 2020		
20 million	5	15.15
13 million	24	72.73
4 million	1	3.03
Missing	3	9.09

As you age skin fat muscle and bone changes will occur		
True	30	90.91
Missing	3	9.09
Which of the following is NOT part of the skins aging process		
Increased oil production	23	69.70
Reduced collagen and elastin	2	6.06
Increased pore size	2	6.06
Reduced pigment & melanin	3	9.09
Missing	3	9.09
As we age facial fat decreases in which areas		
Forehead, temples, and cheeks	29	87.88
Eyelids, jawline, and neck	1	3.03
Missing	3	9.09
As the face loses volume what facial muscle change will NOT occur		
A lifting of the eyelids	26	78.79
Fullness around the chin & jawline referred to as jowls	1	3.03
Uneven facial contours	2	6.06
An aged rather than a youthful face	1	3.03
Missing	3	9.09
Which of the following is a potential positive for using a hyaluronic acid dermal filler		

All the above	29	87.88
Results may be seen immediately	1	3.03
Missing	3	9.09
Which of the following is a potential negative from using hyaluronic acid dermal filler		
Costly	1	3.03
Bruising	28	84.85
Tiredness	1	3.03
Missing	3	9.09
Which of the following is a potential positive from using a collagen stimulating dermal filler		
All of the above	26	78.79
Lasts anywhere from 1.5 years to 5 years	2	6.06
Missing	5	15.15
Which of the following is a potential negative from using a collagen stimulating dermal filler		
Allergic reaction	29	87.88
Low-grade fever	1	3.03
Missing	3	9.09
How much dermal fille product is in one syringe		
1/4 of a teaspoon	26	78.79

1 teaspoon	2	6.06
1/2 of a teaspoon	2	6.06
Missing	3	9.09
Neuromodulators like Botox are used for		
Relaxing the facial muscles so that wrinkles appear less severe	29	87.88
Replacing lost volume due to aging	1	3.03
Missing	3	9.09
PDO Threads are used for		
Lifting and tightening the skin	30	90.91
Missing	3	9.09

Satisfaction Survey Responses

In addition to the pre and post survey, participants were also given a satisfaction survey to rate how they felt about the module shown. The most frequently observed category of *How well did this module assist you in understanding the facial aging process*? was 4= Excellently/Definitely (*n* = 31, 93.94%). The most frequently observed category of *How well did this module assist you in establishing treatment expectations of dermal fillers?* was 4= Excellently/Definitely (*n* = 31, 93.94%). The most frequently observed category of *How helpful was the module in understanding the pros and cons of dermal fillers?* was 4= Excellently/Definitely (*n* = 29, 87.88%). The most frequently observed category of *How helpful was this type of modular learning experience in helping you to understand the content?* was 4= Excellently/Definitely (*n* = 31, 93.94%). The most frequently observed category of *Did the*

module give you enough information to feel comfortable signing an informed consent? was 4= Excellently/Definitely (*n* = 26, 78.79%). The most frequently observed category of *Was the learning module easy to view?* was 4= Excellently/Definitely (*n* = 29, 87.88%). The most frequently observed category of *Were the images pictures in the learning module helpful in understanding the content*? was 4= Excellently/Definitely (*n* = 30, 90.91%). The most frequently observed category of *Was watching this learning module time well spent?* was 4= Excellently/Definitely (*n* = 30, 90.91%). The most frequently observed category of *Would you recommend the use of this automated learning module to other patients seeking dermal fillers- Patients only* was 4= Excellently/Definitely (*n* = 29, 87.88%). The most frequently observed category of *Would you recommend the use of this automated learning module to other providers injecting dermal fillers- Healthcare providers only* was 4= Excellently/Definitely (*n* = 27, 81.82%). Frequencies and percentages are presented in Table 4.4.

Table 4.4

Frequency Table for Nominal Variables

Variable	*n*	*%*
How well did this module assist you in understanding the facial aging process		
4= Excellently/Definitely	31	93.94
3= Adequately/Most Likely	2	6.06
Missing	0	0.00
How well did this module assist you in establishing treatment expectations of dermal fillers		
4= Excellently/Definitely	31	93.94

3= Adequately/Most Likely	2	6.06
Missing	0	0.00
How helpful was the module in understanding the pros and cons of dermal fillers		
3= Adequately/Most Likely	4	12.12
4= Excellently/Definitely	29	87.88
Missing	0	0.00
How helpful was this type of modular learning experience in helping you to understand the content		
4= Excellently/Definitely	31	93.94
3= Adequately/Most Likely	2	6.06
Missing	0	0.00
Did the module give you enough information to feel comfortable signing an informed consent		
3= Adequately/Most Likely	7	21.21
4= Excellently/Definitely	26	78.79
Missing	0	0.00
Was the learning module easy to view		
4= Excellently/Definitely	29	87.88
3= Adequately/Most Likely	4	12.12
Missing	0	0.00

Were the images pictures in the learning module helpful in understanding the content		
4= Excellently/Definitely	30	90.91
3= Adequately/Most Likely	3	9.09
Missing	0	0.00
Was watching this learning module time well spent?		
4= Excellently/Definitely	30	90.91
3= Adequately/Most Likely	3	9.09
Missing	0	0.00
Would you recommend the use of this automated learning module to other patients seeking dermal fillers Patients only		
4= Excellently/Definitely	29	87.88
3= Adequately/Most Likely	4	12.12
Missing	0	0.00
Would you recommend the use of this automated learning module to other providers injecting dermal fillers		
4= Excellently/Definitely	27	81.82
3= Adequately/Most Likely	2	6.06
Missing	4	12.12

Additionally, to graphically illustrate the module satisfaction results, barplots for each of the satisfaction questions were calculated and presented below. See figures 4.1-4.9 for responses to the satisfaction survey questions.

Figure 4.1

Barplot of How well did this module assist you in understanding the facial aging process

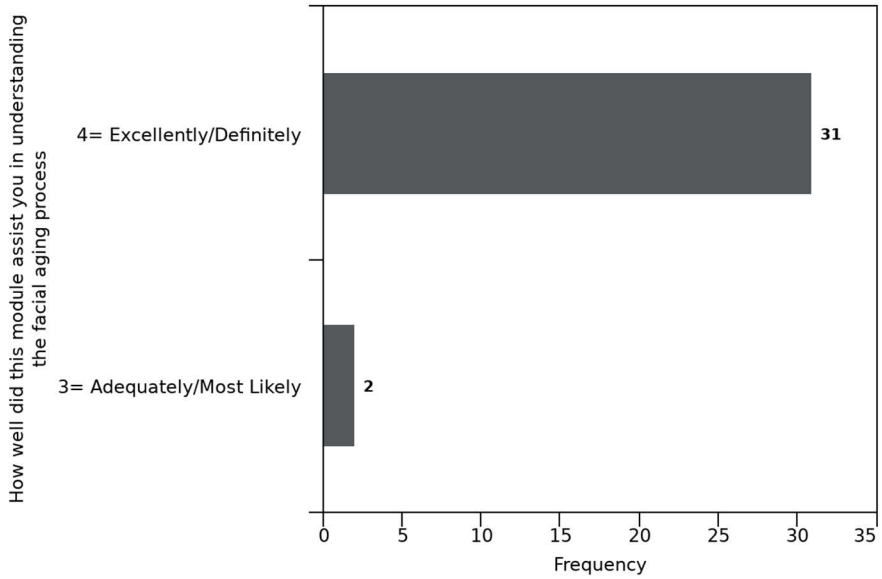


Figure 4.2

Barplot of How well did this module assist you in establishing treatment expectations of dermal fillers

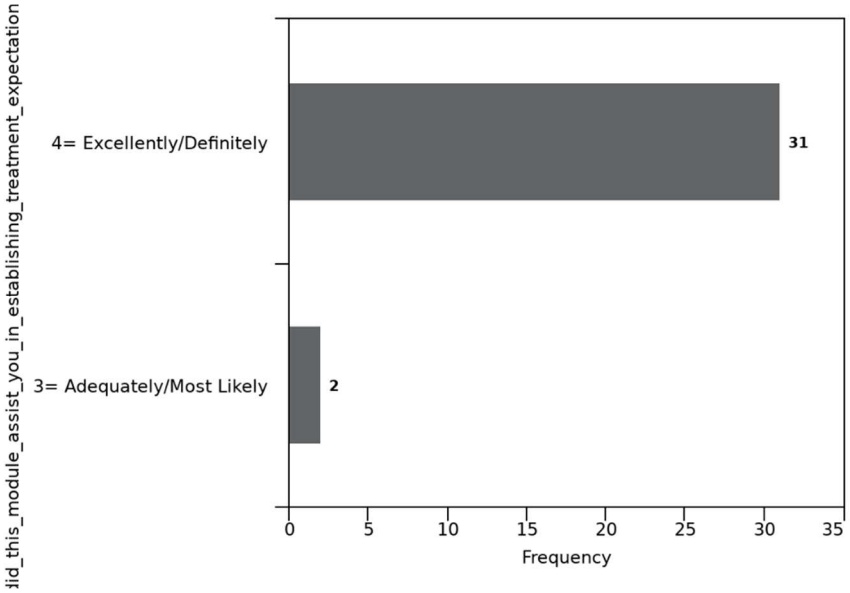


Figure 4.3

Barplot of How helpful was the module in understanding the pros and cons of dermal fillers

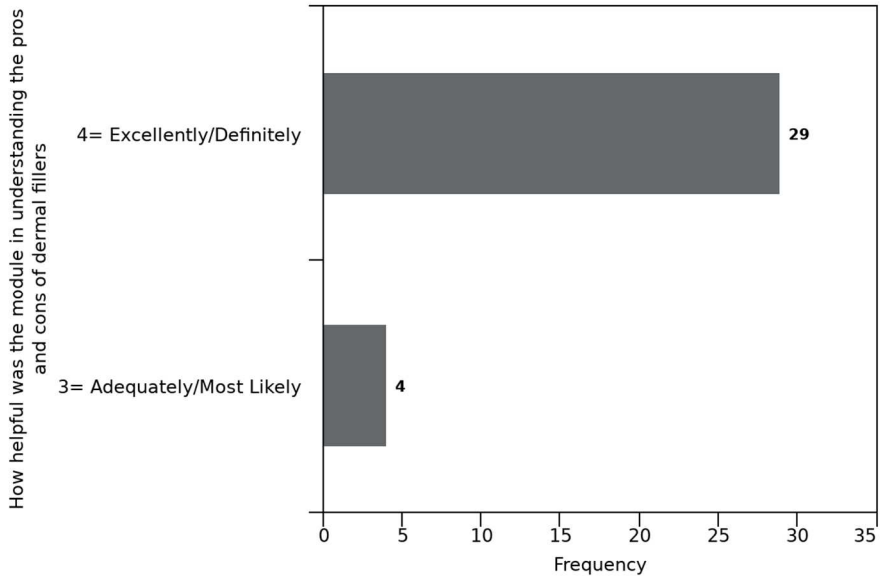


Figure 4.4

Barplot of Did the module give you enough information to feel comfortable signing an informed consent

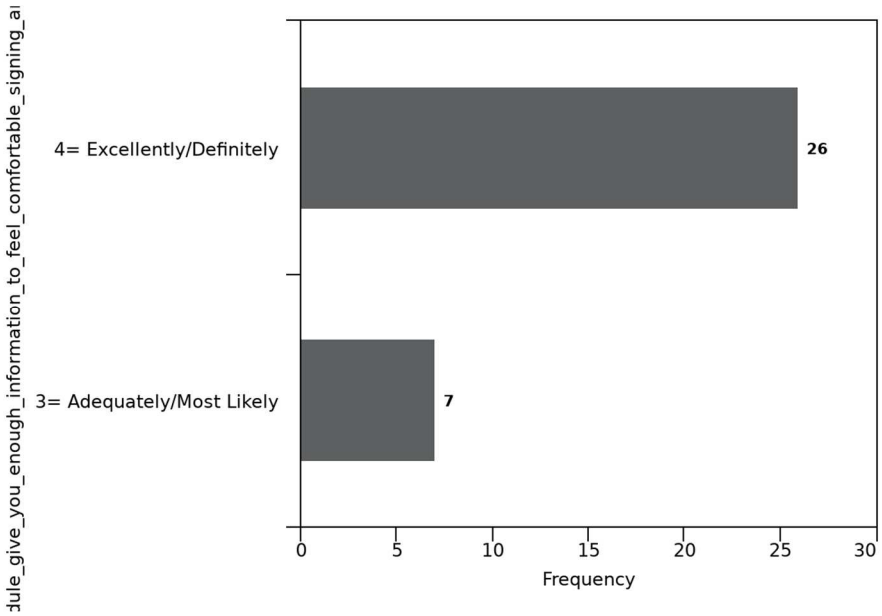


Figure 4.5

Barplot of Was the learning module easy to view

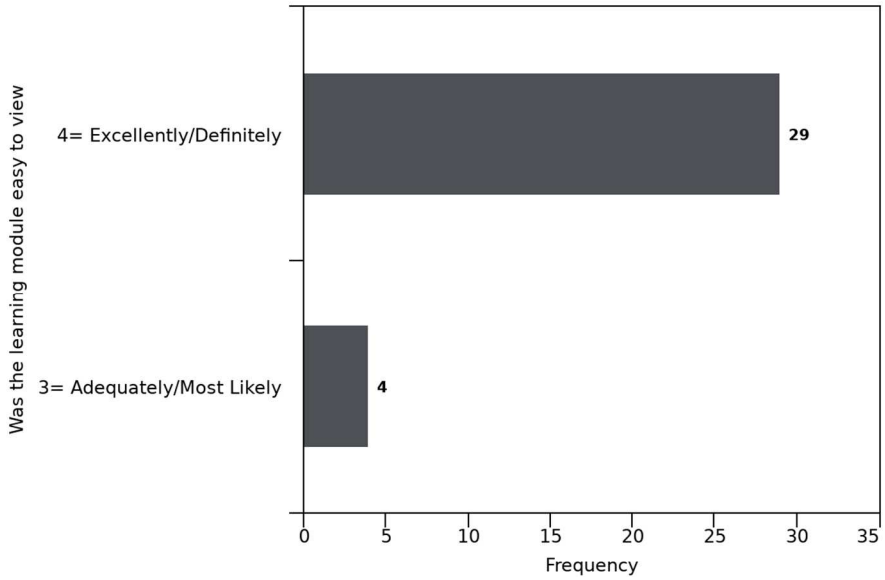


Figure 4.6

Barplot of Were the images pictures in the learning module helpful in understanding the content

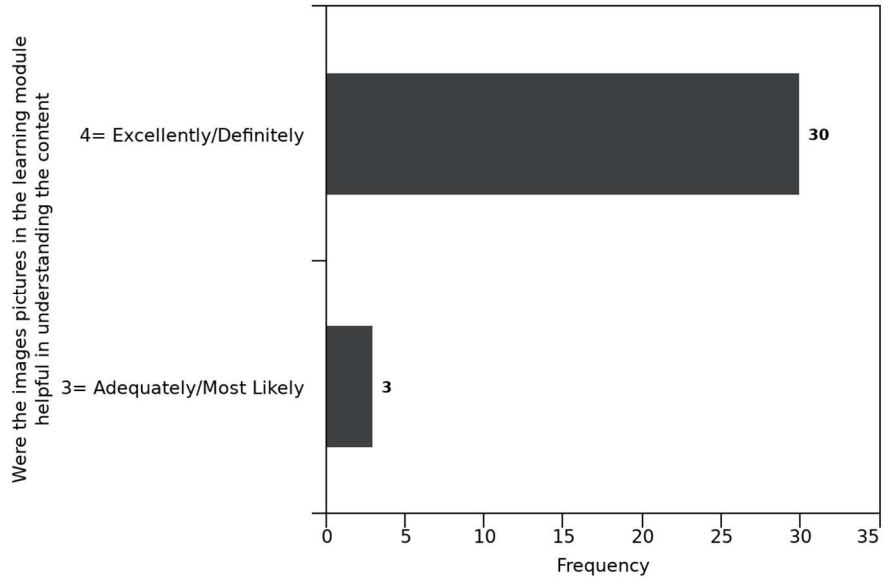


Figure 4.7

Barplot of Was watching this learning module time well spent

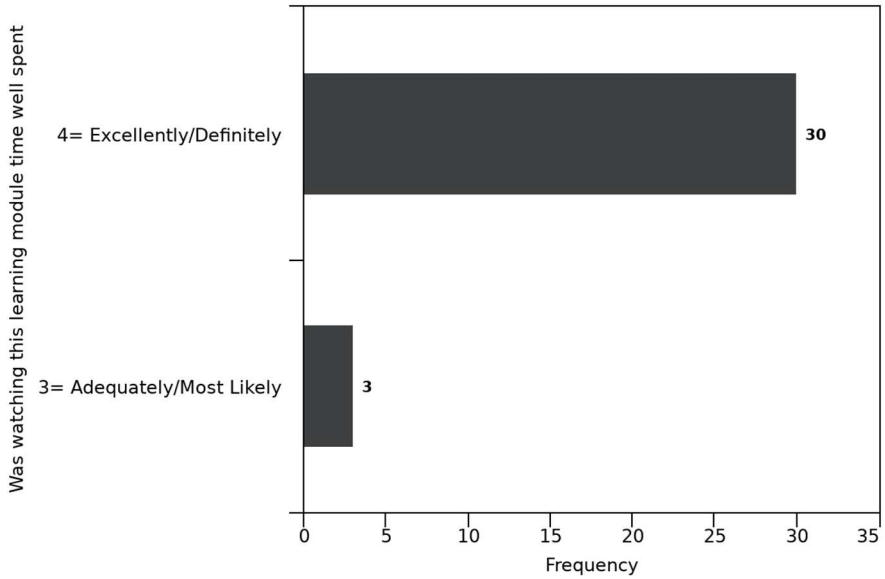


Figure 4.8

Barplot of Would you recommend the use of this automated learning module to other patients seeking dermal fillers Patients only

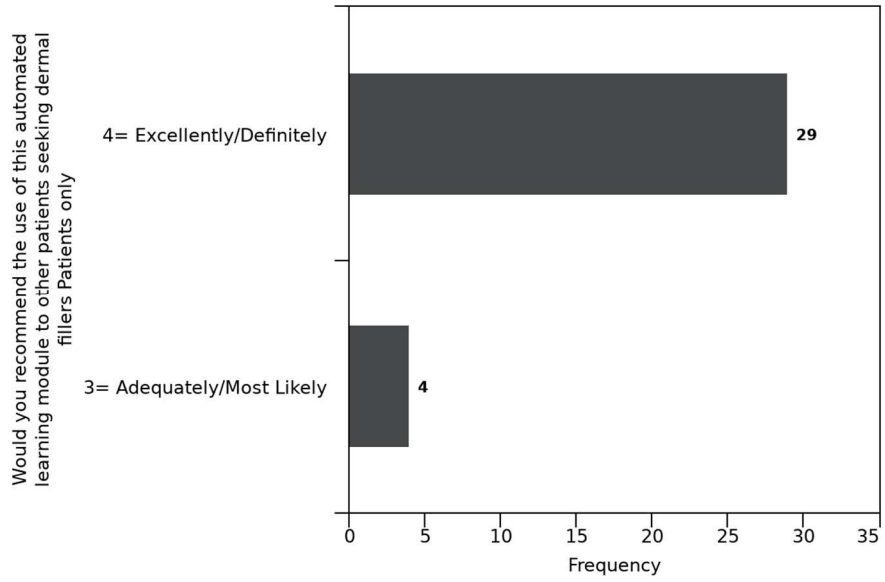
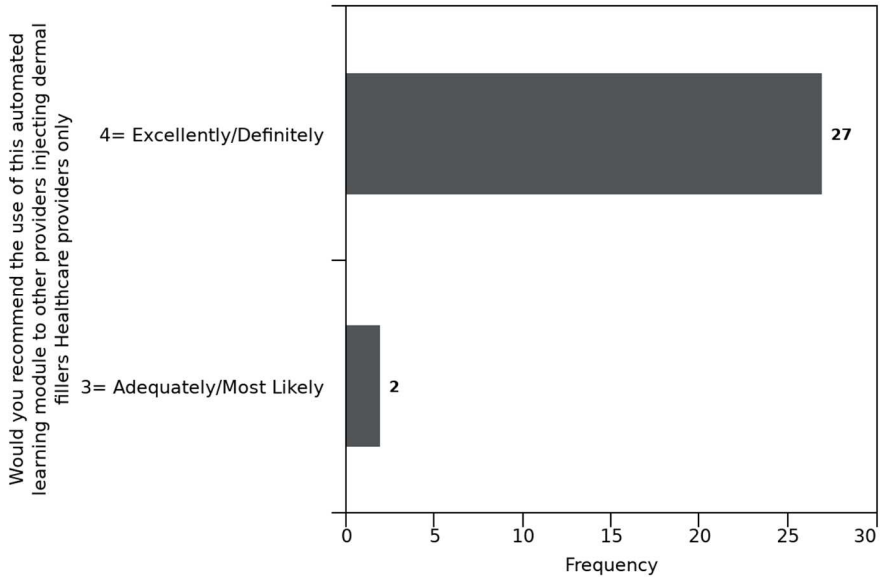


Figure 4.9

Barplot of Would you recommend the use of this automated learning module to other providers injecting dermal fillers Healthcare providers only



Hypothesis testing

To answer the PICOT question and corresponding hypotheses, a two-tailed independent samples *t*-test was conducted to examine whether the mean of time spent at the office was significantly different between the before and during groups. Prior to analysis, the assumptions of normality and homogeneity of variance were assessed using a Shapiro Wilks test and Levene's test respectively. The assumption of normality was violated, $W = 0.44$, $p < .001$. Therefore, a Mann-Whitney rank sum test was run instead. The two-tailed Mann-Whitney two-sample rank-sum test is an alternative to the independent samples *t*-test but does not share the same assumptions (Conover & Iman, 1981). There were 316 observations in group during the study and 201 observations in group before the study.

The result of the two-tailed Mann-Whitney *U* test was significant based on an alpha value of .05, $U = 23417.5$, $z = -5.04$, $p < .001$. The mean rank for group during was 232.61 and the mean rank for group before was 300.50. This suggests that the distribution of time stayed for group during was significantly different from the distribution of time stayed for the before category. The median for during (*Mdn* = 35.00) was significantly lower than the median for before (*Mdn* = 51.00). Table 4.5 presents the result of the two-tailed Mann-Whitney *U* test. Figure 4.10 presents a boxplot of the ranks of time by before and during.

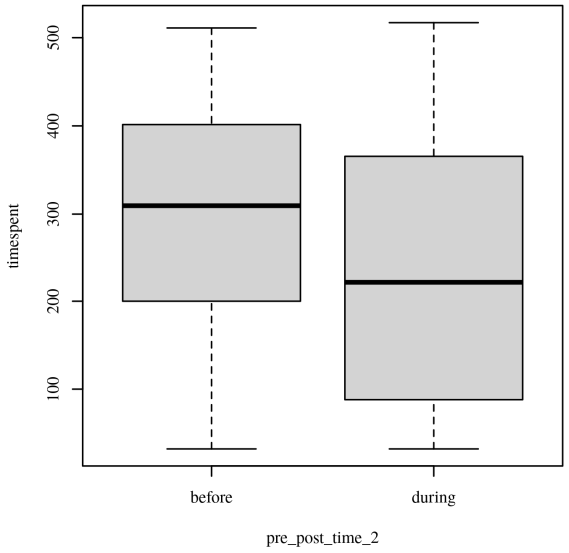
Table 4.5

Two-Tailed Mann-Whitney Test for time by pre_post_time

	Mean Rank				
Variable	during	before	*U*	*z*	*p*
time	232.61	300.50	23,417.50	-5.04	< .001

Figure 4.10

Ranks of time by pre_post_time



In addition, another two-tailed independent samples *t*-test was conducted to examine whether the mean of revenue was significantly different between the before and during categories. Prior to analysis, the assumptions of normality and homogeneity of variance were assessed. The assumption of normality was violated, $W = 0.37$, $p < .001$. Therefore, a two-tailed Mann-Whitney rank-sum test was conducted to examine whether there were significant

differences in revenue between the two time points (before and during). There were 67 observations in group before and 80 observations in group during.

The result of the two-tailed Mann-Whitney *U* test was significant based on an alpha value of .05, $U = 3215$, $z = -2.09$, $p = .037$. The mean rank for group before was 81.99 and the mean rank for group during was 67.31. This suggests that the distribution of revenue for group before was significantly different from the distribution of revenue for the during category. The median for before (*Mdn* = 300.00) was significantly larger than the median for during (*Mdn* = 152.50). Table 4.6 presents the result of the two-tailed Mann-Whitney *U* test. Figure 4.11 presents a boxplot of the ranks of revenue by time points (before and during).

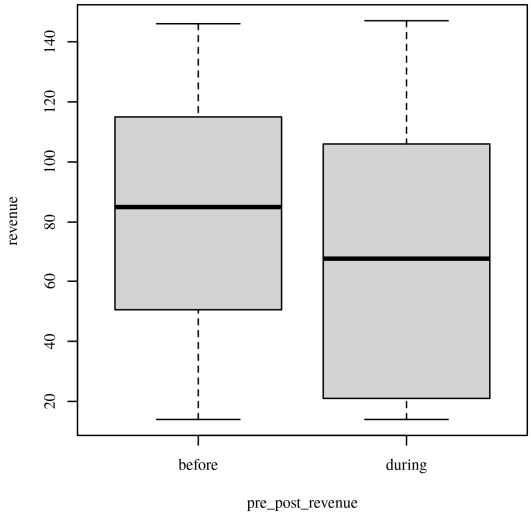
Table 4.6

Two-Tailed Mann-Whitney Test for revenue by pre_post_revenue

	Mean Rank				
Variable	before	during	*U*	*z*	*p*
revenue	81.99	67.31	3,215.00	-2.09	.037

Figure 4.11

Ranks of revenue by pre_post_revenue



Project Findings

The main change that we hoped to see was an increase in revenue and or a decrease in the amount of provider time spent having to educate patients. There was a decrease in the amount of time that each provider was spending with the patients, and this was statistically significant. There was a significant change in the distribution of revenue before and during the study. The median before the study was larger than the median during the study. The amount each patient was spending at each visit decreased during the study, but more patients were seen during this time frame. This may have been because the provider had to spend less time on education and was able to get more patients treated. The amount of revenue increased by approximately $20,000 in the six weeks during the study even though the number of patients seen during the study time frame was less.

Discussion of Results

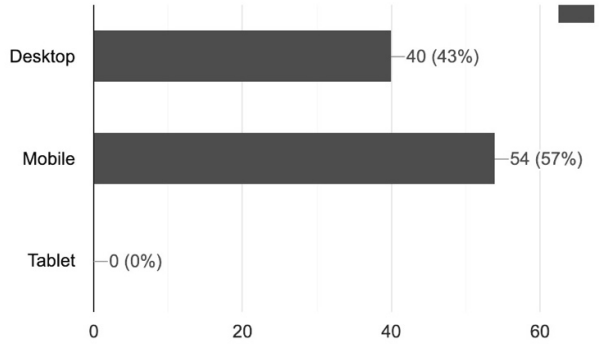
Many external factors may have contributed to these results. The impending mid-term elections may have had an impact on patients spending. The impact of COVID-19 on small businesses cannot be overstated. Before the study, we had more injectors than we had during the study so the fact that more patients were seen during this time frame was impressive, as was the fact that the patient appointment time got shorter and was statistically significant. Historically the months of August and September tend to be slower in aesthetics as many patients who have children are getting in one last vacation before the start of school.

Some other factors apparent during the study was the lack of inclusivity on the demographic survey instrument which was highlighted in several questions. When asking about education three of the participants could not answer that because they had no college education. That option was not available. Other patients remarked that there should be a category for same sex partners who are in a lifelong committed relationship but choose not to be legally married. Finally, three participating patients refused to answer the gender questions because options were limited to male, female, and non-binary.

Another issue that was highlighted was the difficulty of navigating the website used for the surveys. This became evident when comparing the number of patients who started the process but did not go all the way through. Ninety-four patients filled out the inclusion criteria survey, but only forty-two took the pre-video survey. Most of these patients completed the questions on a mobile device (n=54) as depicted in Figure 5.1. This may have contributed to confusion on where to click after being re-routed to another page. Only thirty-eight patients completed the post-video survey and only thirty-three completed the final satisfaction survey.

Figure 5.1

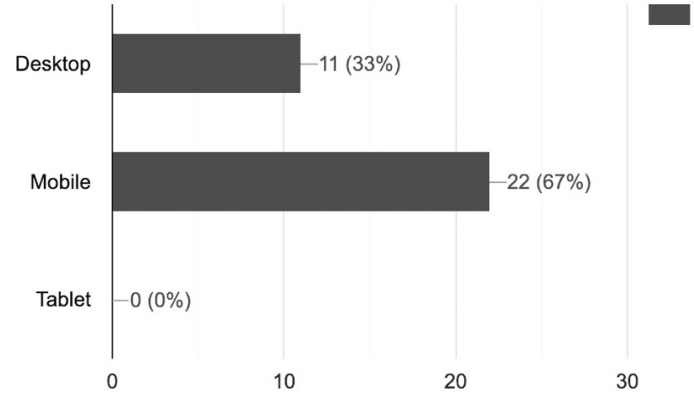
Devices used to complete Inclusion Criteria Questions



The largest age group that completed all the surveys was aged 50 to 59 (n=10), followed by ages 40 to 49 (n=9). An interesting point is that greater than one half of participants were completing the surveys on a mobile device as opposed to a tablet, laptop, or desktop computer (Figure 5.2)

Figure 5.2

Device used to complete final satisfaction survey



Chapter V

Project Significance, Implications, & Recommendations

Project Significance

The significance of this quality improvement project is twofold. First, it showed that there is improvement for the patient experience when they have more knowledge walking in the door. When patients are better informed, they feel more in control of the treatment and the treatment outcomes. This leads to a more thorough informed consent and hopefully better overall satisfaction with the experience at the practice. Second, this may lead to better overall patient retention saving the practice money. The project would need to be extended over a much longer period to see its impact on the practice. At the very least it would be beneficial to look at the provider time spent with patients and revenue made for one year prior to implementation and one year after.

The project provided positive feedback for our practice. The learning module received high satisfaction scores. Feedback included comments like “I have never heard some of the information included in this video” and “this was an AWESOME explanation of how the face ages and how to fix it”. The demographics were a little different than we initially thought they would be. Many patients are at a higher education level, and more are married and working outside the home than we would have thought.

Patient education is paramount in this very competitive industry. This video may be the first of many made available to our patients. MIAM is a different niche of medicine: patients are actively choosing their providers and are not restrained by insurance companies dictating where to be treated. This project provided stakeholders with enough information to continue to pursue implementing the automated education module within our practice. Discussions about having an

automated learning module for each modality offered are active. Our practice has also reached out to an app developer to create an app for the phone. This would help patients narrow down which video to view based on their skin concerns.

Implications to Practice

Using an automated patient module will be beneficial to industry stakeholders, patients, and private MIAM practices. Understanding treatment options allows for a more informed patient. The idea of an automated patient education module could be extrapolated to other medical specialties as well. Many medical practices struggle with providing patient education in a uniform, timely manner. This would allow patients to have the same exposure to the learning module, ensuring that every patient walking through the door has been presented the same information. This doesn't always mean that all patients have understood the information uniformly, but at least the initial information would be presented the same way.

Recommendations

SkinOvation Advanced Aesthetics plans to implement the automated patient education module for each treatment modality that we offer. This will replace standard patient learning within the practice. This type of patient learning will allow time for more involved procedures. This gives the patient more provider interaction time and allows them to ask meaningful questions. The provider can treat and care for the patient in less time. This allows for a larger number of patients to be seen daily, increasing practice revenue.

Recommendations to the MIAM industry include integration of patient educational videos into the EHR. Most practices have patient portals which allow patients to fill out pertinent health information before the first visit or as their medical history changes. Having the patients

access an educational video module based on patient appointment type would continue the momentum started within this project.

Maintaining the Change

Partnering with an electronic health record company such as PatientNow would allow these videos to be built into the patient's chart. This would also track which education modules the patient has seen so the same modules do not repeatedly get sent to them. Having education modules built into an EHR would also allow for broader metrics and trend analysis over a longer period. Manuel data extraction by office staff is time consuming and is subject to human error but using an EHR allows this data to be easily accessed.

Summary

Nurses know how important patient education is regardless of medical specialty. This quality improvement project is important to aesthetic medicine because it shows the importance of engaging the patient in their own treatment. Nurses play a vital role in patient education. They can act as change agents within this industry to push the quality of education available to patients. Patient education provides higher patient satisfaction, keeps costs lower, and increases revenue. Just as important, it contributes to the patients understanding of informed consent (Fravel et al., 2015). Education sets up realistic expectations early on. This allows patients a better understanding of what is and is not possible. This leads to less dissatisfied patients, less negative online reviews, and less negative discussion in the community about the practice (Bondi & Okin, 2021).

Patient education has always been a part of the nursing standard of care. Using an electronic health records system to help with this would allow nurses to perform other equally important duties. The benefits of using an automated patient education module could be

extrapolated to many medical specialties. It benefits all the stakeholders involved and improves the quality of care. As we move forward with technology, nurses need to be active in making uniform patient education the standard of care.

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APPENDIX A – IRB Approval Letter

Western Carolina University | Graduate School and Research

DATE:	25-Aug-2022
TO:	Angela (Angie) Trombley
FROM:	IRB
PROJECT TITLE:	2022-06-04-01, How an automated patient education module improves patient outcomes and informs the quality of care measures for providers within a minimally invasive aesthetic medicine clinic
SUBMISSION TYPE:	IRB Request for Initial Review of Research
ACTION:	APPROVED
APPROVAL DATE:	13-Aug-2022
EXPIRATION DATE:	12-Aug-2023
REVIEW TYPE:	
REVIEW CATEGORY:	Expedited Review

Thank you for your submission of IRB Request for Initial Review of Research materials for this project. The IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received based on applicable federal regulations.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Federal regulations require that each participant receives a copy of the consent document.

APPENDIX B - WCU Consent Form to Participate in a Research Study

Project Title: How an automated patient education module improves patient outcomes and informs the quality-of-care measures for providers within a minimally invasive aesthetic medicine clinic

This study is being conducted by: Wendi Harper-Lonabaugh, MSN, APRN, FNP-C (faculty advisor: Dr. Angela Trombley, DNP)

Description and Purpose of the Research: You are invited to participate in a research study about patient education prior to getting treatment. By doing this study we hope to learn if patients feel more knowledgeable about the procedure, better consented, and more satisfied with the procedure. We will also ask the patient and the provider to fill out a questionnaire at the follow-up visit

What you will be asked to do: You will be sent a link via the patient portal. You will be asked to take a pre-video survey, watch an online video, and take a post-video survey. This will be BEFORE coming into the office for treatment. At the 2 to 4-week follow-up visit, you will be asked to fill in a 12-question evaluation.

Risks and Discomforts: There are no anticipated risks from participating in this research. We anticipate that your participation in this survey presents no greater risk than your everyday use of the Internet. Some of the questions we will ask you as part of this study may make you feel uncomfortable. You may refuse to answer any of the questions, take a break or stop your participation in this study at any time.

Benefits: There are no direct benefits to you for participating in this research study. The study may help us better understand the informed consent process and how to better educate patients prior to patients being treated in the office. It will also help our office to examine patient education and the impact it has on the practice and the patients we serve.

Privacy/Confidentiality/Data Security: The data collected in this research study will be kept confidential. Participation in research may involve some loss of privacy. We will do our best to make sure that the information about you is kept confidential, but we cannot guarantee total confidentiality. Your personal information may be viewed by individuals involved in the research and may be seen by people including those collaborating, funding, and regulating the study. We will share only the minimum necessary information in order to conduct the research. Your personal information may also be given out if required by law, such as pursuant to a court order. While the information and data resulting from this study may be presented at scientific meetings or published in a scientific journal, your name or other personal information will not be revealed. Your information will be collected through a survey on a secure website (using WordPress). The survey questions use a WordPress applet called survey maker by ays-pro. No others will be able to view the data. Some personal identifiable information (PII) data will be collected as part of the study and will be held on the encrypted web server. The data will be stored for 3 years after the study. The information will be kept confidential by use of a coding system, secure storage, using summary data from a whole group, and/or use of pseudonyms for direct quotes The research team will work to protect your data to the extent permitted by technology. It is possible, although unlikely, that an unauthorized individual could gain access to your responses because you are responding online. This risk is similar to your everyday use of the internet. If you give the research team permission to quote you directly, the researchers will give you a pseudonym and will generalize your quote to remove any information that could be personally identifying.

Voluntary Participation: Participation is voluntary and you have the right to withdraw your consent or discontinue participation at any time without penalty. If you choose not to participate or decide to withdraw, there will be no impact on your access to medical care.

Compensation for Participation: None

Contact Information: For questions about this study, please contact Wendi Harper-Lonabaugh MSN, APRN, FNP-C at 828-551-2442 or wlharper2@catamount.wcu.edu You may also contact Dr. Angela Trombley, DNP the principal investigator and faculty advisor for this project, at: atrombley@email.wcu.edu

If you have questions or concerns about your treatment as a participant in this study, you may contact the Western Carolina University Institutional Review Board through the Office of Research Administration by calling 828-227-7212 or emailing irb@wcu.edu. All reports or correspondence will be kept confidential to the extent possible.

You will be given a copy of this information to keep for your records.

I understand what is expected of me if I participate in this research study. I have been given the opportunity to ask questions and understand that participation is voluntary. My signature shows that I agree to participate and am at least 18 years old. By checking the box before I start the first survey, I am giving my consent to participate in this study.

APPENDIX C - 7 Exclusion Questions

Number	Question
1.	Are you under the age of 18?
2.	Are you currently pregnant or breastfeeding?
3.	Do you have a history of severe allergies resulting in anaphylaxis?
4.	Do you have a history of keloid scarring, bleeding, or clotting disorder?
5.	Do you have a history of untreated autoimmune disorders?
6.	Have you been diagnosed with: Scleroderma, Rheumatoid Arthritis, or Lupus?
7.	Have you had any facial surgery, or any other ablative facial procedures in the last 4 months?

APPENDIX D - Permission Letters to use Surveys for DNP Project

SKINOVATION
Advanced Aesthetics

Wendi Lonabaugh <wendi.harper@skinovationnc.com>

Fw: Permission to use survey
1 message

Wendi Harper Lonabaugh <wlharper2@catamount.wcu.edu> Sat, Jul 23, 2022 at 7:14 PM
To: "wendi.harper@skinovationnc.com" <wendi.harper@skinovationnc.com>

From: Daniel Schlessinger <schlessinger.daniel@gmail.com>
Sent: Monday, April 18, 2022 11:43 AM
To: Wendi Harper Lonabaugh <wlharper2@catamount.wcu.edu>
Cc: Joel Schlessinger <skindoc@lovelyskin.com>
Subject: Re: Permission to use survey

Thank you so much for reaching out, Wendi. You have permission to include Figure 1 in your doctoral project so long as you provide attribution. Out of curiosity, what is the topic of your doctoral project?

Daniel Schlessinger, MD

PGY-3, Division of Dermatology

Washington University School of Medicine in St. Louis

402-669-8181

From: Wendi Harper Lonabaugh <wlharper2@catamount.wcu.edu>
Date: Monday, April 18, 2022 at 9:24 AM
To: Daniel Schlessinger <schlessinger.daniel@gmail.com>
Subject: Permission to use survey

April 18, 2022

Dr. Schlessinger,

Hi. I am a nursing doctoral student at Western Carolina University in North Carolina. I would like to get permission to use a survey that appeared in the Journal of Clinical and Aesthetic Dermatology.

The article is by Schlessinger, Schlessinger, and Schlessinger (2010) November, 3(11). 30-35, entitled “Prospective Demographic Study of Cosmetic Surgery Patients”.

APPENDIX E - Permission Letters to use Surveys for DNP Project

SKINOVATION
Advanced Aesthetics

Wendi Lonabaugh <wendi.harper@skinovationnc.com>

Fw: Tool permission

1 message

Wendi Harper Lonabaugh <wlharper2@catamount.wcu.edu> Sat, Jul 23, 2022 at 7:10 PM
To: "wendi.harper@skinovationnc.com" <wendi.harper@skinovationnc.com>

From: Facialogy <facialogy@aol.com>
Sent: Saturday, July 16, 2022 11:09 PM
To: Wendi Harper Lonabaugh <wlharper2@catamount.wcu.edu>
Subject: RE: Tool permission

Hi Wendy,

Hi there. As long as you properly site everything I am officially allowing you to use the pre and post surveys. Good luck.

Hermine

Hermine Warren DNP, APRN, CANS, CNM
Doctor of Nursing Practice

-------- Original message --------
From: Wendi Harper Lonabaugh <wlharper2@catamount.wcu.edu>
Date: 7/16/22 9:46 PM (GMT+01:00)
To: facialogy@aol.com
Subject: Tool permission

Dr. Warren,

I hope this email finds you well. I just wanted to touch base with you. I am just about to start implementing my study. I wanted to get your final approval to use your pre- and post-survey credited to you, of course. Please let me know via email so I can include it in the Appendix section of the paper. I will be happy to send you the results and a copy of my project when I have it completed. I am still trying to work out the dissemination portion of this as well. I look forward to hearing from you. Take care!
Sincerely,

Wendi Harper-Lonabaugh APRN, FNP-C
cell 828-279-5829

APPENDIX F - Permission Letters to use Images for DNP Project

SKINOVATION
Advanced Aesthetics

Wendi Lonabaugh <wendi.harper@skinovationnc.com>

[80901] [GL-052922-13494] Inquiry Response For GL-052922-13494 (V2)
1 message

callcenter@galdermasupport.com <callcenter@galdermasupport.com> Thu, Jun 23, 2022 at 8:21 PM
To: wendi.harper@skinovationnc.com

Dear Wendi Harper-Lonabaugh:

Thank you for contacting Galderma Laboratories, L.P. You have Galderma's permission to use the images attached solely for the purpose of your doctoral project at Western Carolina University.
If you have any further questions regarding this request, feel free to contact us and reference case number (GL-052922-13494).

Best Regards,
Galderma Special Services
866-735-4137
contactus@galdermasupport.com

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APPENDIX G - Demographics / Pre-survey

Aesthetic Procedure PRE-TEST Questionnaire

1. Age:
    a. 18-29
    b. 30-39
    c. 40-49
    d. 50-59
    e. 60 and older
2. Gender:
    a. Male
    b. Female
    c. Non-Binary
3. Ethnicity:
    a. White/Caucasian
    b. Black/African American
    c. Hispanic/Latino
    d. Asian-American
    e. Middle Eastern
    f. Other: _____
4. Highest Level of Education:
    a. Less than high school
    b. High school graduate
    c. Some college
    d. College graduate
    e. Some graduate school
    f. Completed graduate school at master's Level
    g. Completed graduate school at Doctoral Level
5. Annual Income:
    a. Under $20,000
    b. $20,000 - $39,000
    c. $40,000 - $59,000
    d. $60,000 - $79,000
    e. $80,000 - $99,000
    f. $100,000 and up
6. Marital Status:
    a. Married
    b. Separated
    c. Divorced
    d. Widowed
    e. Single, never married

7. Work status:
    a. Work outside the home full time
    b. Work outside the home part time
    c. Work at home (includes homemaker)
    d. Student
    e. Retired
    f. Unemployed
8. Past cosmetic and/or aesthetic procedure/s:
    a. Facials/peels
    b. Laser hair removal
    c. Photo facial (IPL)
    d. Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau)
    e. Dermal fillers
    f. Surgical
    g. Other
    h. None
9. Which procedure/s are you here for today?
    a. Facials/peels
    b. Laser hair removal
    c. Photo facial (IPL)
    d. Neuromodulators (Botox, Xeomin, Dysport, or Jeuveau)
    e. Dermal fillers
    f. Other
10. Which one of the following explanations is the most important reason for your visit today?
    a. To look younger than my age/friends
    b. Self-esteem
    c. Coping with life changes
    d. To feel more confident in front of my significant other
    e. To make myself feel more attractive
    f. Significant other wanted you to
    g. Milestone (wedding, birthday, reunion, etc.)
    h. Other
11. Rate your level of treatment expectation regarding your procedure:
    a. 0= no change
    b. 1= Slight change in appearance
    c. 2= Moderate change in appearance
    d. 3= Significant change in appearance
    e. 4= Total or complete change in appearance

12. Rate the role or influence your health care provider plays in assisting you in establishing treatment expectation?
    a. 0= No role/influence
    b. 1= Minor/slight
    c. 2= Some
    d. 3= Considerable
    e. 4= Major/maximum

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APPENDIX H - Automated Patient Education Module

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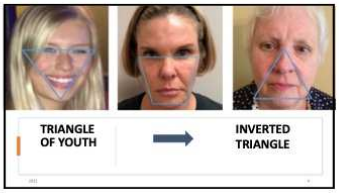

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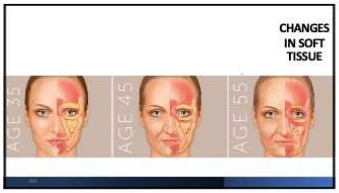

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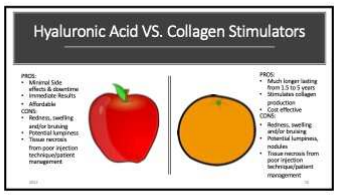

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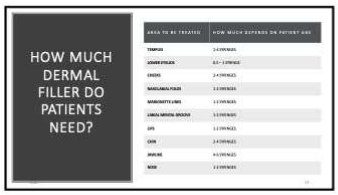

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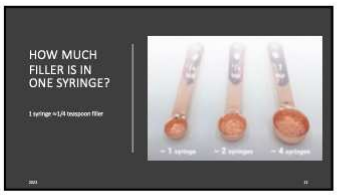

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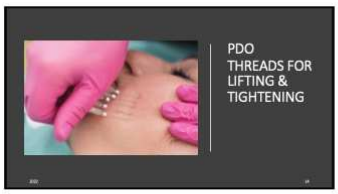

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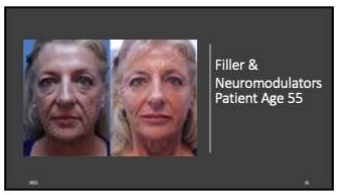

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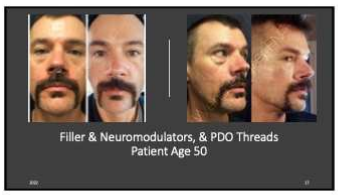

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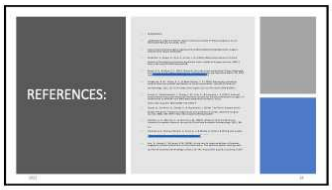

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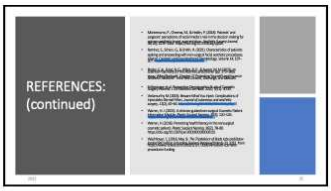

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APPENDIX I - Post-video Survey

Aesthetic Procedure POST-TEST Questionnaire (circle answers)

1. How many nonsurgical aesthetic procedures were performed in 2020?
    a. 4 million
    b. 10 million
    c. 13 million
    d. 20 million

2. As you age, skin, fat, muscle, and bone changes will occur?
    a. True
    b. False

3. Which of the following is NOT part of the skin's aging process?
    a. Increased pore size
    b. Increased oil production
    c. Reduced collagen and elastin
    d. Reduced pigment & melanin
    e. None of the above
    f. All the above

4. As we age, facial fat decreases in which areas?
    a. Forehead, temples, and cheeks
    b. Nose, lips, and chin
    c. Eyelids, jawline, and neck
    d. Ears, nose, and throat

5. As the face loses volume, what facial muscle change will NOT occur?
    a. Uneven facial contours
    b. A lifting of the eyelids
    c. Fullness around the chin & jawline referred to as jowls
    d. An aged rather than a youthful face

6. Which of the following is a potential positive for using a hyaluronic acid dermal filler?
    a. Results may be seen immediately
    b. Minimal side effects
    c. Minimal to no downtime
    d. Affordable
    e. None of the above
    f. All the above

7. Which of the following is a potential negative from using hyaluronic acid dermal filler?
    a. Tiredness
    b. Bruising
    c. Considerable downtime

d. Costly

8. Which of the following is a potential positive from using a collagen stimulating dermal filler?
    a. Lasts anywhere from 1.5 years to 5 years
    b. Stimulates the production of collagen
    c. Cost effective
    d. None of the above
    e. All the above

9. Which of the following is a potential negative from using a collagen stimulating dermal filler?
    a. Blurred vision
    b. Neck stiffness
    c. Low-grade fever
    d. Allergic reaction

10. How much dermal filler product is in one syringe?
    a. 1 tablespoon
    b. 1 teaspoon
    c. $\frac{1}{2}\ to\text{-}\frac{3}{4}$ of a teaspoon
    d. $\frac{1}{4}\ to\text{-}\frac{1}{5}$ of a teaspoon

11. Neuromodulators like Botox are used for?
    a. Freezing the face into an unnatural looking mannequin
    b. Relaxing the facial muscles so that wrinkles appear less severe
    c. Replacing lost volume due to aging
    d. Make you look surprised

12. PDO Threads are used for?
    a. Toughening up the outer layer of skin before getting a laser treatment
    b. Lifting and tightening the skin
    c. Hyperpigmentation
    d. Decreasing pore size

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APPENDIX J – Patient and Healthcare Provider Satisfaction Survey

AUTOMATED PATIENT LEARNING MODULE EVALUATION	
Person completing the questionnaire (circle one). MD/DO. NP/PA. RN. PATIENT	
Please rate your experience with the automated patient learning module by putting a number in each box	
SCORING 1= Poorly/Not at all 2= Slightly/Unlikely 3= Adequately/Most Likely 4= Excellently/Definitely	
1. How well did this module assist you in understanding the facial aging process?	
2. How well did this module assist you in establishing treatment expectations of dermal fillers?	
3. How helpful was the module in understanding the pros and cons of dermal fillers?	
4. How helpful was this type of modular learning experience in helping you to understand the content?	
5. Did the module give you enough information to feel comfortable signing an informed consent?	
6. Was the learning module easy to view?	
7. Were the images/pictures in the learning module helpful in understanding the content?	
8. Was watching this learning module time well spent?	
If the time was NOT well spent, please explain why?	
9. Would you recommend the use of this automated learning module to other patients seeking dermal fillers? **(Patients only)**	
10. Would you recommend the use of this automated learning module to other providers injecting dermal fillers? **(Healthcare providers only)**	
11. Please list the weakness(es) of this module and please list suggestions for improvement.	
12. Please list the strength(s) of this module:	

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