Ying Jie Li

ACAM320B Final Project Podcast: How can I learn in a world of color when the text is white?

Opening:

[Music!]

Hello there! My name is Ying Jie, or 李颖杰 in Chinese. I am currently a third-year student in the faculty of science studying cellular anatomy and physiology. Today, I wanted to explore the role of education in promoting (or not), diversity in healthcare. I go through so many hours of classes every day, but it wasn't until ACAM320B that I started realizing that science faced many more problems beyond finding enough Roman numerals for all the proteins involved in the coagulation cascade. I began to realize that the healthcare inequities discussed in class doesn't just begin in the hospital or the family doctor's office but can be traced back to the research process, which generates the foundational knowledge that future healthcare practitioners are educated on. As a so-called pre-med, I wanted to reflect on my own education in the classroom and also bring in the insights of a friend in nursing school, who ill let introduce herself:

[Melody's Introduction Clip]

I don't think I've critically critiqued the adequacy of the education I've been so privileged to endure in the last three years as much as I have in these past few months taking ACAM320B, I hope the glimpse into the scientific community that Melody and I provide through our own experiences offer a lens into the issues that persist behind the doors of world-class institutions – something that headlining newscasters might not have access to.

[News Clips of Covid Pandemic]

Ah the SARS-COV-2 virus. What a clever little thing. As an anatomy and physiology student who does research in immunology, the virus is truly beautifully designed from an immunological perspective. Mother Nature really outdid herself with that one. But if there is anything ACAM320B has shown me, it's the need for my scientifically wired brain to zoom out of the molecular details and observe the effects on a larger and more systemic scale – something at the size you don't need a microscope to see.

The Covid 19 pandemic really put the spotlight on health like nothing ever has before. It magnified both the marvels of modern science as well as the shortcomings that have yet to be addressed. On one hand, the resilience, power, and efficiency of the scientific community demonstrated the catalytic rate of change that we are capable of. In 2020 alone, 100,000 articles

on coronavirus were published.[1] Breakthrough technologies, such as those used in the covid vaccine, which employed mRNA and lipid nanoparticles, were also developed during this time and marked a major milestone for mRNA therapeutics that were not possible before. In short, mRNA is essentially an intermediate between our DNA and proteins, it acts as a messenger for genetic information. Targeted delivery of mRNA particles has shown therapeutic potential in a variety of clinical settings such as cancer or genetic diseases. However, in order to do this, we needed systems that could protect the nucleic acid from degrading and allow for the delivery and cellular uptake at the target tissue.[2] We see that the advancements made during the pandemic turned these "potentials" into more feasible treatments for future research. This demonstrated that with enough money and attention, unprecedented achievements in modern medical science can be accomplished and major public safety concerns can be managed. However, with all this catalytic change, it is disappointing to see so little advancements in systemic issues that plague our healthcare system.

As we move away from the times when COVID was an imminent threat to public health, we see the tattered remains of the healthcare system in its wake. The immense wait times, lack of physicians and healthcare workers due to burnout, lack of home-care workers for seniors, and overcrowding of ERs due to the trifecta of respiratory viruses (influenza, RSV, covid), have put major burdens on the healthcare system. Many news headlines and governmental policy changes seem to be centered on addressing these issues (e.g. increasing access to primary care) so that healthcare access for Canadians will be improved. For example, it was recently announced that the fee-for-service model for primary care would be changed,[3] in hopes of increasing family physician recruitment and retention. This is supposed to alleviate the fact that 59% of BC residents reported difficulties in accessing a family doctor or didn't have one at all.[4]

However, Lofters et al. (2019) demonstrated that inequalities in breast cancer diagnosis for Canadian immigrant women were not AT ALL explained by access to primary care. They quantified that immigrant women had significantly longer mean diagnostic intervals compared to long-term residents. Considering early detection is one of the main determinants of a positive treatment outcome, these women are subjected to increased detriments to their health due to the late stage of diagnosis.[5] So, increasing the number of family doctors may be a good first step for BC, but it clearly does not address all the needs and healthcare inequities faced by the diverse population.

Manitoba hospitals, which have spearheaded the collection of race-based data, found that Black, Indigenous, and racialized people received significantly fewer vaccines and acquired higher rates of infection during the COVID-19 pandemic, despite Canada being acclaimed for handling the pandemic more effectively than other developed countries[6]

It has become evident that ethnic populations are being lost and overlooked when it comes to services being provided to the public. As a science student who hopes to be medically educated, I found it eye-opening to be reminded that patient care doesn't revolve solely around how many names of Krebs-cycle intermediates or drug classes you've memorized. Patient background, social determinants, and each individual's unique experiences play a large role in their clinical presentation and healthcare outcome. As highlighted by Chan-Yip (2004), culturally appropriate care is incredibly important to be implemented into canonical Western treatments, however, there seems to be a lack of representative voices and a lack of diversity education to meet these needs.[7] Puzan (2003), described this overwhelming whiteness to be unbearable, particularly in the nursing workforce.[8]

On one hand, this reflects the responsibility that needs to be taken at the governmental or policy level to address barriers faced by immigrants to both work in the healthcare field and also seek healthcare. For example, in class, we discussed many factors such as language barriers, financial struggles, lack of community, lack of secure housing, and low levels of acculturation, among other contributing variables which may contribute to why immigrants delay seeking healthcare or do not receive the same access to quality healthcare despite Canada's need-based system. However, I wanted to explore this disparity from another angle – one near and dear to my heart as a student myself.

Gurin (1999) states that higher education institutions are in a unique position to enrich the cognitive and psychosocial development of students. Referencing Erikson's work in psychosocial development, she states that an individual's social and personal identity is largely formed during late adolescence and early adulthood. This largely overlaps with the time in which many students are pursuing higher or professional education.[9,10] At this time, many students are in a critical stage of their development in which "diversity can facilitate a greater awareness of the learning process, better critical thinking skills, and better preparation for complex challenges that they may face as citizens of a democratic and multiracial society."[9]

As such, I wanted to reflect on my own education and the path I took and continue to take as I seek medical education, I wanted to use this firsthand experience to take a critical re-evaluation at the education I receive as well as the barriers that I faced (or didnt) as a visible minority, and the interplay that these factors might have on promoting or hindering someone's journey towards healthcare or ability to provide culturally appropriate care to the diverse patient population served by healthcare professionals in BC and Canada.
I also consulted my friend, Melody, to get some insight and hear her thoughts from the perspective of a student who is actively engaged in clinical rotations since I receive primarily didactic-style lectures on the human body.

Ying Jie

Something Ben mentioned in class really stood out to me. The fact that Canada did not typically collect race-based data was something I had not realized before. But upon learning this information, I've almost become hyper-cognizant of this when it comes to critically analyzing the results of research papers. Unfortunately, I seem to be doing this a lot as I search the literature to find something to explain a possible reason behind my questionable experimental results in the lab for my TA to read. I've come to realize the major problems with generalizing all citizens into one homogenous cohort as this leads to major oversights to disparities faced by immigrants.

In fact, studies have shown that different ethnicities have genetic mutations or variations that might increase their risk for a certain disease or influence their response to certain medications. For example, a study from the University of California SF reported only 5% of genetic traits linked to asthma in European Americans applied to African Americans and that the death rate from asthma experienced by African American children are 10X the rate of non-hispanic white children.[11]

Just this summer, I was personally involved in COVID research at BC Children's Hospital. I was working on a project that investigated the impact of dosing intervals on the efficacy of The Pfizer BioNTech covid-19 (BNT162b2) vaccine against the omicron variant. The experiments were conducted on serum samples collected from individuals enrolled in the COVID-19 Occupational Risks, Seroprevalence, and Immunity among Paramedics in Canada (CORSIP) cohort study. In creating a figure tabulating the cohort characteristics, it became evident that 90% of the cohort was white. However, due to the specificity of the cohort, inclusion criteria, and lack of time and resources to extend the study, further efforts to diversify the samples were not taken.

I feel that this lack of diversity in the literature then spills over into education, particularly since we are educated based on the knowledge that is being produced by the scientific community.

For example, the opening line of the body fluids lecture in our physiology class was: "based on the average 70 kg male…" because much of the research that was conducted at that time focused solely on white males. This is just an example of the many classes we receive as anatomy and physiology students, which are based on historical research that is white-male-centric. Even in research today using mice models, males were preferred over females because they are easier to work with. They don't have the messy hormonal profiles associated with females, which produces cleaner data that is easier to analyze and possibly publish. Oftentimes, this male data is extrapolated to females based on weight and body fat, etc. Further, ethnic differences are often overlooked and generalized to all populations just because one study using humans found statistical significance. These teachings perpetuate white and male-dominated education and treatment.

Beyond the lack of diversity within the cohorts that were being studied, I also feel that there is a lack of interest and funding provided for issues that are unique to ethnic populations, such as traditional medicine. In the literature, only 172,466 publications were put out between 1938 to 2021 around traditional medicines.[12] This can be contrasted to the 100,000 articles published on coronavirus in one year.[1]

Again, this leads to reduced education on this topic and snowballs into what can be put into practice because what we do not learn, we cannot put into practice. The lecture that Ben gave on traditional medicine was the only full-length lecture that I received on that topic in my entire undergrad, despite having taken many pharmacology courses and conversing with my friends who major in pharmacology and look at drug treatments all day. Further, physicians may steer away from these practices to protect themselves from legal action as there is little proof of efficacy because there is so little to read about in the literature.

The reason for the lack of research may be partly due to something Guha (2016) brings up in their writing, which highlights that "double-blind placebo control methods…defies Ayurvedic principles and may not bring accurate results." I think this is applicable in traditional medical practices in general because they "rest on 'energetic' principles" and "may never be completely explained in Western terms."[13] Although there are risks associated with TCM (as with all medicines), I think it is problematic that its use is not incorporated, or at least educated on, in Western practices. As previously discussed, a lack of culturally sensitive care contributes to decreased healthcare outcomes. Further, ignorance of traditional medicines may lead to adverse drug interactions. For example, St. John's Wort, which is native to many parts of Asia and Europe, is used as a healing plant in some cultures.[14] However, I learned in a 5-min segment during my pharmacology class that this plant also alters one's metabolic profile to certain drugs, causing life-threatening ramifications (e.g. overdose despite safe consumption due to slower metabolism).

I feel that these cultural gaps I've highlighted in my undergraduate education persist in higher-level medical education as well. Research has found that medical students generally do not feel prepared to work in a culturally diverse society. For example, one student quoted as part of the study mentioned that "they had a lecture about the Eskimo people. But you cannot say that… that is also a swear word for those people."[15]

Melody

However, it was actually quite refreshing to hear from Melody, as her description of UBC nursing seems to contradict some of these problematic sentiments. This is what she had to say when asked about her curriculum:

[Interview Clips]

Since many studies have found that social isolation as a factor barring undergraduate nursing programs from successfully maintaining diverse student populations,[16] the opposite effect seems to be occurring in Melody's cohort at UBC. Having someone to relate to typically offers more support during times of hardship and reduces feelings of loneliness and isolation. This in turn results in positive feedback as more diverse students will be attracted to the program, which perpetuates the research that shows increased racial and ethnic diversity in health care being related to improved educational experiences for health professions students, which also works to improve access to care for minority patients and increase patient satisfaction.[17]

Further, this diversity may be important when analyzed from a developmental point of view as well. Gurin used the work of Piaget to describe that cognitive growth is facilitated by disequilibrium. In order for adolescents to acquire an understanding and appreciation for the feelings of others, they must interact with diverse individuals in an environment where they hold relatively equal status, such as in a classroom. These circumstances are said to foster perspective-taking and assist in intellectual and moral development. However, in order for this process to occur, diversity and equality must be present in the learning environment, which it does seem to be in Melody's case.[9]

However, another paper highlighted that it is not enough to simply bring together a diverse group of students. Although it is an important first step, other factors need to be considered to maximize the learning opportunities that they present.[10] They argued that increased diversity would only be beneficial if it was accompanied by institutional efforts to become more "student-centered" in their teaching and learning approach.[18] Further, it is important to include opportunities on a regular and ongoing basis for students to come together to communicate and interact cross-racially.[19]

Melody mentioned that there are many opportunities to interact with multiethnic staff, students, and patients, however, there are many barriers that students may face when it comes to fully engaging with their education and this may be due to a lack of consideration toward unique student circumstances on the university's end.

[Interview Clips]

Financial support, and more consideration for the resources that students have access to, such as transit vehicles, seem to be overlooked in this cohort. Further, although the curriculum is well designed, there is not much room for feedback from students in terms of when or how, or where they are able to receive their education. As such, some of the student-centered approaches that were mentioned in the paper might need to be re-evaluated.

Further, Melody spoke about the privilege that she holds which has allowed her to get to where she is today. I also have the same feelings, in which I was fortunate enough to not have to worry so much about financing myself much less a family that I need to support. I was able to work full-time at BC Children's Hospital in a research position that would greatly further my CV, at the cost of being paid a fraction of minimum wage per hour. I didnt even know that was legal. Many immigrants may not be afforded this luxury, as melody mentions, many mature students often have families that they are responsible for and what attracted them to UBC's nursing program was how accelerated it was, allowing them to fast-track the time and money that they needed to spend on school. However, I think these circumstantial barriers may prevent or entirely inhibit ethnic individuals from pursuing education in healthcare, causing those voices to become diluted from the discourse.

Closing:
I think something that really resonated with me was when Melody mentioned that you don't necessarily need to have all the knowledge, sometimes being aware that you don't know about something is enough– as in, it allows you to demonstrate more humility and seek knowledge in areas that you are not as familiar with. Particularly as a medical professional, it's important to realize that even if you have immense expertise in regard to health, that does not mean you automatically know what is best for everyone's health. By taking a patient-centered approach, you are able to cater to their unique needs irrespective of your own experiences or biases.

This reflection has been pivotal in my education thus far. I am so used to the trenches of cellular anatomy and physiology, spending hours injecting various drugs into organ baths and analyzing data for statistical significance, that I forget to take a step back and examine the effects of this work on a broader scale. Most importantly, the emphasis the science placed on maintaining objectivity, has in a sense, removed the human aspect that is so vital to healthcare.
I almost forgot how to write with personal pronouns because of the emphasis on removing self from science. However, I see that it is important to remove all the emphasis from finding new cures and scientific advancements, to also analyze how the existing treatments can be improved for various populations. Despite what the data says, or what the literature might say, each person should be viewed holistically and have their own preferences taken into account.

I think there is a responsibility to both produce useful science, but also be more aware of how it is produced and decimated – and the first step to doing that is to be reflective of the gaps which exist, something I didnt realize previously because I was so hyper-focused on making a place for myself. I kept my ethnic identity separate from my academic passions because they felt like two separate spheres, also, I was so engrossed in being able to receive the education that I've worked so hard towards earning that I never thought to critically analyze its shortcomings. In reading about ad hearing from ethnic healthcare professionals in this class, such as Ranjit and Chan-Yip,

I’ve realized that it is important, if not beneficial, to embrace my ethnic identity as I progress through my education.

Thinking back to when I first stepped foot into UBC, bright eye-ed and naive, fresh out of high school, wanting to study science and make a difference in people’s lives. Well, I didn't actually step a single foot onto campus because my first year was entirely online due to the actions of the Coronavirus. And, the glow that UBC Science seemed to emit like a freshly shined silver platter? Yea, that also tarnished pretty quickly, enough nearly-failed physics quizzes and 20-page SINGLE-spaced lab reports will do that to you. But clearly, something kept me going. Here I am, in my third year studying cellular anatomy and physiology, still cramming biochemistry pathways into my brain. Somewhere along the way, the simple interest in science driving my shallow high school ambition became a full-fledged fire to utilize the knowledge I had in a field riddled with holes – gaps in knowledge, gaps in research, gaps in service. And to harness my unique background, something that I used to hide, to add color to the white canvas of research and education.

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