

The Social Determinants as part of the Medical School Curriculum

An Exploratory Analysis of Domestic and International Medical Schools

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Abstract

The social determinants of health (SDOH) are increasingly recognized as an important topic however it is only recently that the American medical focus has incorporated anything other than biological pathways to health. An ideological shift from our current practice of 'disease-care' to a framework that includes the socio-economic environment is challenging. As education is an effective way to influence change it is important to know what American medical students are learning about the SDOH and, more importantly, what are they not learning when compared to medical students outside of the US.

To assess the emphasis placed on the social determinants of health in medical education, the curricula of 26 universities were analyzed for key terms to ascertain the presence of the SDOH. Results indicate that American medical students overall have less exposure to the SDOH throughout their required course work when compared to schools outside of the United States. Canadian medical schools in particular integrate these concepts into the majority of a students' coursework. By looking at a snapshot of medical curricula we can understand where medical education in the United States currently stands as well as where it has room to expand. Identifying what gaps exist in medical education will enable curriculum committees to address these gaps to ensure a more holistic medical education for future physicians.

Introduction

Health inequality and inequity, which implies social injustice, are unfortunate yet intrinsic aspects of the current health landscape. Health inequities are differences in health outcomes among segments of the population that are already disadvantaged (Braveman, 2003). These health inequities are considered to be unfair and remediable. Health disparities, a term used in the United States but not internationally, are measured by several indicators including life expectancy, infant and maternal mortality, and morbidity rates, are perpetuated by inequity, or the

continued disadvantage of specific subpopulations (Braveman, 2003). These disadvantages are related to what are known as the social determinants of health and include access to education, differences in income level, neighborhood safety, and perceived self worth, as well as many other factors (Kawachi et al, 2002). According to the WHO, the social determinants of health are the context in which people are “...born, grow, live, work and age” (WHO, Social Determinants of Health). The social determinants of health have been a presence in health research for decades. One example is the Whitehall II study, in which a group of researchers in the UK studied the effects of inequality in social status of sedentary civil service workers on several health outcomes, ultimately finding that societal factors such as income and job position play a large part in the health of a population (Marmot et al, 1991). Despite growing concern over these health inequities, medicine tends to center around behavioral-based health outcomes.

The emphasis on the social determinants of health is a common model in public health. However, medicine has been ‘de-socialized’ (Stonington and Holmes, 2006) to focus on what are commonly considered to be the hard sciences. Despite this growing emphasis on the biomedical model, there is evidence that medicine has less impact on overall health than other factors such as the social context in which we exist (Stonington and Holmes, 2006). In fact, many believe that “the stark fact is that most disease on the planet is attributable to the social conditions in which people live and work” (DeVille and Novick, 2011; Stonington and Holmes, 2006, pp e445; Irwin et al, 2006). The concept that medicine has minimal influence on health can be seen from the rapid increase in life expectancy throughout the 20th century (CDC, 1999). Life expectancy is estimated to have been increased by approximately 30 years throughout the first half of the 20th century, with 25 years of that being the result of public health improvements, not biomedical and technological advances (CDC, 1999). Although the relative benefits of biomedicine to addressing the underlying causes of health can be questionable, our society currently focuses almost exclusively on medical interventions to achieve health.

The traditional focus of medicine in the United States has been the treatment of disease in an individual. This was articulated in a 1910 publication known as the Flexner Report and was the guiding framework for medical school curricula for much of the first part of the century (Chapman, 1974). Abraham Flexner, a scholar who evaluated the status of medical education in the United States in the early 20th century, recommended a purely scientific medical school curriculum with high expectations of the quality not quantity of graduates, (Chapman, 1974). It was this set of recommendations that steered medical practice to focus on the biology and physiology of individual patients as opposed to the social environment in which disease is distributed and inequities perpetuated. It was not until the last fifty years that the evolution of medicine, broadly construed, began to include what are called the social determinants of health as an integral player in health outcomes.

Since 1910 and the publication of the Flexner Report the American medical system has undergone several reformations that have emphasized different aspects of health, ranging from disease-focused medicine to preventive measures and now to an increasing focus on the social environment and culture as a determinant of health. It is in the most recent era of medical practice that education is finding itself lagging behind the needs of the field. It is difficult to design and implement a curriculum that combines both the traditional biology and chemistry courses with an integrated framework of social medicine, or what are sometimes called the “messy real-world issues” (Cooke et al, 2006, p. 1341).

Despite the many difficulties, attempts to incorporate aspects of the social determinants into the American medical curriculum standard can be seen over the last few decades. The Association of American Medical Colleges (AAMC) has historically supported medical schools in shaping and implementing curricula to best prepare graduates to practice medicine. In a report on the Medical School Objectives Project published in 1998, physicians were encouraged to be altruistic, knowledgeable, skillful and dutiful (AAMC 1998). In order to be a dutiful provider, the report stated that physicians must be aware of the contributing factors to the health of populations such as the social determinants of health, including economic,

social and cultural factors (AAMC, 1998 p.8). Reports such as this indicate that there is awareness about the importance of teaching medical students the social determinants, however research shows that overall many medical school curricula leaves something to be desired, particularly to its students.

Agrawal et al conducted a survey of first- and fourth-year medical students in the United States in 2002 regarding knowledge about the health status of the US as well as their views on their medical curriculum (Agrawal et al, 2005). In the analysis, 54% of all students surveyed expressed a level of dissatisfaction regarding a lack of courses about health policy, health care delivery and health reform (Agrawal et al). Over half of fourth-year students polled expressed the desire for more *required* courses about these topics (Agrawal et al). It is this wish for an expansion of required courses that drives much of this proposal. In the last six years, the movement to incorporate the social determinants into the skill set of physicians via medical school curricula has continued at a steady pace.

In a recent report, the AAMC describes the most current initiatives to integrate the 'behavioral and social sciences' into the curricula of medical schools (AAMC, 2011). The AAMC has merged the Institute of Medicine's Behavioral and Social Science Domains and the CanMEDS Physician Competency Framework to organize how the behavioral and social sciences fit into a physician skill set along with the traditional skills in anatomy and chemistry (AAMC, 2011). This focus on the social determinants of health and the increasing pressure on medical professionals to engage in more social medicine indicate that there must be a shift in ideology. As the AAMC knows, the most effective way of producing and facilitating this shift is by appropriating efforts to amend the education of new providers.

The United States is at an important crossroads in the realm of health. The much-debated Patient Protection and Accountable Care Act includes not only the expansion of medical care to individuals that have been previously uninsured and therefore often unable to receive care, but also the addition of public health programs as mechanisms for providing health care, as opposed to 'sick care' (Deville and Novick, 2011). Additionally, there are proposed increases in medical workforce

as well as task shifting to accommodate this increase in Americans eligible for health care insurance and therefore healthcare (2011). Gaps in the American medical education system must be addressed as quickly as possible, to ensure that this new influx of providers are well-informed and able to provide appropriate and human-centered care to their patients.

Rationale:

The heightened focus on the social determinants of health (SDOH) has set the stage to better incorporate these concepts into medical school curricula. This research hopes to ascertain the current status of SDOH as a part of the medical school curricula in both the United States and abroad. This information will be used to understand expected gaps in knowledge that American medical students have in regards to the social determinants and provide recommendations to expand and increase knowledge of the social determinants of health within the context of medical school.

Objectives:

The objectives are threefold:

To obtain an overview of the curricula of the most highly ranked medical schools both in the United States and internationally

To identify gaps in American medical school curricula in relation to the social determinants of health

To provide recommendations for reducing these gaps and increasing awareness of the social determinants of health in medical students coursework

To address the above objectives, this thesis will focus on the following three research questions:

1. How do the social determinants of health appear as a part of each medical schools curriculum? (*This can include the mission of the medical school and the required coursework including the course description and objectives if available*)
2. Do international medical schools address the social determinants of health more than American medical schools?
3. How can American schools better incorporate the social determinants of health into their current curricula?

Methods:

Data Collection:

The goal of this research study was to look at how the social determinants of health are portrayed in medical school curricula nationally and internationally. The research questions focused on explaining how the social determinants of health appear in a medical school's curriculum and to compare the quantity and quality of the social determinants of health in the curricula of international medical schools and American medical schools. Lastly, this paper hopes to provide recommendations for how to better incorporate the social determinants of health in to American medical school curricula.

This study is an exploratory analysis of a small sample of medical school curricula in the US and internationally. Medical schools were initially chosen based on the Academic Ranking of World Universities (ARWU) 2010 ranking of clinical medicine and pharmacy universities. This ranking system was chosen because it is rigorous and consistent across countries. Following this initial sampling, additional universities were chosen using convenience sampling utilizing professional and academic connections that facilitated contact between the curriculum administrators and myself.

All universities that were used in the final data analysis came from English-speaking countries, despite an effort to obtain the curricula of universities in non-English speaking countries such as Japan, the Netherlands, Germany and Sweden. It should be noted that all countries chosen for this analysis have longer life expectancies at birth than the United States (UNDP, 2011). For a complete list of universities and countries please see Table A.

Each university's web pages were catalogued and then searched using a set of key terms to ascertain overall emphasis on the social determinants of health. Initial focus was on the mission of the university and was analyzed as a nominal variable (yes/no). The terms chosen were derived from the literature review and included the following (complete list):

<i>social determinants of health</i>	<i>poverty</i>
<i>health disparity</i>	<i>social economic gradient</i>
<i>health equity/inequity</i>	<i>psychosocial</i>
<i>health inequality</i>	<i>cultural competency</i>
<i>social justice</i>	<i>race/racial disparity</i>
<i>social medicine</i>	<i>population health</i>

Following initial analysis, terms were added to the list, however none were removed from the list despite rarely appearing in the data. It is important to know what terminology medical schools are not including in their curricula. Additionally, the curriculum of each medical school was analyzed using the same set of key words to determine how many required courses a medical student in each program must take that include the social determinants of health in some capacity. Every effort was made to obtain a complete data set however this is one of the acknowledged limitations of this study.

Following website and publicly available curricular map analysis, curricular deans of several schools were contacted to verify completeness of data set. Curricular deans were contacted primarily from universities that had unclear websites although contact was made with the majority of the universities. Initial contact was made via e-mail and was followed up with an additional e-mail and a phone call. This information was documented in the study notes.

Courses were looked at within the global experience of a medical student at the university prior to rotations or clerkship. Therefore, the focus of this analysis is the pre-clerkship years, most often the first two years of medical school. The unit of analysis is the entire pre-clerkship coursework load of a medical student (i.e. all the courses required for a medical degree). Only required courses included were included in this analysis. By focusing on the required coursework I hoped to establish a baseline for the minimum amount of population health-related concepts that a student would obtain by attending school at a particular university. The analysis of all possible electives was outside of the scope of this project.

Data Management:

All information was collected into a master database in the outlining software NeO. The data from each university was exported into text files in which the data could be searched quickly. Any occurrences of the predetermined terminology were logged in an Excel spreadsheet based on the terminology used, the university in which the word was found and in what context the term was used.

Data Analysis:

The presence of the social determinants of health as part of the mission and/or vision of the medical school was coded as a yes/no for each university. Each university had all curricular information that was obtained via the university website, student handbooks or personal communication catalogued into a qualitative document. Basic frequency counts were used to assess overall emphasis

each university had on the social determinants of health. As each university organizes their coursework differently, it was impossible to identify the absolute frequency of courses that included the topic of the social determinants of health. Several universities have moved to a 'block' method of curriculum, in which the medical students experience is broken into several blocks with different classes a part of those blocks. In that case, students may only take five to six 'blocks' for the entire two years, with the social determinants of health appearing in one or two sessions. Therefore, it was decided that assessing overall emphasis would be the best method for this analysis.

The data was analyzed by using thematic content qualitative research analysis (Anderson, 1997). Data was looked at individually by university and as either an American medical or an international medical school. During analysis the universities fell into one of four categories based on the level of emphasis. Supplemental text examples are used to illustrate how the social determinants of health are present in the universities. Emphasis was defined as a combination of both quality and quantity.

To assess quantity, university curriculum web pages were assessed for all occurrences of each of the previously identified words. Each appearance of the word was investigated for context and content to identify whether or not the term was being used in a manner relevant to this study. The data was read several times to obtain a thorough understanding of in what way these concepts appeared in the curriculum of each university. The data from all universities in either variable group, American or international, was also coalesced to obtain a broader understanding of how each group of universities included these topics in their curricula. Results and final recommendations, therefore, are taken from both individual analyses of each university as well as a combined analysis of each variable group as a whole.

Results:

By identifying a list of words that would be used to evaluate medical school curricula *a priori* I was able to organize the data and assess in what capacity these terms emerged.

I grouped all medical colleges outside of the United States into an 'international' category and compared them to those universities within the United States. Both categories of schools had universities on either end of the spectrum. Some universities had curricula in which the social determinants of health appeared in several locations throughout the curriculum while other schools had almost no mention of social determinants of health. Despite this fact, there were overarching mechanisms through which the universities exhibited these concepts in their curriculum. These were organized by level of influence that the social determinants had on the curriculum and included low, medium and high. These groupings will be discussed in more detail later. For an overview of the sorting structure please see Table A. It should be noted that these groupings were the culmination of an effort to understand not only how often these themes came up in the curriculum (quantity) but also in which capacity universities portrayed their focus on these themes (quality). Additionally, there was a group of universities in which the social determinants of health were not evident within the curriculum but were included as one of the overall objectives for the medical college.

Surprisingly, none of the universities in this sample had any of the previously determined words in the mission of the medical school. It was unforeseen that this terminology does not make an appearance in what should convey to prospective students, educators and donors the focus of the school, however these terms did appear in the vision, objectives, goals and competencies in several of the schools. Several university mission's included addressing the population's health or the public's health through biomedical processes and procedures. One example is the University of Pittsburg in the United States as seen below:

*The mission of the University of Pittsburgh School of Medicine is to improve the health and **well-being of individuals and populations** through cutting-edge biomedical research, innovative educational programs in medicine and biomedical science, and leadership in academic medicine.*

This could be indicative of the level of appropriateness of the search terminology chosen for the analysis and deserves future research.

Low Prevalence

Universities with a low prevalence of the social determinants of health had only one class that had the pre-defined terms present in the description, objectives or syllabi for that course. Columbia University in New York, the University of Glasgow, the University of Manchester and the University of Cambridge, all in the United Kingdom, had no mention of the social determinants in any capacity throughout the curriculum while University of California San Francisco, University of Minnesota Twin Cities, University of Texas Southwestern Medical Center at Dallas, University of Oxford and University of Calgary in Canada each had one course that contained one of these concepts.

The University of California San Francisco had one longitudinal course called “Foundations of Patient Care”. This course had specific sessions (one class period) that were related to the social determinants of health, such as the session entitled ‘social history’, however the majority of sessions touched upon issues that are considered outside of the scope of this project, such as ethical behavior and communication.

The University of Oxford in the United Kingdom had a singular yet fairly comprehensive course entitled ‘Medical Sociology’. This course covered the rationing of health care in the United Kingdom as well as social class as it is related to health (University of Oxford). Information found for this course included the academic requirements for this course. To get academic credit for this course students must complete ‘a basic paper’. This raises the question of how to

determine what level of depth and retention are universities expecting of their students in regards to these topics.

The University of Minnesota Twin Cities is an example of a medical curriculum that includes the broad topic of 'public health' as part of the curriculum. Although the field of public health often focuses on issues such as the social determinants of health, health inequalities and health disparities, the inclusion of 'public health' does not indicate that the medical school is teaching these concepts or teaching them in any meaningful way to students. This broad topic was only counted in universities that explicitly described the topics of public health as including concepts related to this research.

The University of Cambridge in the United Kingdom had a sparse website, that may have contributed to its' lack of information. The university had almost none of the predetermined concepts indicated as being part of the curriculum with only one mention of the social aspects of *patient care* being an overall learning outcome. This was similar in both the University of Manchester and the University of Glasgow websites. With such little information on the universities it is difficult to tell what students are required to learn. It also raises the question as to how placements in health settings where there is the potential of encountering concepts surrounding the social determinants of health, such as community clinics or clinics that primarily serve vulnerable and disadvantaged populations, contribute to the overall learning of these topics.

Medium Prevalence

A medium prevalence was defined as when there were more than one to two courses that met the requirement for the SDOH content. Courses in this category were also included if there was one course specifically focused on the social determinants of health that was taken longitudinally throughout the medical students pre-clerkship years as this indicated a constant exposure to these concepts. This was determined to be distinct from a longitudinal course in which one or two

sessions throughout the lifetime of the course had the social determinants of health present. Four of the seven schools that fell into this category were American medical schools: University of Washington, University of California Los Angeles, Stanford University and Harvard University. Each university had two courses that were very obviously related to the social determinants of health. The majority of courses from these universities framed the social determinants of health as related to how the social environment affects individual behavior and choice. In addition to these American medical colleges, the University of Nottingham, the University of Bristol and the Imperial College of Science, Technology and Medicine all in the United Kingdom fell into this category.

Stanford University's curriculum is divided into four blocks, one of which is the Practice of Medicine. This block includes several topics including population health. There are several individual sessions during this longitudinal course that pertain to this research. Individual sessions focus on a population approach to medicine, for example "The Population Health Approach to Cardiovascular Diseases" or "The Population Health Approach to Accidents and Injuries". Although the objectives for these individual sessions were not accessible, these courses indicate that Stanford is making efforts toward incorporating these topics into the curriculum as they relate to the traditional view of health.

The University of Washington's curriculum has one course in particular that narrows in on topics surrounding the social determinants of health. Required during students' second year of course work, the course 'Medicine, Health and Society' discusses the 'non-biological' influencers of health and how these factors are interrelated to health care delivery. Another course, 'Systems of Human Behavior', expose University of Washington medical students to the concept of social roles as factors to consider while engaging in a doctor-patient relationship. In addition to these two courses, the University of Washington has a set of institution-wide goals for medical student education. One of these goals is to "*engage students in healthcare delivery, public health, and research to strengthen their understanding of healthcare disparities and regional and global health issues*" (UW Handbook). This

emphasis on disparities, although only focusing primarily on healthcare as opposed to broader 'health', indicates that the University of Washington is making efforts to expose their medical students to the social determinants.

Despite having a longer life expectancy than the United States, highly ranked medical colleges in the United Kingdom indicated fewer than expected courses and learning objectives regarding the social determinants of health. The Imperial College of Science, Technology and Medicine offers one longitudinal course to students that spans the first two years of medical school. This course, the Foundations of Clinical Practice, has several components, one of which is entitled 'sociology'. This section of the course expects students to understanding the 'relationship between disease and social contexts of the life course, psychosocial environment and socio-economic circumstances." Additionally, students are expected to understand the limitations of medicine. Overarching curricular learning outcomes includes a 'broad understanding of the 'social basis' of health.

The University of Nottingham in the United Kingdom was also determined to fall into the medium prevalence category. One course in year one entitled "Public Health and Epidemiology" included topics such as health inequalities, the 'wider' determinants of health, the social framework for health, and population health as well as other terms that were used for this research. Objectives for this course include the following:

You will learn about the social model of health and consider wider determinants of health as described by Dahlgren and Whitehead. Students will also learn about the differences between biological variations in health and health inequities as well as the explanations for health inequalities.

University of Nottingham medical students also take coursework in their second year that elaborates on health disparities and global health topics (personal community, University of Nottingham). Additionally, the University of Nottingham has longitudinal themes throughout the first two years of pre-clerkship work. Entitled 'concurrent themes', the themes go up from health in the cellular level, the person and the community.

The University of Bristol's curriculum is broken into what are termed 'vertical themes'. One theme, 'disability, disadvantage and diversity', discusses the concepts of social factors and health, developing cultural competence, and health inequalities. This is the only university in this sample that had the term 'health inequality' in the curriculum. The idea of health inequalities falls under the term 'disadvantage', which is often related to social justice.

High Prevalence

The high prevalence category was primarily comprised of international universities and included University of Toronto, McMaster University, University of British Columbia, Flinders Medical School and University of Melbourne in Australia, and the American schools Mayo Medical School, University of Pittsburg and Johns Hopkins University. In these universities the social determinants of health permeate throughout the entire curriculum; not only do each of these universities have several courses about this topic but it is also one of the overarching themes of the medical college.

Johns Hopkins University, the original inspiration for the 1910 Flexner report and the impetus for the science-focused medical curriculum in the United States, has a set of competencies with which each medical student is expected to graduate. One of these competencies is 'the social context of medicine' (Johns Hopkins School of Medicine). This competency states that medical school graduates should "understand and respond to factors that influence the social, behavioral and economical factors in health, disease and medical care" (Johns Hopkins School of Medicine). This objective, coupled with the several courses in which the social determinants of health appeared, indicates that the curriculum at Johns Hopkins University is dedicated to providing exposure of the non-biological determinants of health to medical students.

Flinder's Medical School, one of two schools from Australia that were included in this study, had two separate tracks in the medical school that students

could choose. The first option was a health sciences focus while the second was a medical science focus. For the purpose of this study, both options were considered, however there was more coursework in the health science focus. The medical school had three courses that included the social determinants of health topics in it including a course titled Epidemiology for the Social Determinants of Health. There were several overarching aims of the school that contributed to this body of knowledge. One aim, which applied to both tracks, was to *'recognize the importance of basing medical practice on a social and community view of health and illness'*. Another aim was understand the population health landscape in Australia as well as internationally.

The University of Melbourne, also in Australia, emphasizes several of the same themes throughout the courses in the two pre-clerkship years. The learning outcomes of these courses include having medical students understand the disparities between indigenous and non-indigenous peoples in Australia as well as understanding what factors contribute to a 'well-society'.

Understand the determinants of a well society and the economic, political, psychological, social and cultural factors that contribute to the development and persistence of health and illness

In addition, the learning goals include learning about the 'equitable allocation' of finite health resources. This term is not found in other medical school curricula.

All of the universities that fell into this category had high levels of these concepts throughout their curriculum, however the two universities with the highest prevalence were University of Toronto and University of Pittsburg. The University of Pittsburg in the United States had several classes in which the social determinants of health and associated concepts appeared. The Population Health Course, as it is distinct from the longitudinal curricular theme 'Population Medicine and Public Health', includes a poverty simulation in which students grasp an in-

depth understanding of the poverty-related barriers that their future patients will face. Goals for this course that are particularly relevant to this research are:

1. *Discuss the relationship of socioeconomic differences to health status*
2. *Discuss factors contributing to disparities in health and potential interventions*

In addition to the Population Health course, the curricular theme Population Medicine and Public Health is implemented in the follow courses: Introduction to Being a Physician, Evidence-Based Medicine and Biostatistics and Prevention. The University of Pittsburg medical school has implemented a comprehensive and in-depth curriculum in regard to topics surrounding the social determinants of health.

In the University of Toronto curriculum concepts of the social determinants of health appeared in the overall goals of the medical college, the competencies each medical student is expected to graduate with, and in almost every course in the curriculum. The first semester of the first year all medical students enroll in a course called the 'Determinants of Community Health', which is a longitudinal course that spans the entire four years of school. During the first quarter, students are taught about the social determinants of health and population health, and are then placed into primary schools to teach these concepts to school children. Although outside of the scope of this project, the social determinants of health also appear in each clerkship topic as the medical student goes through clinical rotations. For example, in the surgery rotation the first learning objective is to "demonstrate an awareness of the underlying psychosocial and socioeconomic problems that may complicate discharge from hospital following elective or emergent surgery." This university has incorporated the social determinants of health into every aspect of the curriculum.

Influence outside of the Curriculum

As stated previously, there were schools in which the social determinants were not obvious in the curriculum, yet these topics were an overarching goal of the

medical school experience. University College of London and McGill University had very little information about their respective curricula yet stated that incorporating the social determinants of health as well as the biological determinants of health were an integral part of their programs. The University College London had ‘overarching themes’ in their curriculum structure that included a Social Determinants of Health theme and a Mental Health theme. The mental health theme was meant to incorporate several aspects of care that relate to mental health together and included the topics of social determinants and teaching on health and social care.

McGill University has several objectives with which medical graduates are expected to obtain through their time at the university. One topic, entitled ‘Health Advocate’, has two specific objectives that are directly related to the social determinants of health:

Objective 4.3.1

Appreciate the important non-biological determinants of poor health and of the economic, psychological, social and cultural factors that contribute to the development of illness

Objective 4.1.4

[Students should understand] Determinants of health on a population level, including demography, culture socioeconomic status, race, ethnicity, gender and circumstances of living

Although these mechanisms were outside of the original scope of work, it is important to note that the social determinants of health appear differently throughout the sample. It is unclear how these mechanisms differ in terms of educational outcomes and student absorption of these materials.

All terms appeared in some capacity from the universities identified in this study. The terms health equity/inequity and health inequality were found in more than one international medical school albeit no American schools. In international medical schools, the term 'social-' or 'socialized medicine' was not found in any curricular information. In American medical schools, no universities included the terms equity/inequity or social justice. It is unclear the importance of the lack of these terms. As this list was iterative in nature, terms were added such as 'population health' as it appeared that universities were using this term as a proxy for social determinants of health. It is also important for future work to determine the overall goals of teaching 'public health' in medical schools, as this term appeared frequently however was not considered part of this study. It is unclear if 'public health' was used to discuss population health and if the social determinants of health were considered to be a part of that conversation. Additionally, the University of Oxford used the term 'medical sociology' to describe many of the pertinent concepts in this study. Although this term was not included in this study it should be considered as a possible vocabulary term in the future.

In an effort to expand the data collection process to include non-English-speaking countries, universities were explored in Japan, the Netherlands, Germany and Sweden. Although the majority of the data that has come from those universities is not in English, there was a small amount of information that had been translated. In Leiden University in the Netherlands, a student-exchange program has some of the courses taught in English. Because this is a study abroad program, all courses are technically optional, which leaves them out of the parameters of this study. However, one of these optional courses is entitled '[the] Cultural Aspects of Health and Healthcare' and focuses on the non-biomedical model of health. As this information is outside of this study, it can only inform researchers that non-English speaking universities should be explored for these concepts as they may shed more light on this topic.

Several universities that were included in this study are currently undergoing a curriculum renewal process. For the purpose of this study, only the

most current curriculum was used however data regarding curriculum reform was obtain and catalogued. Universities undergoing curriculum review were often integrating several non-biological aspects of medical education into the curriculum in a more meaningful way, including the social context in which health exists, doctor-patient communication and ethical practice in medicine. The University of British Columbia, hopeful to implement their 'curriculum overhaul' by 2013, has a working group focused on Social Responsibility and Accountability, that specifically focuses on the fourteen social determinants of health as defined by a 2010 report out of Toronto (Mikkonen and Raphael 2010). Johns Hopkins University, already at the forefront of American medical schools, is undergoing further curriculum renewal to include the theme 'social concerns with health disparities, outcomes, and safety'. Curriculum reform is an obvious opportunity that medical schools currently have to address some of the gaps in the knowledge of their graduate students.

Table A:

Prevalence Level	Institution	Country
High	Mayo Medical School	United States
High	University of Pittsburg	United States
High	Johns Hopkins University	United States
High	University of Toronto	Canada
High	McMaster University	Canada
High	University of British Columbia	Canada
High	Flinders Medical School	Australia
High	University of Melbourne	Australia
Medium	University of Washington	United States
Medium	University of California Los Angeles	United States
Medium	Stanford University	United States
Medium	Harvard University	United States
Medium	University of Bristol	United Kingdom
Medium	Imperial College of Science, Technology and Medicine	United Kingdom
Medium	University of Nottingham	United Kingdom
Low	University of California San Francisco	United States
Low	Columbia University	United States
Low	University of Minnesota	United States
Low	University of Texas Southwestern Medical Center of Dallas	United States
Low	University of Oxford	United Kingdom
Low	University of Cambridge	United Kingdom
Low	University of Manchester	United Kingdom
Low	University of Glasgow	United Kingdom
Low	University of Calgary	Canada
Outside Curricular Influence	University College London	United Kingdom
Outside Curricular Influence	McGill University	Canada

Discussion

Although this was an exploratory analysis of the curricular content of a small sample of medical schools, it appears that there are some overarching messages. Canadian universities in particular are on the whole incorporating non-biological determinants of health into the curriculum on a much wider scale than American medical schools. As expected there were individual universities that fell outside of this determination, such as University of Calgary and University of Pittsburg. Universities from the United Kingdom implemented these topics to a lesser degree than what was expected, similar to the United States. It is unclear if the small sample size contributed to American universities performing poorly compared to Canadian universities however it is believed that this is a result of the societal concern of the social determinants of health outside of the United States.

On the whole, Canadian medical students are being exposed to these topics throughout their medical school experience and are often exposed more in-depth and for a longer period of time. It is believed that this may be related to the CanMEDS Physician Competency framework that has purposively included non-biological determinants of health into the health care culture in Canada (Frank, 2005). Additionally, the Association of Faculties of Medicine of Canada (AFMC) founded the Public Health Educators' Network (PHEN) in 2007 to address the teaching of public health in medical schools in Canada (AFMC Primer on Population Health). The initial goal of this group was to develop an electronic textbook for medical students to learn these topics; the result of this endeavor was the AFMC Primer on Population Health. The Primer is broken up into three parts with several chapters that touch traditional public health topics including the social determinants of health and health disparities. In the first chapter of the Primer, the definition of health is expanded to include the individual as well as the family, the community and the surrounding culture (AFMC Definitions of Health). This resource was created for Canadian medical students and is indicative of the broader role that medicine plays in the Canada. Canadian physicians, educators and policy

makers are committed to encouraging widening the role of the Canadian physician and are taking steps to increase education around these topics.

Although more subtly, the American medical community and education system is also shifting its' focus. The Institute of Medicine in 2004 proposed a set of Behavioral and Social Science Knowledge Domains that were intended to be used in an American medical school's curriculum to ensure that American physicians are being trained holistically. Following this report, American universities are in the process of incorporating the social determinants of health into their curricula. As noted above, several universities are currently undergoing curriculum review; as of now, I believe that proponents of the social determinants of health can be cautiously optimistic about future curriculums in American medical schools.

Overall, the majority of American medical schools as well as medical colleges in the United Kingdom could expand curriculum coverage of topics relating to the social determinants of health. The University of Pittsburg is an example of an American university that has successfully implemented a curriculum that incorporates biomedical science with the social determinants of health for several years. If they believe it is an important aspect to be covered in the curriculum, curriculum committees can utilize the wealth of information available on the internet to take advantage of the road previously paved by universities such as the University of Pittsburg and the University of Toronto. Not only do these universities show the different mechanisms through which the social determinants of health can permeate the coursework of medical students but they also exemplify how to portray these concepts to individuals outside of the university. Johns Hopkins University also is an excellent example of how to incorporate these concepts throughout the curriculum, and should be used as an example as well. By sharing knowledge that is freely available, many more American and British medical schools have the opportunity to incorporate these concepts in an evident and meaningful way.

The terminology used in this research also deserves mention. Despite the focus for this study being on the social determinants of health, and the impetus a

growing concern about the health and wealth disparities in the United States, this research had to expand the search to include more general terminology for medical schools. Although population health was not an original term being used, it seemed important to include after the first few universities were evaluated. Medical students are being taught a surprisingly small amount about health disparities in their communities inside the classroom environment. However, it seems a small victory that medical schools are attempting to expand the definition of health from the individual-level to a population-level. Additionally, when focusing on disparities in health, the majority of curricula mentioned disparities in *healthcare*. Considering the shaky relationship between medical care and actual health this is not an ideal inclusion in the curriculum (DeVille and Novick, 2011; Stonington and Holmes, 2006; Irwin et al, 2006). It is up to the researcher to decide whether or not these concepts should be considered part of this research, or if the definition should be more narrowly contained.

Implications for the Future

The WHO's Commission on Social Determinants of Health has been instrumental in bringing health inequalities to the forefront of discussion (CSDH, 2008) and has recently been followed by initiatives such as the United States Healthy People 2020 objective of addressing the social determinants of health (Healthy People 2020). These movements are defining what a healthy future consists of and what goals we are working towards. Restructuring education is a vital part of reaching these goals and is an upstream approach to reducing health inequities.

Although restructuring the entirety of medical education is outside of the scope of this project, the initial step is to understand what the current landscape looks like. This project hopes to address the medical education portion of this question by determining what American medical students are not being exposed to in their coursework with the goal of influencing future curricula decisions to ensure

that providers are equipped with all tools necessary to provide informed, appropriate and sensitive care to their patients.

Limitations

The most important limitation was the difficulty in obtaining a full dataset. Although every effort was made to obtain a complete dataset there was a lack of response from the curricula staff at several of the universities that hindered this endeavor. This project became a *de facto* look at how medical schools portray themselves to prospective students. Mayo Medical School is one example of how an in-depth conversation with the associate dean of academic affairs elucidated the capacity to which these topics were found in the curriculum. Although initial searching showed that there was very little SDOH in the Mayo Medical School curriculum, the associate dean explained that the mechanisms by which medical students at Mayo are exposed to these topics throughout their entire time at the university to counterbalance Mayo's reputation as a 'subspecialty tertiary care facility'. This experience indicates that several other universities that may have scored 'poorly' have more to offer regarding these topics in their curricula than what is obvious from this dataset.

Additionally, because several of the universities were in non-English speaking countries there were universities that had to be left out because of the language barrier. This resulted in a skewed international medical school database that emphasized schools in primarily the United Kingdom and Canada. Additionally, this data admittedly does not capture what is being said in the classroom, how these topics appear in problem-based learning situations, and the majority of reading requirements for courses. However, it is also important to know how universities portray themselves via online information portals.

Another limitation is the focus of this research is on only required coursework for medical students. Looking at the number of elective hours and possible electives that students have to choose from is outside of the scope of this

project, however is an important aspect of the SDOH as part of the wider university's curriculum.

The narrow search term list also limited the potential findings in the study. Search terms such as 'public health' and 'medical sociology' were not included in this study, however they may be worth exploring in the future. Terms that were included, such as cultural competency, were perhaps too broad. The term 'social history' can also focus only on the background questions that medical doctors ask their patients, as opposed to taking into account an individual's status and situation in society. This study did not look at required reading in the coursework that provided this level of information; the inclusion of books that explain the social determinants of health in great detail would indicate that these topics are being taught in classes without actually have the correct search terms in the description or syllabi.

More philosophically, the actual skills and knowledge that medical students graduate with is not being captured in this study. It is unknown how much these concepts stay with medical students following graduation.

Conclusion

The mechanisms through which the social determinants of health appear in a medical schools' curriculum vary across schools and country lines. This study made every possible attempt to obtain a true dataset and given an accurate portrayal of a small sample of medical schools in the United States and abroad. It is clear from this research that much more needs to be done, including a more in-depth curriculum review project that analyzes not only the mechanisms through which the social determinants of health appear in a curriculum but also how this knowledge is viewed by medical students themselves. Future research could also potentially include surveys of fourth year medical students determining how they believe the social determinants of health were addressed in their medical school experience.

Knowledge retention is another important avenue of inquiry that the academic community could investigate regarding this topic.

Through this project it has become increasingly apparent that future research should be done to better understand the coursework that medical schools are requiring of students. This study attempted to capture a broad set of information, but future studies might benefit from focusing on only comparing the United States and Canada, or looking at creating an overview of a large number of American medical schools. This research was formative in nature, and will hopefully be used to inform future studies.

References

- AAMC. (1998). *Learning Objectives for Medical Student Education: Guidelines for Medical Schools*. Washington, DC.
- AAMC. (2011). *Behavior and Social Science Foundations for Future Physicians: Report of the Behavioral and Social Science Expert Panel*.
- AFMC Primer on Population Health. About the Primer. The Association of Faculties of Medicine of Canada Public Health Educators' Network. Retrieved April 2, 2012 from http://phprimer.afmc.ca/inner/about_the_primer License: Creative Commons BY-NC-SA
- AFMC Primer on Population Health. "Chapter 1 Concepts of Health and Illness: Definitions of Health. The Association of Faculties of Medicine of Canada Public Health Educators' Network. Retrieved April 2, 2012 from <http://phprimer.afmc.ca/Part1TheoryThinkingAboutHealth/Chapter1ConceptsOfHealthAndIllness/DefinitionsofHealth> License: Creative Commons BY-NC-SA
- Agrawal, J. R., Huebner, J., Hedgecock, J., Sehgal, A. R., Jung, P., & Simon, S. R. (2005). Medical students' knowledge of the U.S. health care system and their preferences for curricular change: a national survey. *Academic medicine : journal of the Association of American Medical Colleges*, 80(5), 484-8.
- Anderson, R. (1997). Thematic Content Analysis (TCA): Descriptive Presentation of Qualitative Data. Retrieved February 2, 2012, from <http://www.wellknowingconsulting.org/publications/pdfs/ThematicContentAnalysis.pdf>
- ARWU. (2010). Academic Ranking of World Universities in Clinical Medicine and Pharmacy - 2010. Retrieved November 1, 2011, from <http://www.arwu.org/FieldMED2010.jsp>
- Braveman, P. a. (2003). Monitoring equity in health and healthcare: a conceptual framework. *Journal of health, population, and nutrition*, 21(3), 181-92.
- Bristol University. Medical School Curriculum Overview. Retrieved April 29, 2012 from <http://www.bristol.ac.uk/medical-school/prospective-students/curriculumoverview/>.
- CDC (1999). "Ten great public health achievements—United States, 1900–1999". *MMWR Morbidity and Mortality Weekly Report* 48 (12): 241–3.
- Chapman, C. B. (1974). "The Flexner Report" by Abraham Flexner. *Daedalus*, 103(1), 105-117. The MIT Press on behalf of American Academy of Arts & Sciences.

- Columbia University College of Physicians and Surgeons. Curriculum Overview. Retrieved March 21, 2012, from <http://ps.columbia.edu/education/curriculum-overview>
- Cooke, M., Irby, D. M., Sullivan, W., & Ludmerer, K. M. (2006). American medical education 100 years after the Flexner report. *New England Journal of Medicine*, 355(13), 1339-44.
- CSDH. (2008). *Closing the gap in a generation: Health equity through action on the social determinants of health. Final Report of the Commission on Social Determinants. Global public health*. Geneva.
- Deville, K. and Novick, L. (2011). "Swimming Upstream? Patient Protection and Affordable Care Act and the Cultural Ascendancy of Public Health. *Journal of Public Health Management Practice*, 17(2), 102-109.
- Flinders University. Bachelor of Clinical Sciences/Bachelor of Medicine, Bachelor of Surgery. Retrieved April 14, 2012, from <http://www.flinders.edu.au/courses/rules/undergrad/bclsbmbs.cfm>.
- Frank, JR. (2005). *The CanMEDS 2005 Physician Competency Framework*. The Royal College of Physicians and Surgeons of Canada.
- Harvard Medical School. HMS Course Catalog. Retrieved January 12, 2012 from <http://hms.harvard.edu/content/medical-education>.
- Healthy People 2020. (2011). *Healthy People 2020*. Retrieved October 10, 2011, from <http://www.healthypeople.gov/2020/topicsobjectives2020/>
- Imperial College of Science, Technology and Medicine. Curriculum. Retrieved March 26, 2012, from <http://www1.imperial.ac.uk/medicine/teaching/undergraduate/medicine/mbbsbsc/curriculum/>
- Imperial College of Science, Technology and Medicine. Programme Specification for the MBBS/BSc 2010-11. London; 2010. Available at: <http://www1.imperial.ac.uk/resources/7DBA4546-F2C9-4B13-8D69-866B42357B67/progspec1011.pdf>.
- Irwin, A., Valentine, N., Brown, C., Loewenson, R., Solar, O., Brown, H., Koller, T., et al. (2006). The commission on social determinants of health: tackling the social roots of health inequities. *PLoS medicine*, 3(6), e106.
- The Johns Hopkins School of Medicine. The Johns Hopkins School of Medicine

Academic Catalog. 2012. Available at:
<http://www.hopkinsmedicine.org/som/students/academics/catalog/index.html>. Accessed March 2, 2012.

Kawachi, I., Subramanian, S. V., & Almeida-Filho, N. (2002). A glossary for health inequalities. *Journal of Epidemiology and Community Health*, 56(9), 647-652.

Leiden University. Cultural Aspects of Health and Healthcare. 2011. Available at:
https://studiegids.leidenuniv.nl/en/courses/show/29218/cultural_aspects_of_health_and_health_care. Accessed May 5, 2012.

Marmot, M. G., Smith, G. D., Stansfield, S., Patel, C., North, F., Head, J., White, I., et al. (1991). Health Inequalities among British civil servants: the Whitehall II study. *The Lancet*, 337, 1387-1392.

Mayo Medical School. *Mayo Medical School College of Medicine*. Rochester, MN; 2010:1-28. Available at: <http://www.mayo.edu/pmts/mc1300-mc1399/mc1388.pdf>.

McGill University. Doctor of Medicine and Masters of Surgery. Retrieved January 3, 2012, from <http://www.mcgill.ca/medadmissions/programs/mdcm>.

McMaster University. Undergraduate Medical Program. Retrieved March 11, 2012, from <http://fhs.mcmaster.ca/mdprog/>

Melbourne Medical School. Course Structure - Melbourne Medical School. 2011. Retrieved April 29, 2012, from http://medicine.unimelb.edu.au/study-here/md/course_information/course_structure

Mikkonen, J., & Raphael, D. (2010). *Social Determinants of Health: The Canadian Facts*. Toronto: York University School of Health and Policy Management.

Office of Medical Education University of Pittsburg. Curriculum Description. 2012. Retrieved April 11, 2012, from <http://www.omed.pitt.edu/curriculum/>.

Stanford University. MD Program - Education. 2012. Retrieved January 15, 2012, from <http://med.stanford.edu/md/>

Stonington, S., & Holmes, S. M. (2006). Social Medicine in the Twenty-First Century. *PLoS Medicine*, 3(10), e445.

UNDP Human Development Report. (2011). *United Nations Development Programme*

University of British Columbia. MD Undergraduate Education. Retrieved February 1, 2012 from <http://mdprogram.med.ubc.ca/>

- University of Calgary. Curriculum. Retrieved March 22, 2012, from <http://www.ucalgary.ca/mdprogram/node/601>
- University of California Los Angeles. Medical Education Program of the David Geffen School of Medicine at UCLA. Retrieved April 2, 2012, from <http://dgsom.healthsciences.ucla.edu/dgsom/education/pages/mep>.
- University of California San Francisco School of Medicine. Curriculum. Retrieved March 4, 2012, from <http://www.medschool.ucsf.edu/curriculum/overview/>
- University of Cambridge. MVST Course Curriculum. Retrieved May 2, 2012, from <http://www.bio.cam.ac.uk/sbs/facbiol/mvst/courses.html>
- University College London. MBBS Course Information. Retrieved February 22, 2012, from <http://www.ucl.ac.uk/medicalschool/staff-students/course-information>
- University of Glasgow. *Medicine Undergraduate Study*. Glasgow, Scotland Retrieved April 21, 2012, from http://www.gla.ac.uk/media/media_45634_en.pdf.
- University of Manchester. Medicine. Retrieved April 3, 2012, from <http://www.medicine.manchester.ac.uk/undergraduate/medicine/courseetails/>
- University of Minnesota Medical School. Constitution of the University of Minnesota Medical School. Minneapolis, MN.
- University of Minnesota Medical School. Med School Curriculum. 2011. Retrieved February 13, 2012, from <http://www.med.umn.edu/medical-school-students/medical-school-admissions/curriculum/index.htm>
- University of Nottingham. Medicine BMBS. Retrieved April 2, 2012, from <http://www.nottingham.ac.uk/ugstudy/courses/medicine/bmbs-medicine.aspx>
- University of Oxford. Course Structure. Retrieved March 21, 2012, from <http://www.medsci.ox.ac.uk/study/medicine>.
- University of Texas Southwestern. Curriculum. Retrieved April 4, 2012, from <http://www.utsouthwestern.edu/education/medical-school/academics/curriculum/index.html>
- University of Toronto. Preclerkship Curriculum. Retrieved March 2, 2012, from <http://www.md.utoronto.ca/program/preclerkship.htm>

UW Medicine. MD Program. Retrieved November 17, 2011, from
[http://uwmedicine.washington.edu/Education/MD-
Program/Pages/default.aspx](http://uwmedicine.washington.edu/Education/MD-Program/Pages/default.aspx)

WHO. Social Determinants of Health. Retrieved June 5, 2012, from
http://www.who.int/social_determinants/en/