

REFLECTIONS OF VARIOUS HEALTHCARE SHADOWING EXPERIENCES
WITH A FOCUS ON PHARMACY AND OTOLARYNGOLOGY CLINICS

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A CAPSTONE REPORT

Presented to the Faculty of Miami University in partial
fulfillment of the requirements
for the degree of

Master of Medical Science

Department of Biomedical Science

The College of Arts & Science
The Graduate School
Miami University
Oxford, Ohio

2024

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2024

Introduction

The MMSc. in Biomedical Science (BMS) program has supported each student to flourish as a future healthcare provider by offering both didactic and experiential learning. As a BMS student, I have reflected on four aspects of the program that have further solidified my passion for medicine. The first section of this paper applies content learned in the classroom to patient visits observed during clinical shadowing experiences. The second section discusses the importance of patient-provider interactions and the communication within. This section also contains positive and negative examples and potential strategies for future and current healthcare professionals when providing quality, patient-centered healthcare. The third section delves into the medical literature to expand on conditions not discussed in the classroom and therapeutic management of patients with these specific conditions. Finally, the fourth section is a discussion of the impact that psychosocial determinants of health have on the overall health and livelihood of patients and their families. Altogether, this paper is a compilation of knowledge I acquired from the classroom and through shadowing various healthcare providers. Successful completion of this program and the reflections I have described opened my eyes to the intricate layers embedded within the delivery of healthcare. Not only have I developed a holistic view of healthcare, but I have also gained insight into what healthcare niche I feel is best for my personal skill set.

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From the Classroom to the Clinic

While shadowing, I encountered two patient visits where dulaglutide was prescribed to treat Type II diabetes mellitus (T2D). Both patients were also prescribed another medication that treats T2D called metformin. I was curious what the parameters were to prescribe two antidiabetic medications rather than utilize metformin as monotherapy. Upon research, it was apparent that metformin is used as monotherapy when a patient has a glycosylated hemoglobin (HbA1c) below 9.0%. Metformin is used in combination therapy when a patient has an HbA1c above 9.0% (Corcoran & Jacobs, 2023). In one of the encounters specifically, the nurse practitioner (NP) discussed with her patient about increasing their dose of dulaglutide from 3.0 mg to 4.5 mg as part of combination therapy to decrease their patient's HbA1c and body weight. At the conclusion of the visit, the nurse practitioner (NP) and the patient reached a unanimous decision. The patient would maintain their current dose of dulaglutide owing to the greater risk of adverse gastrointestinal (GI) effects that may result from the increase to the 4.5mg dose of dulaglutide. I then questioned how the dosing of dulaglutide positively and negatively affects other patients when utilized in combinational therapy.

Courses in the BMS program have educated me on the prescription of dulaglutide and metformin and their impact on the human body. Dulaglutide is a glucagon-like peptide 1 (GLP-1) analog, meaning that the medication has chemical and structural similarities to GLP-1. The similarities allow for dulaglutide to carry out the functions of GLP-1. GLP-1 is an incretin hormone encoded in the proglucagon gene in the L cells of the small intestine, pancreatic alpha cells, and neurons in the brainstem. It is secreted approximately 15 minutes after a meal and works to increase insulin secretion, suppress glucagon secretion, inhibit gastric emptying, inhibit gastric secretion, and suppress food intake. Patients with T2D lack endogenous GLP-1 as a

functional hormone, making them eligible for treatment with GLP-1 analogs (Shi, 2023; Manning, 2023). Dulaglutide aims to promote the proliferation of pancreatic beta cells that release insulin to stimulate glucose uptake into muscle and liver cells. In a patient with T2D, the GLP-1 analog can decrease HbA1c by approximately 1% and induce weight loss. Metformin limits hepatic glucose production inhibits glucose absorption from the GI tract, sensitizes peripheral tissues to insulin, and increases glucose uptake. It can decrease an HbA1c by 1.5-2% and induce some weight loss (Manning, 2023).

A randomized control trial evaluated how patients with T2D who were already undergoing treatment with metformin could benefit from 1.5 mg, 3.0 mg, or 4.5 mg doses of dulaglutide. The primary objective included determining superiority of dulaglutide 3.0 mg and 4.5 mg over 1.5 mg in reduction of HbA1c at 36 weeks. Secondary superiority objectives included change in body weight. Patients were required to be 18 years or older, to have been diagnosed with T2D for six months or longer, to have a HbA1c ranging between 7.5-11.0%, to have a body mass index (BMI) of 25 kg/m² or more, to be insulin and GLP-1 RA naïve and to have been taking metformin of at least 1500 mg/day for three months or longer. The trial began by treating the patients with 0.75 mg of dulaglutide once a week and gradually increased to one of the three randomly assigned doses of 1.5 mg, 3.0 mg, or 4.5 mg of dulaglutide to be taken once per week by the fourth week. At the primary efficacy endpoint of 36 weeks, differences in baseline body weight and HbA1c levels, including those with HbA1c levels greater than 7.0%, were measured. In addition, researchers compared the three dulaglutide doses at the end of the 52-week treatment period by taking note of adverse effects (Frias et. al., 2021).

The results revealed some significant differences in outcomes when comparing the 4.5mg and 3.0mg doses to the 1.5 mg dose. A dose of 4.5mg showed a significant difference in HbA1c

from baseline at 36 and 52 weeks. Moreover, 3.0 mg and 4.5 mg doses showed a significant difference in the proportion of patients obtaining an HbA1c of 7.0% or less compared to the 1.5 mg dose. There was also a significant difference in patients who lost weight with 3.0 mg and 4.5 mg of dulaglutide at 36 weeks and 4.5 mg of dulaglutide at 52 weeks. Based on the results of this study, both 3.0 mg and 4.5 mg of dulaglutide are more efficacious than a 1.5 mg dose for lowering HbA1c and weight loss, and the 4.5 mg dose is more efficacious than the 3.0 mg dose, consisting with a dose-dependent effect (Frias et. al., 2021).

Although dulaglutide demonstrated decreased HbA1c values and decreased body weight, some patients in the study reported experiences of adverse effects. The most common were adverse gastrointestinal (GI) effects like nausea, diarrhea, and vomiting. There were a greater number of patients with GI adverse effects, ranging from mild to severe among those taking both the 3.0 mg and 4.5 mg of dulaglutide compared to the 1.5 mg dose. The research found the incidences of adverse GI effects among those taking 3.0 mg and 4.5 mg of dulaglutide were comparable (Frias et. al., 2021).

Overall, the randomized control trial addressed my clinical question regarding the positive and negative effects that can occur when increasing the dose of dulaglutide. Increasing the dose of dulaglutide to 3.0mg or 4.5 mg decreased HbA1c and decreased body weight; however, 4.5 mg was more efficacious. Both 3.0 mg and 4.5 mg of dulaglutide can induce similar incidences of adverse GI effects, but they may occur more severely in some patients (Frias et. al., 2021). When I reflect on the nurse practitioner's decision not to increase the dulaglutide dose to 4.5mg, the comparable incidences of adverse GI effects between 3.0 mg and 4.5 mg of dulaglutide influence me to think that the patient could have received the 4.5 mg dose. However, continued post-marketing monitoring of adverse effects may help further inform this

decision. Additionally, the nurse practitioner seemed to have established a rapport with the patient and better knows their medical history; therefore, the decision to hold the dose of 4.5 mg of dulaglutide was likely to be influenced by multiple factors. Thus, a thorough discussion of the benefits and risks associated with varied dosages of dulaglutide during patient-provider visits, in reference to patient medical history, increases the quality of clinical treatment.

Framing a Clinical Question and Interrogating the Literature

Early on in my shadowing, I spent time with an otolaryngology (ENT) oncologist. The morning consisted mostly of patients following up on the diagnoses of tongue cancer and their treatment. Nonetheless, a woman approximately 40 years of age presented to the physician with otalgia and pharyngeal discomfort that was exacerbated when eating and swallowing. She also reported sporadic shooting pain from her right ear that migrated through the right side of her face, although it was not as frequent as the other symptoms. Moreover, the patient explained she was previously diagnosed with trigeminal neuralgia by another physician, but she remained unconvinced and sought a second opinion. The ENT thought to evaluate her styloid process and its length. Finding the styloid process to be elongated and extending into her throat, he suggested that she may have Eagle's syndrome. In discussing treatment options, the surgeon mentioned both extraoral and intraoral surgeries with where extraoral surgery would leave an external scar as opposed to the intraoral surgery. The ENT failed to discuss the surgeries in depth as the patient asked for other options, shifting the conversation.

Prior to this experience, I had never heard of Eagle's Syndrome, or associated surgical treatments. I wondered if extraoral or intraoral surgery was more efficient at relieving the patient's presented symptoms, so I decided to investigate medical literature. I first formulated a clinical question through the PICO (Population, Intervention, Comparison, Outcome) format. My

question was, “Among patients ≥ 40 years of age with Eagle’s Syndrome, is intraoral surgery more effective than extraoral surgical treatment to decrease otalgia and pharyngeal discomfort?” From this question, I utilized PubMed and applied the terms “Eagle’s Syndrome” AND “intraoral surgery” AND “extraoral surgery” to the search engine.

I found a review of 103 patients, enrolled retrospectively and meeting clinically important criteria, who were followed to determine if there were significant differences in quality of life with completion of either intraoral or extraoral surgery. Intraoral surgery, styloidectomy with or without tonsillectomy, was conducted if the styloid process could be touched through palpation intraorally or if a CT scan identified the styloid process to be in close proximity to the oropharynx. Extraoral surgery, styloid process resection, was conducted if the styloid process could not be palpated intraorally or under the mandible, or if the CT scan identified the angle of the styloid process to be small. Quality of life, defined by the Quality of Well-Being Scale (QWB) and comparisons of preoperative and postoperative states, improved regardless of the surgical approach; however, there was no significant difference in postoperative quality of life between intraoral or extraoral surgical treatment of Eagle’s Syndrome (Wang et. al., 2022).

Limitations were not discussed in this study. Although they were not explicitly discussed, the study was neither randomized nor blinded. Blinding the surgeon would not have been possible but blinding the patients and the investigators assessing initial therapeutic effects (cure vs. effective vs. ineffective) was possible. Blinding in this case would serve to prevent detection bias, a bias resulting from the knowledge the investigators receive about the intervention rather than the intervention alone.

Another article I found discussed advantages and disadvantages associated with intraoral and extraoral surgical treatment methods for Eagle’s Syndrome. As mentioned previously,

intraoral surgery sometimes involves a tonsillectomy. This is for better visualization of the styloid process by the surgeon to expose the styloid process and does not usually offer extra benefit to the patient (Wang et. al., 2022). However, intraoral surgery is more advantageous for aesthetic concerns related to external scarring as well as reduced operating time. Extraoral surgery allows for a better visual view of the styloid process for a complete styloid resection but includes longer surgical time and an external scar (Elimairi et. al., 2014). Furthermore, postoperative pain was 5 days longer for patients who underwent extraoral surgery rather than intraoral surgery (Wang et. al., 2022).

I was also curious to know if Eagle's Syndrome being misdiagnosed as trigeminal neuralgia is a frequent occurrence. I again interrogated the medical literature and found another prospective study that described some aspects of misdiagnoses. In the study, with a similar outline to the previous, 8 patients with Eagle's Syndrome were evaluated for preoperative and postoperative symptom assessment as well as interrogation of postoperative satisfaction. However, prior to being diagnosed with Eagle's Syndrome, 6 of the patients were obscurely diagnosed with a form of neuralgia, suggesting that this may be a common occurrence (Müderris et. al., 2014). Therefore, although Eagle's Syndrome is rare, the condition should still be considered as a possible diagnosis when a patient is being evaluated for complaints of facial pain.

Accordingly, the articles discussed would guide my clinical care of the patient in terms of formulating a preoperative counseling session. I would describe the mechanical differences of the intraoral and extraoral procedures, followed by a description of the advantages and disadvantages to both with emphasis that there is not a significant difference in the resolution of Eagle's Syndrome symptoms. The patient will be given time to discuss their concerns or ask

questions following my descriptions. This approach would allow me as a physician to listen to the patient's reservations and for the patient to feel that I care about them and not just their diagnosis of Eagle's Syndrome.

Reflection on Effective Communication in Healthcare

As I reflect upon the interactions I witnessed throughout my shadowing experiences, patient-provider interactions are likely the most influential factor of the visit. My observations have simultaneously reinforced my passion while also given me pause about pursuing a career in healthcare. Two observed interactions that demonstrate this seeming contrast will be discussed here.

To elaborate, a patient-provider interaction I witnessed that reinforced my passion for healthcare was a pharmacist guiding a patient in the reorganization of their pillbox. The patient had multiple health problems that led to numerous prescribed medications, many of which appeared the same. Additionally, there was a mild patient-provider barrier in communication due to the patient's cognitive impairment. Despite these challenges, I observed the pharmacist kindly explain how the patient could identify the differences among their medications and establish proper compartments for each. The pharmacist then guided the patient through an exercise to reinforce these points. Not only was the pharmacist kind, but she was also extremely diligent and forbearing with the patient. This interaction opened my eyes to how a task like organizing medications may burden some patients when there are layering challenges. By the end of the appointment, I could tell that the patient was relieved. Truthfully, it was a gift to witness the mood of the patient brighten, the tension dissipate, and the gratitude they expressed to the pharmacist. This interaction reinforced that I want to pursue a career in healthcare to help people and relieve the patients of their worries.

From a different perspective, I witnessed a patient-provider that gave me an initial pause regarding pursuing a healthcare career when an ENT attempted simultaneous engagement with the patient and the nurse. In this instance, the provider asked the patient a question and discussed with the nurse what to chart while the patient was responding. This patient-provider interaction made me question if the patient felt heard by the provider. The provider may have missed something the patient said and needed to repeat a question, or the provider may have misinterpreted something the patient expressed. This strategy leaves much room for error in their communication. It made me reflect on the quality of treatment I would have wanted if I were the patient. The pause that this patient-provider interaction gave me was beneficial; it emphasized the need for carefully listening to and mindfully caring for my future patients.

Furthermore, patient-provider interactions not only influence the quality of care that a patient receives but can also yield positive and negative feelings on the part of the patient about their experiences. These experiences can potentially impact future patient engagement with the healthcare. As mentioned previously, I believe that patient-provider interactions are the most influential factor of a visit, as they are the foundation for delivering and receiving quality healthcare system. Although patients and providers may differ in perspective on what quality healthcare entails, it should always be patient centered. Patient-centered care involves respectfully responding to a patient's condition as well as their needs, values, and preferences when making clinical decisions (Institute of Medicine, 2001). Effective communication from the provider is imperative to administering the care well.

Effective communication, or patient-centered communication, is the process whereby the provider encourages the patient and their family to participate in the discussion of treatment options to reach a shared decision (McCabe, 2003). Similar to the provider utilizing strategies to

mitigate conflict when interacting with a patient, prioritizing trust and respect sustains effective communication. The presence of trust and respect, or lack thereof, for the patient by the provider can change the atmosphere of the visit.

The patient-ENT oncologist interaction I described was a situation in which effective communication was absent and patient-centered care was not practiced. The newly diagnosed tongue cancer patient lost trust in their provider due to the provider's lack of respect for the patient's feelings and questions about their life-altering condition. More specifically, the ENT oncologist's failure to engage in conversation with the patient about treatment options likely resulted in the patient feeling as if the provider only sees them as a cancer patient rather than a person undefined by their condition. The provider discussing patient care with the registered nurse (RN) while the patient was attempting to ask questions caused the patient frustration and loss of trust as well. Ultimately, the lack of effective communication and patient-centered care plausibly left the patient feeling disrespected and untrusting of their provider.

As a graduate student shadowing, I was a bystander in this interaction and did not discuss it with the ENT oncologist after its occurrence. As the student who requested this shadowing experience, I chose not to discuss this circumstance with the provider because I felt uncomfortable questioning their practice style. I was fearful that I might come across as entitled by correcting the provider when I have never experienced my own patient care, let alone attended medical school.

However, if I were a resident in the ENT oncology clinic, I believe I would feel more comfortable expressing my thoughts about the absence of a patient-centered approach to this interaction. I would first approach the physician and ask how they are feeling because the visit moved quickly and without much patient conversation. From observing, I know the provider had

many patients to attend to and was trying to ensure proper documentation and effective treatment. It was apparent that the ENT oncologist failed to recognize that communication was impaired with the patient, leading to a paucity of respect for the patient and trust for the provider. I would expect an answer from the provider explaining feelings of stress regarding the number of patients they need to treat while wanting to provide quality healthcare. I would then offer my assistance by with the treatment of a few patients to alleviate some of the pressure and ensure that patients are receiving quality patient-centered care, especially those with life-altering conditions.

Establishment of effective communication and patient-centered care in patient-provider interactions first begins at understanding that the patient and provider are separate individuals. A patient hopes to receive quality healthcare from a healthcare provider who intends to provide patients with quality healthcare. Although simple concepts, it is important to remember these points because the patient and provider are different people. Individuals may have mismatched opinions and expectations, especially regarding what they define to be “quality”. Clashing definitions of quality can interfere with the provider’s delivery and the patient’s receipt of care. Conflict during a patient-provider interaction likely leads to a decreased quality of healthcare defined by both. Therefore, patient-provider interactions need to incorporate strategies that aim to positively explore perspectives to gain an understanding of each person’s expectations. Through this, the highest quality healthcare, care that includes effective communication and patient-centered care, can be delivered and received. From my experiences in shadowing various healthcare professions, some, but not all, patient-provider interactions have implemented helpful strategies.

I observed an interaction between a pharmacist and a patient that utilized a technique to build rapport. The patient was seeing the pharmacist for a follow-up appointment on T2D management. She kindly greeted the patient with friendly enthusiasm as she walked into the room and before opening the patient's chart. This acknowledged the patient's life outside of being simply a person with T2D and made them feel more welcome. The patient went on to ask the pharmacist about how she was doing. The continuation of the kind exchanges reminded me of conversations that friends would engage in, increasing the amount of comfort in the room. After briefly catching up, the pharmacist asked the patient about their management of T2D without making any assumptions. By actively listening to the patient, the pharmacist allowed them a chance to voice their perspective on how the utilization of metformin, empagliflozin, and dulaglutide was going.

As the conversation continued, the patient expressed concern about the upcoming holidays and how they felt it would be a challenge to manage their T2D. Another strategy that the pharmacist used, consciously or subconsciously, to help navigate the patient through their concern was motivational interviewing. Motivational interviewing is a mechanism to help encourage patients who are currently unwilling to or ambivalent about adjusting their habits to consider doing so (Bischof et. al., 2021). Five interventions are a part of motivational interviewing: open-ended questions, active listening, praise, summary of an effective technique, and self-motivation statements (Bischof et. al., 2021). The pharmacist asked the patient what worried them about the management of their T2D around the holidays, revealing concern about increasing blood glucose levels from the types of food consumed or overeating. Again, the pharmacist actively listened to these concerns from the patient and responded with praise for acknowledging the possible challenge. Through discussion, the pharmacist and the patient

summarized concerns about increasing blood sugar levels but also wanting to enjoy holiday meals. Together they created a plan that the patient could follow to enjoy the food while continuing to manage their T2D. By the end of the visit, the patient seemed confident in their management of T2D and eager to not be limited in their engagement around the holidays. This patient-provider interaction served to be a great reminder that building rapport and motivational interviewing can help the patient and provider come to a shared decision.

Despite the pharmacist's use of effective strategies in their patient-provider interaction, not all providers engage similarly. To elaborate on the patient-ENT oncologist interaction, the provider quickly entered the room, without greeting the patient, and immediately began discussing what their recommendations were for treatment. Although these were said to be recommendations, the provider did not ask the patient what their concerns were about the possible surgical reconstruction of the tongue, chemotherapy, and radiation. These treatments, along with the diagnosis, can be life-altering in many ways for patients. Not thinking to address patient concerns can add to negative feelings that the patient may already be experiencing because of their diagnosis. The provider could have focused on building a rapport with the patient and helping them feel more like a person rather than just a cancer patient. Additionally, the ENT oncologist could have provided the patient with clinical or financial information on the treatment options to help answer and/or eliminate any concerns or negative feelings.

Furthermore, the assisting RN was there to possibly allow for better engagement with the patient; however, the presence of the RN did just the opposite. There were moments during the visit when the patient tried to ask questions, but the provider did not hear them because he was telling the RN what to document. The patient appeared frustrated when not heard and when they needed to repeat themselves. If the provider were to need the RN to document visit notes,

logistics regarding what to document should have been noted before entering the room. The provider should have also actively listened to the patient when they were asking questions about their life-altering condition and treatment.

Based on the patient-provider interactions I witnessed, the definition of quality healthcare may vary for every provider and every patient. Although I did not ask for each provider's and patient's exact definition of quality healthcare, there are inferences I can make from the healthcare provided and received. For example, the pharmacist was interested in engaging with the patient and finding a way to manage T2D without completely limiting the patient. The confidence and eagerness of the patient with T2D demonstrated that the patient was satisfied with the shared decision reached through building rapport and motivational interviewing. On the other hand, the ENT oncologist may have viewed quality healthcare as seeing patients quickly and sending them on their way to be able to timely see their patients. He may have also thought an RN documenting for him would give him more time to engage the patient. The quality healthcare definition of the ENT oncologist did not match the definition of the patient as they appeared frustrated, and the interaction could have been improved with strategies that mitigated the differences.

Overall, patient-provider interactions require strategies, like building rapport and motivational interviewing, to help come to a shared decision on care despite perhaps having deviating views of what constitutes quality healthcare.

Reflection on Psychosocial Determinants of Health

On January 19th, possibly the snowiest day of the year so far, I shadowed a pediatrician at Riley Hospital for Children in Indianapolis. Riley Hospital for Children serves children and families across Indiana who need specialty care, and their needs do not diminish when the

weather is poor. A severe snowstorm the night before an appointment, which likely required waiting and changing schedules to book, does not make for great travel. Personally, the drive downtown takes around 40 minutes, but the icy roads increased my drive time to over an hour. Being 20 or 30 minutes late to shadow might not seem significant as I do not directly influence the quality of care that patients will receive. However, what if the patient and their family were late due to the road conditions to a critical appointment that they waited months, and they could no longer be seen as a patient because the physician had to continue to see other patients? What if they were to get in a car accident bearing the cold, icy drive, increasing medical bills even more? Ultimately, there were several potentially adverse scenarios, which increased in likelihood as winter weather conditions impeded travel.

The weather indirectly hurt the patients and families on the snowy Friday by affecting travel. A boy just over a year old was not able to attend his appointment because his grandmother, who was also his primary caregiver, felt that it was unsafe to drive. The pediatric care team quickly eased the distress by conducting a virtual visit. A virtual visit seems convenient when the weather outside is poor; however, this patient received lesser care no matter how hard the team tried to deliver quality services. The visit was disrupted by a poor internet connection and a failure to keep the child in the camera frame. It appeared difficult for the grandmother to have eyes on her grandchild while trying to communicate with the providers. For the healthcare team, each specialist needed to evaluate the patient. From a provider standpoint, a virtual visit was exceptionally challenging for occupational therapy (OT) and physical therapy (PT) to evaluate behaviors or movements that align with age-related milestones. Low-quality observation of the patient increases the risk for undiagnosed developmental delays that require earlier detection to offer the patient and their family quality healthcare.

As the day continued and the roads cleared, more patients attended their appointments. I recall meeting 16-year-old parents who appeared exhausted from sleepless nights. The lack of sleep was due to their 6-month-old baby's unrelenting fussiness, distress, and indigestion. The lactation consultant monitored a typical formula feeding and said that the child was likely experiencing acid reflux. The consultant also advised the parents to change the amount of formula provided and allow their baby more breaks during feedings as their quick eating may contribute to his condition. Although the young parents received the information they needed to care for their child, the team wondered if they had the resources and support to adapt to their suggested changes.

The pediatric care team then asked the parents what kind of support they had at home. They described that the mother's parents were unsupportive while the father's mother helped when she was available. Given their age, I feared that the parents may compromise their education for the care of their baby. Quitting school was not discussed but may be considered the best option for 16-year-old parents with little support. Not only will their baby require more of their time, but there will also be added expenses. Data from 2015 suggests that a child born in 2022 and raised in a middle-income, married household will cost 233,610 dollars (Lino, 2017). No one was entirely certain of the parents' socioeconomic status, but it is unlikely they have a mirroring income.

Continuation of education indirectly leads to better and more employment opportunities that are associated with an increased income. Furthering their education has the potential for these young parents to provide their child with more than ceasing school will. Besides, people who lack education have reported worse general health than educated people (DeLaet & DeLaet, 2012). For example, lower educational attainment is often associated with lower-ranking jobs,

and people with lower-ranked jobs have an increased risk of cardiovascular disease (Zajacova et. al., 2012). Therefore, if the parents succumb to not continuing education, their health will likely suffer, and they will be less able to provide quality care for their child.

A direct example of the influence that lack of education was depicted in an encounter I had while volunteering at a local food pantry. My volunteering for the day consisted of restocking shelves to prepare for the daily curbside shopping for people in the community who cannot afford groceries. A woman came in an hour before the scheduled start time of curbside shopping and asked if she could shop earlier because she needed to take care of her mother. The woman openly shared that her family had always lived in town but that her mother had recently moved into an assisted-living facility after suffering from a stroke. As she shopped, she continued to explain that she was the primary caregiver of her children and now her mother, leaving her hardly any time to pursue an education, provide an income, or take care of herself. This depiction of the woman's life caused me to reflect on my previous thoughts on the lives of the two young parents of the 6-month-old baby and how a lack of education may steer them down a similar path.

Within a few shadowing experiences, I witnessed the influence of different determinants on healthcare outcomes. Weather has the potential to disrupt transportation of patients and families to appointments that may be highly critical for them to attend. Although virtual visits are an easy resolution for this, it comes with many barriers to providing and receiving quality care. Lack of education also has the potential to spiral into decreased access to employment and income, causing the suffering of health for an individual and their family. In summary, these determinants play equally important, yet distinct roles in people's daily lives and as patients.

Impact of the Program on My View Towards a Career in Healthcare

The knowledge acquired from coursework and shadowing experiences within the Biomedical Sciences program has further solidified my passion for healthcare. As a freshly graduated 21-year-old, I had no idea what aspect of healthcare I wanted to pursue. I shadowed various healthcare professionals as an undergraduate student; however, I could not see myself in any of those professions and I was unsure if I desired to go to health professional school. I felt lost at the beginning of my pursuit of this program, but I was determined to find the career pathway that was right for me.

To explore healthcare areas I had not yet considered, I sought conversations with the program advisors for advice. These conversations involved recounting previous experiences and highlighting my interests. This set the groundwork for the formulation of a plan to connect with and shadow dietitians, pharmacists, and optometrists, all of whom I had little to no shadowing hours completed with previously. Exploring these three professions through conversation and clinical experiences has provided me with clarity on a future healthcare career.

As I leave this program, I confidently say I aspire to pursue a Doctorate in Optometry. Optometry offers me a specific niche area of care where I can master daily optometric skills to treat patients. Additionally, the profession allows me to help with the management of other conditions such as high blood pressure, high cholesterol, and diabetes. More specifically, an optometrist I shadowed explained a time when she could see partial occlusions in the arteries of the eye in screened images. She then asked the patient about a history of strokes and informed them that there was an obstruction in an artery of one of their eyes. Identifying the blockage in the eye before the patient was a victim of a retinal ischemia allowed the optometrist to refer the patient to an ophthalmologist for its removal. The optometrist, ophthalmologist, and primary care

physician of the patient were to then monitor patient cardiovascular health. This experience opened my eyes to the difference that optometrists can make and the kind of collaborative work they do with other physicians.

Moreover, the optometrists I have shadowed have only expressed love for the profession. One aspect one of the optometrists highlighted was the instant gratification that the patients experience upon receipt of corrected lenses. Another aspect of the profession is work-life balance. Work-life balance is essential because physicians cannot provide patient-centered care if they allow their personal lives to bleed into their work; they must work to take care of themselves to assure that they remain focused when caring for patients.

Before attending professional school and quickly following graduation from this program, I plan to obtain a job as an Optometric Technician to gain more experience in optometric patient care and workflow. I am ambitious to begin this new journey and am grateful for the endless support and encouragement I received from the program and Miami University faculty.

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