

Fall 2023 Global Health Internship Report

Aurangabad (Sambhaji Nagar), India

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Introduction

In Fall 2023, I was selected to serve as the Global Health Intern in India through the Global Health Internship of the International Medical Outreach (IMO) student group in collaboration with the University of Central Florida's Department of Anthropology. The internship's purpose is to provide students with opportunities to experience medical outreach firsthand and to learn about the socioeconomic disparities related to health and healthcare around the world. The Global Health Intern is tasked with conducting ethnographic research and an anthropological assessment in the community in order to improve IMO's ability to serve communities in need during future trips.

The Fall 2023 semester was the first time that the Global Health Internship took place in India. The original location of the internship was the city of Pune, but was changed to Aurangabad (recently renamed to Chhatrapati Sambhaji Nagar, henceforth referred to as Sambhaji Nagar in this report). The trip was conceived by Om Pathak, a member of the Executive Board and the trip's official liaison. As a speaker of the local language, Marathi, Om proved to be an invaluable asset throughout our trip, both assisting me in conducting interviews with patients and keeping an open channel of communication with Dr. Tupkary, founder of Sevankur Bharat and a founding member of the hospital Dr. Hedgewar Rughalaya Hospital where IMO members shadowed clinicians. Dr. Tupkary worked to ensure that I was able to interact with doctors, staff, and patients during our time in Sambhaji Nagar, and demonstrated great hospitality.

Preparation for the 10-day trip in Sambhaji Nagar began at the beginning of the Fall 2023 semester, when I worked alongside my faculty advisor, Dr. Shana Harris. Each week, we discussed publications on a selected topic related to health issues and healthcare in India, which

provided a foundational understanding of the Indian healthcare system and prevalent local social determinants of health, and shaped the research I conducted in Sambhaji Nagar (discussed in detail below).

My relationship with IMO is unique compared to previous Global Health Interns. I joined IMO in Fall 2022 and was a member of the team on their trip to Puerto Rico in Spring 2023. Additionally, I currently serve as a director of IMO's health training sector. I highlight this relationship because it is the responsibility of the Global Health Intern to attend IMO's health trainings, as well as language workshops and pre-trip meetings so that all trip members are educated on the culture, history, and the landscape of healthcare in the trip location. Having previously attended an IMO trip, I was familiar with both from the structure of the trip and the trip members.

In addition being one of the individuals responsible for researching information for health trainings, I also regularly was involved in meetings with IMO's cultural ethics sector that is responsible for running the language workshops and providing cultural education to members. I feel that these experiences aided me tremendously in feeling prepared and comfortable to conduct research in India. I make this point to encourage future interns to be more involved with IMO, either before being selected for the internship or after they have completed their research. Doing so would assist them in easily transitioning into the internship, but also allow them to gain additional experience in the provision of global health and directly helping underserved populations.

Developing Research Topic

During my meetings with Dr. Harris, we identified a number of prominent themes in the literature that I was interested in investigating further during the internship. Rather than focusing

on a single topic, I chose three themes: medical pluralism, environmental risk, and the nature of both public and private hospitals. Also, IMO requested that I research some broader factors contributing to health outcomes in Sambhaji Nagar; if IMO were to return to India, this research could serve as a foundation for future initiatives. Due to these reasons and the volume of data gathered, this report is both comprehensive and precise in detailing the delivery of healthcare in Sambhaji Nagar at Dr. Hedgewar Hospital.

Methodology

For this research, I conducted semi-structured interviews and participant observation. Semi-structured interviewing uses pre-determined questions to cover topics of importance but allows for engaging with the responses of the participant to learn more about their experiences (Kvale 1996). This flexibility takes precedent over regimented questioning, as knowledge is built and shared through dialogue. Furthermore, participant observation allows the researcher to immerse themselves in the world of the participants through taking part in daily activities, events, interactions, and rituals to gain an understanding of the fundamental aspects of their social life (DeWalt and DeWalt 2001). These research methods allowed me to directly interact with the environment and people of Dr. Hedgewar Hospital and the additional sites where the IMO team traveled (the hospital's center in the city's slums and a blood bank). I also shadowed members of the cardiology department, giving me the opportunity to observe some procedures in the hospital's catheterization lab and intensive care unit. I conducted a total of 16 interviews (five patients, nine doctors (some of which also held an administrative position), two non-clinical staff from the accounting and insurance departments), which lasted between 30 to 90 minutes.

Alongside these more formal interviews, I conducted informal interviews while shadowing, which yielded additional data. The hospital held a meeting for all of the IMO team to

speak with several of Dr. Hedgewar Hospital's founding members and staff, in which the other IMO team members had the opportunity to ask their own questions. The hospital's pre-medical students also ate dinner with the IMO team numerous times throughout our stay, which allowed us to connect and learn more about their experiences as students in India. The IMO team toured one of Dr. Hedgewar's slum centers in Sambhaji Nagar, the slum itself, and a blood bank for people with a blood disorder called thalassemia. Thanks to the English language proficiency demonstrated by staff and students alike, I encountered few challenges in communication during interviews and interactions at Dr. Hedgewar Hospital. I only needed to modify my speech to be easier to comprehend, as they were not as accustomed to the American accent. Linguistic barriers only presented themselves during interviews with patients, where Om Pathak and a staff member translated my questions and the responses of the participant, and while navigating the hospital between interviews with participants, which was alleviated by my understanding of a few key phrases in Marathi.

Sevankur Bharat and Dr. Hedgewar Hospital

The two institutions that IMO worked with throughout this trip are Sevankur Bharat and Dr. Hedgewar Hospital. Sevankur Bharat is a non-governmental organization (NGO) created by doctors working at Dr. Hedgewar in 1997 with the purpose of instilling "ethical medical practice and social awareness along with national integration by participating in different activities organized by Sevankur" (Sevankur Bharat 2024). Sevankur Bharat collaborates with medical students, graduates, and non-medical personnel through volunteer and medical service work, and by offering scholarship and fellowship programs to students. It was Sevankur Bharat who provided lodging for the IMO team in Sambhaji Nagar and warmly welcomed us into the city, as well as organizing our interactions with Indian medical students.

Sevankur Bharat works hand-in-hand with Dr. Hedgewar Hospital, which itself is unique from the hospitals described in the academic literature that I reviewed and the many medical institutions around India. In general, hospitals in India are separated into public and private institutions, which is different than in the United States where so many hospitals are private. Public hospitals in India are managed by municipal governments, which are in turn overseen by state-level governments. This leads to a large range of variation in the quality of public hospitals across the nation's 28 states, especially when the strength of municipal governments remains relatively unchanged since India's independence in 1947 (Gore 2021). Thus, the long term effects of British colonization are still visible in the public healthcare system.

Municipal and state level governments are responsible for the distribution of public health services, yet they are unable to meet the needs of their population due to their weak administrative powers. When compared with those that are private, public hospitals were often described by doctors that I interviewed as less "sincere," limited by only having primary care services as well as long wait times, and poor equipment and manpower. This results in a reliance on the private health sector to distribute care, which was also acknowledged during an interview with the hospital's insurance team, who drew attention to state programs that encourage patients to seek out private hospitals. The private healthcare sector is responsible for approximately 70% of all outpatient visits (Gore 2021), as it covers specialization treatment at often higher cost, which is somewhat offset by the financial support levied by those programs but not extensive enough to be satisfactory. This creates an issue in health provision, as public hospitals often cannot meet the full needs of the population and private hospitals require a financial commitment that many people cannot meet due to their socioeconomic status.

Recognizing this discrepancy, Dr. Hedgewar Hospital's mission is to provide quality healthcare at a low and affordable cost as a non-profit, privatized charity hospital geared towards serving the poor. The hospital is the core of a larger NGO trust named Dr. Babasaheb Ambedkar Vaidyakiya Pratishthan, which has established mobile clinics and health centers situated in the city's slums in tandem with a number of social programs to improve health in the region.

Findings

The findings for this report are divided into three themes: cultural, managerial, and medical.

Cultural Findings

Selfless Service

As both Sevankur Bharat and Dr. Hedgewar Hospital were founded to help those in need, they have cultivated a culture of service that permeates all of their programs and activities. During my interactions with both patients and doctors, the significance of social influence and change were made clear through the ways in which they discussed medicine. Across numerous conversations, these topics emerged in relation to a doctor's responsibility to also be a leader in society; people will look to doctors for guidance on how to live because of their expertise. From this position, there is a degree of social influence similar to that of a politician due to their capacity to change behaviors or structural factors.

Doctors do what they do for others. For example, during the group discussion with some of the hospital's founding members and staff, some of the phrases were used to describe this point: "become a doctor not for yourself but for society" and "work for the masses, not classes." These values are not just phrases repeated at the hospital. In fact, doctors working there received

one third of the pay compared to working at other institutions. Being a charity hospital, lower pay allows resources to be put back into the hospital to allow it to continue serving the community. During our first day of medical shadowing, hospital staff gave an introductory presentation to the IMO team about their patient demographics to provide us with a better grasp of who comes in for care. Approximately 40% of all patients treated earn less than US\$ 1,200 annually, and 35% earn between US\$ 1,200 and 3,600. This is a staggeringly low annual income. Also, they added that around 70% of India's population is made up of rural communities, and 25% of Sambhaji Nagar's population lives in slum settlements.

Sincerity, transparency, and professionalism are among the values that hospital staff wish to maintain and provide to the patient, and being a good person is held as an imperative part of being a good doctor. "Medicine is 40% skill and 60% character," as was stated by the head obstetrician/gynecologist. The work culture is one where people want to be educated about the world and strive to make it better. Programs are established to give back to society and improve systemic and socioeconomic issues, rather than only focusing on treating health problems through what they called an "integrated approach." Additionally, the hospital is supported through donations, volunteers, and social workers to encourage its continued growth.

Emphasis of Religion in Caretaking

Religion plays an important role in both caretaking and mediating the morals of society at the hospital. In Hinduism, the word "Seva" is the concept of selfless service to god or society and doing so without expecting anything in return. It represents devotion and compassion and is at the heart of the institutions where IMO spent its time. This concept is where Sevankur Bharat derives its name, and Bharat is the name for India in several of the nation's indigenous languages. The idea of giving without expecting something given back was explained to me

through a religious story as we returned from visiting Sambhaji Nagar's slums. A doctor recalled the Bhagavad Gita, which is an ancient Hindu scripture recorded as a dialogue between a prince named Arjuna and an avatar of the god Vishu called Krishna, who is also himself a god. In this poem (Mukundananda n.d.), Krishna tells Arjuna:

You have a right to perform your prescribed duties,
But you are not entitled to the fruits of your actions;
Never consider yourself to be the cause of the results of your activities,,
Nor be attached to inaction.

This passage is about expecting nothing in return for the work one does. One should do their work because it is right, not because of possible rewards, a point that relates back to the idea that doctors engage in a kind of selfless service when treating patients. Additionally, a statue of this same god, Vishu, is in a garden at the center of Dr. Hedgewar Hospital. The statue can be easily seen throughout the hospital, as its floors spiral around the garden at its nucleus. Vishu is regarded as a protector and known as The Preserver, as it is Vishu who returns to Earth in times of turmoil and restores balance according to Hindu lore. The symbolism of having this statue in a place of healing is important and represents what Dr. Hedgewar Hospital wishes to do for their communities.

A man I spoke with who was recovering in the physical therapy unit in the slum center told me, "This type of work sees the god in everyone, this institution is a gift to mankind." The IMO team was told center staff and doctors that the "guest is god," as everyone we interacted with was as accommodating as possible. We first experienced this when we landed in Sambhaji Nagar and were greeted with food, gifts, and a welcoming ritual of flowers and herbs. In Indian culture, doctors are held next to god through their work. When discussing ecological impacts on health, a doctor told me that Hindu culture sees each tree as god and Bharat as mother, ultimately healing the planet. This practice of seeing god in others and in things creates a sense of reverence

and compassion for people and the world itself. This belief is paramount in understanding the hospitality and care that doctors and laymen alike go about their work. During interviews with doctors and patient, Hinduism and Buddhism were also highlighted to give people confidence in tackling mental issues and maintaining mental health. For instance, the use of meditation, yoga, mantras, and breathing exercises are functional cognitive practices that form the basis of mindfulness therapy, which has roots in Buddhist traditions but are not exclusive to it. The earlier quoted Bhagavad Gita even calls meditation a form of liberation from suffering. Interestingly, mindfulness-based therapies are as effective as traditional cognitive behavioral therapies in regard to depressive and anxiety disorders, as well as substance use disorder and post-traumatic stress disorder (Singh 2023). Studying the religion was also said to be key in creating a good society alongside observing honesty and humility.

This emphasis on religion and Indian philosophies was associated with maintaining what a participant called the “Indian Quest” to acquire and share knowledge with the world. During my conversation with the doctor about the Bhagavad Gita, I was told that the Indian Quest was lost due to invasions such as that of Islamic forces in the 11th century and British colonization. Since the regaining of the nation’s independence in the mid-20th century, however, there has been a shift to claim that quest and ancient knowledge once more. In October 2020, the Ministry of Education even founded the Indian Knowledge Systems Division whose purpose is to research and disseminate Indian Knowledge Systems, to “actively engage in spreading the rich heritage of [India] and traditional knowledge” (Indian Knowledge Systems Division 2024). Part of this work entails research in ancient and medieval Indian texts and incorporating the findings into modern conservational and medical practices, town planning, mathematics, politics, etc. As the doctor

said, “Now we are searching ourselves, we are still intact with our philosophies, you cannot destroy it from our genes.”

Medical Pluralism and Ayurveda

Medical pluralism is defined as the employment of more than one medical system by a population or utilizing both conventional healing practices and "complementary or alternative" medicine (Wade et al. 2008). Commonly, the conventional system is known as biomedicine or allopathic medicine, and complementary or alternative medicine refers to systems that are not biomedical. However, I am hesitant to call India's many non-biomedical systems "alternative," as the Indian government offers a diverse range of medicinal techniques which are overseen by the Ministry of Ayurveda, Yoga, Unani, Siddha, and Homeopathy (AYUSH). These practices are legitimized and integrated into clinics, hospitals, and state programs as well as originating in traditions that the government continues to research and educate its population about broadly (Chaturvedi et al. 2023). As ancient Indian practices, Unani is a holistic system of medicine originating in ancient Greece that was redefined and practiced by Arab and Persian populations, while Siddha focuses on truth, accomplishment, and bliss. Homeopathy is another system of medicine that works to "treat like with like," utilizing natural substances that are similar to the symptoms of any particular illness the treatment aims to cure. All of these practices are supported and delivered by the Indian government to improve health, as there are institutions offering training and degrees in Ayurveda, Unani, Siddha, and Homeopathy.

According to the Press Information Bureau of India (2016), there are a total 3,598 hospitals and 25,723 dispensaries that offer AYUSH treatment throughout the country. Notably, approximately 78% of hospitals and 59% of dispensaries perform Ayurveda. This focus on Ayurveda was also evident during my fieldwork, as much of what I learned about India's

traditional medicines was related to Ayurveda. The origin of Ayurveda is considered to be divine, as the Hindu god Brahma, who is responsible for creating the universe, first conceived of Ayurveda. The Hindu god Dhanwantari is regarded as the god of Ayurveda and an avatar of Vishu, the same god whose statue is at the center of Dr. Hedgewar Hospital. In Hindu lore, Dhanwantari reproduces Ayurveda to humankind and disseminates the practice to a number of disciples. The oldest known treatise of Ayurveda, the Charaka Samhita, dates to the second century BCE. It is categorized into eight books detailing the general principals of Ayurveda, pathology, anatomy, diagnosis, therapeutics, pharmaceuticals, toxicology, and signs of successful treatment (Jaiswal and Williams, 2017).

A medical doctor I spoke with earned his first degree in Ayurveda and went on to practice biomedicine at Dr. Hedgewar Hospital. Additionally, a number of the pre-medical students that I met were currently studying Ayurveda as undergraduates. I learned of two medical undergraduate programs during my fieldwork: the BMMS (Bachelor of Medicine and Bachelor of Surgery) and the BAMS (Bachelor of Ayurveda, Medicine and Surgery). Those who complete studies of either degrees at the undergraduate level have the opportunity to earn an MD/MS in Ayurveda. Also, if the student scores well on their medical entrance exam, they can enter medical school and become a MD. This education system allows for an individual to study one medical system as an undergraduate and still possess an MD in another. I was also made aware of research institutions that that perform drug testing to determine what mixtures are most effective for treatment and clinical research. These institutions fall under the Ministry of AYUSH and integrate modern scientific research with the ancient practice so that medicine continues to evolve with new knowledge.

Ayurveda is based on the belief that the universe is composed of five elements: *Vayu* (air), *Jala* (water), *Aakash* (space or ether), *Prithvi* (earth) and *Teja* (fire). These elements create three humors of the human body that control its physiological functions called *tridoshas*. It is the perfect balance between the natural elements of the universe and the *tridoshas* that lead to a healthy life, which is maintained through following divine wisdom (Jaiswal and Williams, 2017). There is a great deal more to the practice of Ayurveda, but I would like to focus on this foundational concept because of how it is interwoven with medical practice at Dr. Hedgewar Hospital.

During our first day at the hospital, the IMO team was given an introductory presentation about the hospital, its goals, and its progress. Here we learned that the hospital utilizes a biosocial approach that recognizes the value of healing the cause of an illness rather than just treating its symptoms. The biosocial model considers behaviors, socio-environmental factors, and biological factors when determining health outcomes. Addressing all of the potential risks and impacts on health and working to improve them is effective in improving health outcomes and highly necessary in global health initiatives. At the hospital, this biosocial model is furthered by Ayurveda to ensure a cohesive and balanced lifestyle.

Ayurveda and biomedicine presented as mirrors to one another. Ayurveda was said to “prevent the disease before it comes to you” and provides slow care over a long period of time (ideally the individual’s entire life) because it “removes the root of sickness,” as said by a doctor and patient. Conversely, my participants saw biomedicine as providing instant relief for acute illness, like surgeries that need immediate treatment. But nearly everyone I interviewed emphasized the use of both systems of medicine, and no one touted the use of only one. They

maintained that together the practices can encourage a healthy way of living while also tending to infection, injury, or other serious ailments, and maximizing positive health outcomes.

In addition to the general use of Ayurveda to assist with behavioral and lifestyle changes, Ayurveda was said to function “just like a miracle,” according to my participants. Some also said that Ayurveda has no negative side effects compared to biomedicine, as it is a “more pure” form of medicine due to its natural and herbal components, which they believed cannot harm the patient. Only one participant disagreed that Ayurveda has no side effects. This individual stated that any action creates a side effect, and that any medication should be used judiciously and nothing should be followed blindly, which they think the Indian people could do with Ayurveda at times. “Ayurvedic and homeopathy are good basic sciences, but one must accept the limitations and the advantages of it,” they concluded. A knowledge of these systems creates an understanding of their pros and cons. As a doctor who completed their BAMS told me, “When the practitioner is skilled in the side effects of the specific substances used, proper knowledge of medicine and patient analysis and knowing when to integrate new treatments, Ayurvedic will have no side effects.” Despite this uncertain discourse, this belief influences many people to turn to Ayurveda when dealing with health issues.

Vegetarian and Non-Vegetarian Diets

Next is a discussing of diet, particularly the distinction between vegetarianism and non-vegetarianism. Approximately 40% of all Indians are vegetarians, the highest percentage of all countries (Borude 2019). Religion plays an important role in the rate of vegetarianism in the country, as cows are a sacred animal in Hinduism therefore beef is generally not consumed in the area. Also, due to the Muslim population in Sambhaji Nagar, pork is not commonly eaten, as its

consumption is prohibited by the religion. Additionally, Buddhism, Hinduism, and Jainism all encourage a lacto-vegetarian diet, which involves eating no meat or eggs.

Yet, religion is not the only influence on vegetarianism in India. During interviews with a non-clinical team at Dr. Hedgewar Hospital and a patient, my participants discussed the benefits of having a “veg” diet as opposed to a “non-veg” one. A veg diet was said to lead to a calmer person with more vigor. The patient shared their experience working in construction and their observations that non-veg dieters had greater amounts of energy earlier in the day but quickly tired out, whereas veg dieters were able to maintain their stamina for longer periods of time. The patient suggested that this was because humans have a different digestion system from animals, so energy is not stored as efficiently and the body has to do more to keep energy. They supported this claim by saying vegetables can be eaten raw, which means humans can eat them when they are most pure. This theme was also present in the interview with a non-clinical team, who said veg diets had the same benefits but attributed the preservation in energy directly to trophic levels. Trophic levels relate to how energy moves from the sun through producers, consumers, and decomposers. When producers photosynthesize energy directly from the sun, some energy is used to sustain the organism and some is lost as heat via entropy. Therefore, when another organism consumes the producer (like a caterpillar eating a leaf), energy is transferred into the caterpillar from the leaf. Energy is spent and lost as the caterpillar lives, and, when a frog consumes the adult butterfly that the caterpillar became, energy is transferred once more. Due to energy loss, only 10% is transferred between levels, with the organisms at higher levels being animals. During this interview, the non-clinical team maintained that, because vegetarian foods are at the first trophic level, they possess the greatest amount of energy directly from the sun, which then provides the greatest amount of energy to the individual.

Both interviews revealed an emphasis on purity of food and a focus on energy preservation, yet the trophic chain is used to describe food webs in nature and not the caloric density of organisms at each level. Fruits and vegetables are generally much lower in calories than meat due to high water and fiber content. This makes them a filling and healthy food but may not be as critical in meeting daily energy expenditure as proposed, unless of course an adequate amount of each are eaten to account for the lower caloric density. Grains, dairy, and legumes, all part of the same trophic level as fruits and vegetables, have a much higher caloric density, with whole grains accounting for the majority of calories within an average Indian vegetarian diet (Sharma et al. 2020). It is also important to mention that due to religious restrictions on the consumption of cows and pigs, the most common meats in India are fish and poultry, which are both lean meats whose total caloric density per gram are among the lowest of meats. This results in the average caloric intake in India to be 300 calories below the EAT-Lancet recommendation of 2500kcal, with those of lower socioeconomic status (SES) consuming only 1600 kcal daily and those of higher SES consuming more than double that (Sharma et al. 2020).

Managerial Findings

Positive Outlook on Government and Regulations

From the literature review I conducted before traveling to Sambhaji Nagar, I learned that bureaucracy and political influences can act as barriers to health provision and create challenges in administering care in some public medical institutions throughout India (Gore, 2021). To further explore if and how government policy affected the functioning of Dr. Hedgewar Hospital, I spoke with doctors about guidelines or policies that may make their jobs more difficult. They reported only positive things about policy and regulations: “We have them for good reason.” My

participants explained that being a National Accreditation Board for Hospitals and Healthcare Providers (NABH)-approved hospital means that they maintain a standard of operations to ensure patient safety and quality treatment. They reported this accreditation as something valued by Dr. Hedgewar Hospital. The policy was described as necessary for quality control but never too strict as to be cumbersome, practices such as requiring certain amounts of training for different positions, teaching staff how to identify illnesses that need urgent treatment, how to conduct basic life support, and holding a cardiac arrest team on standby, and having patients provide a signature to indicate that they understand the medical procedure they are going through after a staff member explains it.

During an interview with the head of insurance and a number of other staff members, the staff recognized that the national government had a dependence on private hospitals and clinics to distribute services to individuals that the state itself fails to reach. Government programs exist to assist in this effort, as public care centers in India have issues with staffing, sanitation, and limited availability.

Some doctors that I interviewed praised other government initiatives. They expressed pride in how effective the government was in its swift management of the COVID-19 pandemic by distributing vaccinations, which was possible due to the central government's control in producing vaccinations as well as offering them free of cost. The private health sector cooperated with the central government to optimize the time it took to procure a functional vaccine. Another initiative that was being pushed by the government at the time of my fieldwork was to move all transactions cashless to make payments quicker and easier to both complete and track. As explained to me by the insurance department, the first few months of implementing this new policy will be challenging, but processing all payments will be smoother and faster for patients

and insurance later on. At a hospital like Dr. Hedgewar where the patients who do not have digital devices to make these payments are also highly likely the ones receiving free treatment, cashless payment would not be an issue.

Challenges in Maintaining Staff

A prominent issue at Dr. Hedgewar Hospital is maintaining staff throughout each year. As a charity hospital, the doctors accept one third of the average salary that they would receive at another institution so that the hospital can continue to run and charge needy patients as little as possible. This, in tandem with the hospital's consistently high volume of patients, leads to a situation where individuals are employed in a high engagement and workload environment for a fraction of the salary. The issue of salary understandably makes the decision to join Dr. Hedgewar Hospital as a doctor significant, especially as these doctors must also agree to be employed only at this hospital. The lack of staff can be exacerbated when someone is absent or on vacation, which causes the workload to be reallocated to other staff members.

Staffing issues did not only pertain to doctors. Staff in both the pharmacy and nursing departments, for example, told me about their difficulty in training new and inexperienced staff to the level that is required and expected due for NABH accreditation and hospital standards. Participants suggested that university education is not preparing students to work, including not knowing work-related information or drug combinations in the pharmacy. This lack of practical knowledge forces Dr. Hedgewar Hospital to teach new staff these skills after hiring them, which over time and in large quantities can be a drain on time and resources, both of which are not in abundance. NABH accreditation is becoming more common at all health institutions throughout India, but the accreditation is not easily obtained because of the application fee. The fee accounts for the number of beds in the hospital, nursing department, medical labs, blood bank,

and health center in the city's slums, all of which are run by the hospital. All have an individual application fee at the time of approval and an annual fee that must be paid to maintain the NABH accreditation, alongside maintaining the standards required. Additionally, an approximation of 10% of this newly trained staff leaves Dr. Hedgewar Hospital due to finding a more preferable opportunity, leading to the hospital to hire new staff once more and repeat the process of training, if needed.

Who Receives Aid?

The main government scheme utilized by Dr. Hedgewar Hospital is Mahatma Jyotiba Phule Jan Arogya Yojana (MJPJAY), a program established in 2012 to provide full or partial health insurance coverage to qualified individuals for 996 medical procedures and 121 follow-up procedures, all of which can be checked at the hospital. Applicants must have an annual income of less than US\$ 1,200. The state of Maharashtra, where the hospital is located, performs surveys to determine who is beneath this income and the individuals responsible for registering for their MJPJAY card, managed by the Charity Commissioner who completes a monthly report for each category. The hospital's insurance department estimated that 30-40% of the patients that they treat are covered by MJPJAY. Around 70-80% of all patients are also rural farmers, a fact that provides more insight into the demographic of patients being treated at the hospital. Government policy dictates that those with a MJPJAY card receive aid, but sometimes people without a card ask to receive these benefits. Staff in the insurance department decide if these individuals are truly in need by observing their behaviors, clothes, the price of their technology, and how they approach asking for aid. Asking for extra money while being well dressed and having jewelry or other expensive items are clear indicators. As one staff member told me, "If somebody can afford gold rings they can pay for treatment." Conversely, a poor patient may not have a card

despite clearly qualifying for charity coverage due to lack of education or accessibility. In such cases, the hospital usually proceeds with treatment and assists in registering the patient for the program or provides a long period of time to allow them to pay without time pressures.

Medical Findings

Environmental Risks to Health

Rapid urbanization and economic growth in India throughout the past few decades are chiefly responsible for the deterioration of water and air quality and an increase in pollution and waste production. India is among the fastest growing economies in the world, averaging a growth rate of 6.7% from 2011 to 2018 before moderating at 3.7% throughout the COVID-19 pandemic, which was nearly double the rate of the United States during the pandemic (MacDonald and Xu 2022). This incredible growth via industrialization has allowed the nation to develop immensely as a global economy, but it has also brought about significant health and environmental risks.

Some of the most readily observable health issues that I observed in Sambhaji Nagar are related to waste disposal and environmental pollutants. It was common to see trash lined along roads or in public areas, sometimes as sparse bags, discarded items or food. At other times, it was large piles of waste that have grown into a sizeable and impromptu mound. There was one such mound that the IMO team passed each day while traveling to Dr. Hedgewar Hospital, and each morning there were always a few people, or one morning a cow, going through the waste, searching for something of value. These trash mounds appear to form as waste is disposed of wherever is most accessible.

Due to poor municipal trash pick-up infrastructure and the overabundance of waste produced by urban populations, much more waste is produced than can be managed effectively. Therefore, municipal waste is dumped on the outskirts of urban centers or alongside streets,

including in Sambhaji Nagar. As of 2015, India's Central Pollution Control Board estimated that between 51-56 teragrams (51-56 trillion grams) of municipal solid waste was generated annually, with the majority coming from urban populations (Chaudhary et al. 2021). For reference, five teragrams is approximately the weight of the Great Pyramid of Giza. Methane and carbon dioxide are both released from the waste, which culminates in the greenhouse effect and temperature increase in urban areas (Chandra 2015). Although none of my participants made note of rising heat as a health issue, research by Singh, Singh and Mall (2020) discuss what is called an Urban Heat Island to describe how localized pollution directly raises the temperature of urban areas by 1-4 degrees Celsius, plays a role in extreme weather effects, and increases exposure to air pollutants, which can affect health.

An alternate method of disposing of such trash piles is burning them. Although rendered illegal by the Indian government, the burning of trash piles still occurs throughout the nation. Burning solid waste contributes to air pollutants and is associated with respiratory and cardiovascular disease, cancer, and adverse health outcomes by releasing toxic chemicals such as nitrogen oxides, sulfur dioxide, volatile organic chemicals, and polycyclic organic matter (Wisconsin Department of Natural Resources 2024). Much of the population is aware to some degree of the negative health impact of burning waste, thus it is performed out of necessity to remove waste and clear space (Ramaswami et al. 2016). During interviews, my participants acknowledged that the government has taken steps towards improving pollution and waste disposal but has not been strict or effective in enforcing the ban.

I also clearly noticed air and water pollution upon arriving in India. In Mumbai, there was a haze that limits visibility to just a few miles, and members of IMO who have asthma were advised to use their inhalers, myself included. Minutes after our arrival in Mumbai, my chest

tightened for the first few hours before subsiding. Additionally, when we visited a Mumbai beach, the sand was littered with a variety of garbage and the water was empty of swimmers, as the beaches nearest to the city pose health risks from floating waste or contaminated sea water.

Air pollution is also related to traffic. The streets of India are full of two-wheeled scooters, compact SUVs, and tuk-tuks, a modified three-wheeled bicycle with a roof and back cabin most often used as a form of taxi. Doctors that I spoke with identified that there is a reliance on personal vehicles in India, estimating one vehicle per home. This estimate amounts to a very large number of vehicles when accounting for India's large population. Also, the roads are often tight, which encourages the use of compact vehicles, and dense traffic leads to a lot of halting and starting. This, compounded with the lack of strong state transportation, all lead to vehicle emissions as a main contributor to air pollution. According to the International Energy Agency (2023), road transport accounts for 12% of India's carbon dioxide emissions and is estimated to continue growing until it peaks in 2040 . Air pollution impacts the respiratory system, causing chronic bronchitis, asthma, chronic obstructive pulmonary disease, and other respiratory issues, which can be exacerbated by the effects of COVID-19 (National Institute of Environmental and Health Sciences 2024).

Seasonal Outbreaks

When discussing infectious diseases with physicians, I learned that there is a sharp spike in mosquito-borne infectious disease during the rainy seasons due to stagnant water, which is responsible for the majority of vector-borne illness in India. This, in conjunction with climate change, creates warmer and humid environments for mosquitoes to thrive, posing a major health risk to the population (Naik, Tyagi, and Xue, 2023). These regular seasonal outbreaks are completely expected by health institutions, but they are unable to prevent them because of the

amount of stockpiled resources needed to do so. Every monsoon season becomes a reoccurring health crisis; the infection control team estimated that 20% of the population falls ill. In particular, those who are uneducated are likely to go even longer before seeking care. The infection control team also explained that, based on their experiences working with patients dealing with infectious disease, “If it doesn’t interfere with their work then they won’t come in,” resulting in the prognosis to only worsen over time. Infectious diseases like dengue become more severe with secondary infections and require blood and fluid transfusions. Also, there has been a rise in respiratory fungal infections that target the now immunocompromised as a result of the COVID-19 pandemic. It is also worth noting that there are many festivals and celebrations in India, with a few occurring each month. These events can facilitate the spread of infection due to crowd size and perhaps lack of hygiene.

Causes of Overpopulation

According to the United States Census Bureau (2023), as of July 1, 2023 India is the second most populated nation in the world with 1.409 billion residents. This means that approximately 17% of the world’s population resides in India. The population of India continues to grow, and is projected to reach 1.425 billion people by the end of April 2024, thereby surpassing the world’s most populated country of China (United Nations 2024).

There are many contributing factors to such intense population growth. To begin, couples in India have traditionally married young and encouraged to have large extended families. From 1992-1993, 41.9% of women ages 15-19 were married, but this percentage has decreased steadily; as of 2015-2016, 16.4% of women of the same age range were married (Chakravorty et al. 2021). As for family size, from 1992-2016, households with nine or more members decreased from 11.3% to 5.4%, households with 6-8 members decreased from 28.1% to 20.6%

(Chakravorty et al. 2021). Additionally, two-thirds of India's population lives in rural areas, where it is practical to have many children because of higher mortality rates than urban areas.

Gender plays a role in family dynamics, as having a male child ensures that a family line continues and men are expected to provide economic support for families through their work. When women marry in India, either arranged or not, a dowry is given to the groom's household to ensure the financial security of the bride as she moves into the home of the groom, which can often be a point of financial stress for the bride's family (Srivastava et al. 2021). Dowry payments are associated with gender inequality, since dowries increase the cost of raising a woman and decrease the cost of raising a man. Parents wish for their daughters to be married to educated men with steady urban jobs, but this often comes with a dowry price. In order to curb the dowry practice and the associated aversion to female children, the Indian government passed the Dowry Prohibition Act in 1961, legally barring the act of dowry payment. Despite this act, research found that between 1960-2008, a dowry was paid in 95% of all marriages (Anukriti, Kwon, and Prakash 2018). Another act passed in 1994 banned pre-natal sex determination due to selective sex abortion. In the OBGYN wing of Dr. Hedgewar Hospital, a plaque on the wall states that determining the sex of a child before birth is a punishable act. For these reasons, there is a preference given to male children, and families may have as many children as necessary to have at least one male son (Sandu and Sukiasyan 2018).

The growing population in India's urban centers, in particular, is a result of multiple factors. One factor is rural to urban migration due to the high poverty and low literacy rates in rural India. Large families struggling to maintain self-sufficiency have young men leave their rural homes and travel to urban centers in the hopes of securing a job and financial security (Karutz and Kabisch 2023). Natural disaster and drought can also play a role in rural to urban

migration, but the greatest factor is the opportunity to work (Karutz and Kabisch 2023). These migrants usually have little to no wealth or resources to their name and settle in the outskirts of urban areas with what they can acquire, leading to the formation of slums.

Slums accounted for 35% of the urban population in 2018, and often lack one or more of the following amenities: durable housing, sufficient living area, access to clean water, access to improved sanitation facilities, and secure tenure (Gupta et al. 2023). As IMO toured the slums of Sambhaji Nagar, I was told that the city recently completed an ambitious project to construct homes out of concrete or brick in the slums. Generally, houses in these areas are composed of sheet metal, wood, and clay. This initiative provided structurally sound homes for all those living in the city's slums. In these new urban centers, most people do not receive education or opportunities to move out of the slums and, as a result, the poverty becomes generational. Through discussion with various OBGYNs and other physicians around Dr. Hedgewar Hospital, I learned that this creates a lack of sexual education and subsequently a lack of family planning on top of the poor health outcomes in the slum areas.

Another important factor in the rising population of India is the incoming flow of people searching for job opportunities from neighboring nations like Pakistan, Bangladesh, and Nepal. These nations are contending with their own global health and economic issues, and for many the burgeoning industry of India provides the chance to work. The people experience a similar pattern to rural to urban internal migrants, as the available jobs are usually low-income and take place in unfavorable or dangerous work conditions (Sandu and Sukiasyan 2018).

Impacts of Overpopulation

Twenty percentage of India's land mass consists of tropical forests, 20,000 square kilometers of which was lost between 2001 and 2018 (Haughan et al. 2022). Increased demand

for crops, the growing economy, and the increasing population create pressures on these forest habitats (Hauhgan et al. 2022). Also, urbanization and population growth has led to the removal of tree plantations and the displacement of ecological systems. This loss is problematic for multiple reasons, including the effect on pollution control. One of the most common ways to reduce pollution is planting trees, but, as deforestation continues to reduce plantations across India, this strategy grows less effective. Reducing the amount of plants being destroyed for paper or timber production as well as and planting is vital because, as a doctor told me, “plants are best friends.” Furthermore to encourage awareness of forest health and plants, Dr. Hedgewar Hospital gives new mothers a small potted plant to grow alongside their new infant.

A perspective maintained by the infection control team was that cities, including Sambhaji Nagar, are not only becoming denser but land that was previously uninhabited is also being cleared to make room for the growing population. The lack of living space and need to create more room not only leads to the destruction of the natural habitat but also exposure to possibly new pathogens, which both have their unique challenges. While discussing ecologically-related health challenges during our interview, they noted the presence of scrub typhus, also called bush typhus, a bacteria-based disease spread through tick bites. Scrub typhus is effectively treated with antibiotics if administered soon after the symptoms begin. Yet scrub typhus is a relatively new issue in Sambhaji Nagar, and both patients and providers have issues in identifying the disease and acquiring the antibiotics to treat it. The infection control team believes that the introduction of scrub typhus in the city is caused by new human developments in the scrub forest regions, where the ticks are abundant. People are also at greater risk for other diseases such as leptospirosis, leishmaniasis, malaria, chikungunya, and dengue in these new settlements, as exposure to insects that are responsible for them is much higher.

Healthcare Provider Shortages

During my interview with the infection control team and later discussions with other doctors, they explained that doctors in India handle a greater amount of patient diagnostics and interaction when compared to the United States, and nurses have a smaller role. They are met with a high volume of patients that need treatment,, each requiring a time investment on the part of the doctor. The World Health Organization recommends at least one doctor per 1,000 patients, and, India achieved that mark ratio as of 2018, a massive turnaround from its ratio of 0.77 doctors per 1,000 patients the previous year (Kumar and Pal 2018). Unfortunately, this figure does not represent the whole story, as the majority of practicing doctors are located in urban centers where populations are denser. According to India's Ministry of Health and Family Welfare (2021), there is an shortage of 79.9% of specialists at community health centers and 20% of posts are vacant with a shortfall of 30% of positions at public health centers.

Barriers to Becoming a Doctor

When speaking with pre-medical students at Dr. Hedgewar Hospital alongside with doctors, the consensus was that becoming a doctor in India means wanting to help the community and heal the sick. Indeed, passion is the driving factor for people to enter medicine; it is not the pay or ease of practice, and it is far easier for someone to choose another occupation and make a comparable or greater salary. Unlike in the United States, a student's score on the entrance examination for medical school determines the specialty that the student will enter. Therefore, if a student is placed into a specialty that they do not want to practice, then they may not go into medicine. Additionally, before receiving their medical degree, students must spend one year working in a rural village. This requirement can also be a barrier to graduation since specialists are the greatest medical personnel need in India. Spending a year in a facility that will

most likely lack the resources for a student to exercise their specialty may discourage or prevent them from continuing their work. Compounded with the chance that doctors may leave India to practice medicine in another country for greater financial compensation, these factors contribute to the low rates of specialist care in rural areas.

Lack of Research

With this in mind, there are few doctors whose careers focus on research, as the vast majority of those practicing medicine are not involved in research. This creates a reliance on medical research done in other nations, namely resource-rich countries. Insufficient resources and research investment leaves India's research field at the mercy of other nations and slows progress in the fight against diseases, since any new infection unique to India will take longer to receive research to halt the illness. As such, the infection control team and other doctors at Dr. Hedgewar Hospital told me that there is a real need for Indian medical research.

Over-the-Counter Medication

I was also made aware that all antibiotics can be purchased over the counter in India. For the infection control team at Dr. Hedgewar Hospital, the most concerning aspect of this practice is that bacteria will become increasingly drug resistant if the population continues to take prescription drugs at its current rate. Antimicrobial resistance is an expanding health crisis in India and requires regulated antibiotic use to counteract it. Patients may take antibiotics unnecessarily, both increasing the pathogen's resistance and keeping it within the community instead of coming into the hospital.

A Farmer's Vignette

During a conversation with a patient who was a farmer, I asked him if he feels satisfied with the food to which he has access. This question sparked a passionate response: “How can I be satisfied? The food makes us sick!” He went on to explain that the fertilizer and chemicals used to increase crop yield and improve the taste of produce were full of harmful chemicals, and that his region had the highest incidence of cancer because of these chemicals. The man detailed how private companies will come to the village offering to sell seeds and other goods that will help grow more food. But often these vendors lie about the type of seed they are selling or the purpose of the goods they sell, assuming that the goods or fertilizer works at all. Additionally, only two people in the village had access to a water filter and, similar to the sale of fertilizer, these individuals were members of a private company who offered clean drinking water for a price rather than selling the filters. If villagers could not afford it, then they would not be drinking clean water. Dr. Hedgewar Hospital offers clean drinking water to patients at an affordable price for the average farmer, but this man lived over 100 kilometers away and was a three-hour drive from the hospital. He spoke of how thankful he was to have his own vehicle, as many other villagers must take a taxi back and forth from the hospital. Within his village, an estimated 80% of people have a toilet in their home, but two or three full buckets of water are required to flush and there is no spare water during the dry season. This means that either the stool remains in the home or villagers must find another location to use the bathroom.

He exclaimed that the villagers have no legal power to prevent this practice from happening, so his village is trapped in a cycle of exploitation. To compound the issue, the government requires each farmer to fill out a form that explains how much land they own and the crops that they grow. In the case of a natural disaster, the government claims that they will use this information to provide financial support to farmers to prevent starvation due to their crop

being destroyed. But, as the farmer said, “Everyone fills out the form but the government doesn’t come. Many people kill themselves because it is easier than staying alive.” At this point in our interview, a small crowd had gathered around the farmer, both interested in his words and supporting his points. He identified government corruption as the root cause of these problems in his home, since officials want money more than to serve the people. When officials are caught performing something illegal or unsavory, they are not removed from power. This creates a culture of corruption: “Our country will only be fixed when these problems are solved.”

Lifestyle Changes

Throughout my interviews, doctors identified a number of behavioral changes among the population that they considered to be the cause of some health issues. Many of these changes were related especially to lifestyle diseases or conditions, such as heart diseases, hypertension, obesity, diabetes, and drug and alcohol addiction. While these were much less common 10 to 20 years ago, there has been higher incidence in the past decades. At the core of these behavioral changes, according to these doctors, is a cultural shift towards living a “fast” life, where the average person trades out patience for whatever path allows them to achieve what they want immediately. This instant gratification accounted for the prevalence of fast food being eaten more often, people resorting to crime to secure quick cash, and more common use of antibiotics to achieve instant relief. In other words, “people are becoming lazy.” The cause of this “fast” life seems intertwined with the infusion of Western culture and the industrialization of India, as the traditional extended families become more rare and nuclear families with two working parents become the norm in urban areas to support a family. This transition away from extended families is viewed negatively, as parents in nuclear families have less time for the children, the children has less family to play with as they age, and there is a dependency on technology instead of other

people throughout the childhood. This results in a lack of respect, empathy, and social bonding within the household, which weakens a person's sense of social responsibility. Instead, the connection with technology develops into an addiction that encourages a sedentary lifestyle.

Recommendations

Based on my research at Dr. Hedgewar Hospital and in Sambhaji Nagar, I have the following recommendations for IMO and future Global Health Interns in India.

First, future IMO initiatives should involve participation in Sevankur Bharat's One Week for Nation program. This yearly program entails medical students and doctors traveling to rural and remote regions in India to organize medical clinics and health awareness camps. For one week, the program participants live amongst the villagers and share in their culture and customs, while gaining firsthand experience of social and health issues. I feel that this participating in this event or working alongside Sevankur Bharat to do something similar would be an incredible opportunity for IMO's next team in India. In this first trip to India, IMO gained valuable experience within the city of Sambhaji Nagar and its slums. Focusing the next trip on rural health would allow IMO to see different sides of Indian life and gain a greater comprehension of how health is impeded and how care is distributed in multiple settings.

Second, health workshops to educate patients would be fruitful endeavors, as public awareness of proper waste segregation and disposal, vehicle emissions, sexual education, and vectors of infectious disease remains low. As patients travel to the hospital and wait to be seen, there is a time window where patients can learn about practices that can result in safer sex and less unexpected births as well as the symptoms of prevalent diseases, which can help them better understand when to visit the hospital for care. A main challenge of executing a workshop in this setting is the language barrier, as educated Indians are generally those who can speak English.

Therefore, IMO could collaborate with a translator or prepare a workshop to be run by hospital staff.

As this was IMO's first time traveling into India, my goal was to provide a solid foundation for future trips and Global Health Interns so that they may better understand the conditions of Dr. Hedgewar Hospital, the social and health ailments they work to address in the region, as well as the challenges they encounter while doing so. It is my hope that this report supplies insight and a base knowledge for further research to explore a variety of topics either discussed here or not in more depth.

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