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The Public Health Journal is the first student-directed initiative to publish work from students and influential people within the industry. It has been developed to create a central outlet for students to distribute their work and read the work of others like them. This project has been spearheaded by the Student Government Association (SGA) of the Graduate School of Public Health and we are encouraging that its readers use this format to drive dialogue around public health.

If you are interested in contributing work, please reach out to Justin Briskin at jub74@pitt.edu. Contributors are persuaded to follow their interest and practice creative freedom when completing their work. Some work that we accept includes, but is not limited to, opinion pieces, news reporting, student research, graphic design, and letters-to-the-editor. Further, we are open to publishing announcements from student organizations.

SGA Board:
Umeka Ganjoo (President)
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Lauren Gutterman (Administrator)

Special thanks to the Editorial Board

Thank You,
Justin Briskin
Editor-in-Chief

Cover Graphic Design:
Louis Vazquez
IG: @lou_lvaz

Disclaimer: The opinions in this journal are only those of each individual writer.
Association of Women in Public Health  
AWPH is hosting a virtual panel of professional women in public health on Wednesday, April 14th at 9pm on Zoom.  
Click here to register.

Global Health Student Association  
GHSA will be looking for a new executive board (President, Vice President, and Treasurer/Business Manager, Secretary and Events Coordinator). Board members will be expected to assist in organizing events such as coffee sales for fundraising purposes and help the Center for Global Health and Global Studies

(Cont. on next page)
Center organize Pitt's Global Health Case Competition. Any interested students should email ghsa@pitt.edu.

**Dean's Office**

- Dean’s Day 2021 will be held on April 5-7, 2021. To attend one of the sessions, simply join the Dean’s Day Virtual Poster Session by visiting the [Dean’s Day page](#) and clicking the link to join the session.

- Submit photos/”well wishes” paying tribute to your time at GSPH. We want to see/hear you! And how you’ve lived, studied, interacted, been challenged, and succeeded with the changing environment of the world and COVID-19. Find out more about this initiative and how to submit [here](#)!
INTERVIEW WITH THE NEW GSPH DEAN LICHTVELD

By SGA

On March of this year, the SGA board members met with Dean Lichtveld, the newly-appointed Dean of the University of Pittsburgh’s Graduate School of Public Health, to discuss her background and plans for the school. Her remarks were interesting, insightful, and forward looking.

**How did you become interested in the Dean position at Pitt Public Health?**

“Becoming a dean is a long road.” Her interest in becoming the Dean started with a commitment to bring science to communities. This is a commitment which she has evolved through different stages of her career. When she worked in medicine within the Amazon rainforest, she became inspired to work in public health. During this experience, she realized that the environment has everything to do
do with health, which gave her additional motivation to develop a community-focused career within environmental public health.

Her experiences as a physician abroad led her to believe that she could make the largest impact in public health through having a career in public life. Her goal was to become the Minister of Health in Suriname but political circumstances intervened with those aspirations. Upon leaving Suriname, she started a position at the Centers for Disease Control and Prevention (CDC) where she continued to make a difference. After about 18 years at the CDC, she realized she couldn’t accomplish all that she intended to serve the world in her current role. She felt that she needed a cadre of emerging scholars to work with to achieve this, which encouraged her move to her multifaceted leadership positions at Tulane University. To make an even greater difference, she believed that the next logical step was to become a Dean where she could promote and further interdisciplinary approaches to public health.

**Outside of public health, where are your interests? What do you do for fun?**

Even outside of her work setting, she is an avid reader. In fact, one of her favorite authors is David Baldacci. Additionally, she is a nature lover – especially water! She is also a licensed Zumba instructor and maybe once we get back into the swing of things, you can all catch her in a Zumba class.
What are your plans for GSPH?

She has created a three-fold plan for implementing strategic changes at GSPH, including increasing our school’s national ranking, broadening our educational offerings, and maximizing the benefits of community assets locally, regionally, nationally, and around the globe. Initiatives to accomplish this involve creating a Bachelor of Science in Public Health for undergraduates and establishing a Master of Public Health degree program specializing in health equity. Furthermore, she plans to establish an Office of Research within GSPH and hire a communications director to generate more visibility for our school and students. She also plans to leverage our local healthcare community by increasing our involvement with UPMC, in particular their health plan, and also with the University of Pittsburgh’s Community Engagement Centers. She believes that it is important to promote diversity and inclusion within our staff, faculty, and student body. Her vision is to support our school through a strategic, multidimensional approach engaging students, staff, and faculty.

What advice can you give to students who will be graduating this semester?

She is a strong believer in focusing your time as a student by cultivating your network because it is something that you can use for the rest of your life. Although this may be more difficult once the students graduate, students should stay in touch with those
within their network with important milestones such as when they publish work, get a new job, or make any changes within their life. Furthermore, staying in touch with people (such as your mentors) could carry the mentor-relationship into professional life potentially leading to future references for work opportunities. Additionally, she stated that one should work hard during their limited time as a graduate student to build a resume and CV, and publish as much of their research as possible.
INTERVIEW WITH PA DEPUTY SECRETARY OF HEALTH MEGHNA PATEL

By Justin Briskin

MHA Candidate,
Health Policy and Management

This article summarizes the highlights of my conversation with Pennsylvania’s Department of Health’s Deputy Secretary of Health Resources and Services Meghna Patel. Our conversation covered the topics of the opioid epidemic, new payment models, rural healthcare, and the Department of Health’s relationship with the Pennsylvanian legislature.

**Prescription Drug Monitoring Program (PDMP)**

The PDMP is a drug surveillance and prevention program that provides the monitoring systems and education for providers via a face-to-face, academic, or online setting. Patel stated that since its initiation, the program has seen a significant decrease in opioid prescribing.
An obstacle the Department of Health had to address occurred when patients were complaining that they were too quickly being dropped by their providers when the providers saw red flags in the patient’s prescription history. This did not render the patients enough time to find another provider, so the State initiated a patient advocacy program that assists them in finding a new provider. This program has also been utilized for patients whose providers have been arrested or retired. Additionally, Patel mentioned that other states have implemented similar patient advocacy programs.

Nationally, the opioid epidemic has garnered a lot of attention. Since the COVID-19 pandemic, there have been reports that drug abuse has gotten worse. Within Pennsylvania, although Patel stated that through the PDMP she has not noticed any changes during the pandemic in terms of prescribing, she has seen an increase in fatal and non-fatal opioid overdoses. Interestingly, she has observed that those who have overdosed have been denying hospital care at a higher rate. She presumed this to be the cause of people being afraid to go to hospitals during the pandemic.

**Rural Health**

Under the fee-for-service reimbursement model, Patel stated that many rural hospitals are not maintaining a high enough operating margin, as are the urban hospitals who have more of an ability to see more patients. Consequentially, rural hospitals have been
closing at a dangerous rate which has been having negative ramifications on people within rural areas. In 2019, Pennsylvania started a new voluntary model called the *Pennsylvania Rural Health Model*, which now has 17 participating hospitals (with approximately 65 that qualify) and six participating insurance providers, that moved to a global budget payment structure and focuses on care inside and outside of the hospital within the community. Patel claimed that this new payment model has received support from both hospitals and payers.

With this payment model, Pennsylvania allocates a budget for a hospital based on the hospital’s attributes such as their financials from the past several years, the market they serve, the transformation they would like to employ to their community (ie: geographically specific preventative care screenings to limit future healthcare expenses), and payer mix. This budget is intended to provide the hospitals with enough financial backing to keep them out of the red. Under this model, there is a reconciliation process that analyzes the hospitals budget to ensure that they are appropriately spending money and utilizing their resources. If they are adequately operating within their expected parameters, they could be granted additional finances to prevent them from falling into negative margins. Although the data is limited regarding this payment model since it is new, Patel believed that it has been more beneficial to hospitals than the fee-for-service model. Over the next few years, she stated that the Department of Health will more definitively be able to show evidence to further advocate for this payment model.
I referenced research that found that rural hospitals have been closing at an exponential rate. Between 2005 – 2012 59 rural hospitals have closed and 2013 – 2020 111 have closed (1). To try keeping their doors open, rural hospitals have partnered with larger health systems. In response, Patel expressed that Pennsylvania is concentrated on ensuring sufficient cost, access, and quality of care. Hence, as these partnerships are established, the State monitors them to guarantee that they are not hindering any of these three areas. She continued that with a lack of healthcare delivery, it can be difficult for health insurance providers to find hospitals to contract with. With this scarcity, the State is available to offer guidance. Much of this guidance recommends for health insurers to implement more telehealth services for their beneficiaries.

**Legislation**

When asked about the Department of Health’s relationship with the legislature, Patel said that they were very close. When trying to understand their policies and drafting legislation, they often communicate with the Department of Health. For example, the legislature does not want to pass laws that only look good on paper, so they partner with the Department of Health to discern whether they will work in execution. Further, since the Department of Health collects a lot of data, they submit this data to the legislature so they can see where the problems are that need legislative improvements.
Speaking of the opioid issue, Patel noted that this data sharing has instituted new law following the implementation of the PDMP. After reviewing the data, the legislature made compliance requirements for providers and pharmacist to check the system for warning signs of opioid abuse. Additionally, the data sharing has launched new programs such as the patient advocacy program.

Works Cited
https://www.shepscenter.unc.edu/programs-projects/rural-health/rural-hospital-closures/
ASSOCIATION OF PREHOSPITAL PLASMA WITH SURVIVAL IN PATIENTS WITH TRAUMATIC BRAIN INJURY

By Danielle Gruen, PhD
MD Candidate

This article has been written by a member of the PHJ Editorial Board Marsha Haley, MD on a JAMA published research paper.

It is a significant accomplishment for a medical student to be first author for an article in a high-impact journal such as the Journal of the American Medical Association (JAMA). We are fortunate to have such a student at the University of Pittsburgh School of Medicine. Dr. Danielle Gruen received a PhD in Biogeochemistry from the Massachusetts Institute of Technology and Woods Hole Oceanographic Institution, and completed the Harvard-MIT Health Sciences and Technology Graduate Education in Medical Sciences certificate program. She trained as an NIH T32 Postdoctoral Fellow in Trauma and Sepsis in the Billiar Lab, and is currently an MD student at the University of Pittsburgh. Below, I summarize her recent publication, titled “Association of Prehospital Plasma With Survival in Patients With Traumatic Brain Injury: A Secondary Analysis of the PAMPer Cluster Randomized Clinical Trial.” This work was mentored by senior author Dr. Jason Sperry, Professor
Traumatic Brain Injury (TBI) is a worldwide problem with significant medical and economic morbidity, and limited therapies exist to improve outcomes. One avenue of research is prehospital interventions; that is, administering therapies in the field or during transport before the patient reaches the hospital. In 2018, the Prehospital Air Medical Plasma (PAMPer) trial showed that administration of prehospital plasma improved 30-day survival by 10% in severely injured trauma patients at risk for hemorrhagic shock and transported by air ambulance (N Engl J Med. 2018;379(4):315-326.).

The authors of the present study wanted to identify patients who would benefit from such early interventions to target resources to the most appropriate patients. They performed a post hoc secondary analysis of a subgroup of patients from the PAMPer trial. In this secondary analysis, they defined TBI as brain injury diagnosed by CT scan, as opposed to the initial study where TBI was defined by clinical criteria.

The authors compared patients with and without TBI in the
subgroup defined by CT scan. They found that there were no differences in demographics, injury characteristics, or fluid administration (other than plasma) during the duration of prehospital transport between the two groups. Once the patients reached the hospital, however, transfusion requirements did differ across the groups. Patients with TBI who were treated with prehospital plasma received less IV fluid, blood pressure medication, and red blood cells in the first 24 hours. In addition, patients with TBI who received prehospital plasma had lower international normalized ratios, which is a measure of the ability of the blood to clot (median [IQR], 1.20 [1.10-1.40] vs 1.40 [1.20-1.80]). Patients with TBI who received prehospital plasma had lower unadjusted 24-hour mortality (16.2% vs 35.9%) and 30-day mortality (35.1% vs 55.4%). This was statistically significant even after accounting for multiple confounders.

The 30-day survival benefit of prehospital plasma in subgroups with and without TBI as diagnosed by CT scan was characterized using Kaplan-Meier survival analysis and Cox proportional hazard regression. 30-day mortality was assessed across patients with and without TBI using a generalized estimating equations model to account for trial cluster effects. The plasma and TBI association was statistically significant even after accounting for multiple confounders.

In an exploratory subgroup analysis of patients with TBI, the authors assessed whether initial neurological deficits or concomitant injury burden were associated with the survival
They found that prehospital plasma was associated with the greatest survival benefit among patients with TBI with Glasgow Coma Scale scores of less than 8, which indicate more severe brain injury (HR, 0.56; 95% CI, 0.35-0.91), for a 44% reduction in the risk of mortality, and among patients with TBI and polytrauma (HR 0.50, 95% CI 0.28-0.89), for a 50% reduction in the risk of mortality.

In the cohort of patients who were transported from the scene of the injury, patients who received prehospital plasma had improved 30-day survival (HR, 0.45; 95% CI, 0.26-0.80; P = .005), suggesting that minimizing the time between injury and plasma administration is important.

The authors concluded that there is a strong survival benefit associated with prehospital plasma in patients with TBI. This secondary analysis suggests that patients with TBI as defined by CT scan, who are administered prehospital plasma, have greater survival benefit than the overall PAMPer cohort. Limitations include lack of blinding and randomization; also, the use of CT and variability in other treatments and physicians may result in unanticipated bias. Although the underlying mechanisms for the survival benefit associated with plasma remain unknown, these findings suggest that early resuscitation with blood products including plasma may benefit patients with TBI and risk of hemorrhagic shock. From a Public Health perspective, prehospital plasma administration has the potential to decrease morbidity and mortality for the trauma patient with TBI. If this intervention
ultimately results in neurologic recovery, it could potentially decrease the significant economic health burden of TBI. Further studies will be helpful to determine these benefits.

Works Cited

To read the full research paper click:
https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2771732

To give more context and significance, this paper was also featured in an accompanying commentary:
https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2771729

This work has also been mentioned in a podcast:
https://jamanetwork.com/learning/audio-player/18552186
This summary has been written by a member of the journal's Editorial Board Marsha Haley, MD. She is a MPH student within the department of Health Policy and Management.
The COVID-19/SARS-CoV-2 pandemic that continues to rage on seems to unveil new challenges by the day. At the time of writing this, the one-year anniversary of the emergence and first outbreak of the novel coronavirus is quickly approaching. In this difficult year, a plethora of information about the virus has been learned, and new avenues of treatment have been explored. Although the speed at which scientists have been able to study the virus has been remarkable, there are still many unanswered questions. One of them regards a subset of individuals who seem to have persisting symptoms of COVID-19 months after they were first infected.

To date, there have been over 30 million cases with over 500,000 deaths reported that have been caused by this virus (2). As such, it is difficult to overstate the imperative nature of this crisis. For many who become infected with COVID-19, the symptoms frequently consist of shortness of breath, a nonproductive cough, fatigue, and muscle aches that appear within 14 days after
exposure to the virus (7). These symptoms have been seen to dissipate after a point when the virus is no longer detectable within a person’s body; usually around 30 days post-infection in a majority of individuals (1).

In some cases, unfortunately among 1.8% in the United States, more severe symptoms emerge that lead to mortality of the infected patients (5). There is a lot of ongoing research that seeks to understand the risk factors for developing severe disease, and what can be done to prevent mortality in the individuals whose disease progresses to a life-threatening one.

More recently, however, it has been discovered that there is a subset of individuals who contract COVID-19 and develop a different, more long-term form of the disease. These individuals have been dubbed the COVID-19 “long-haulers.” Symptoms of persistent COVID-19 can be the same as the ones found in active infection, such as shortness of breath, cough, and chest pain, but there are other symptoms that may emerge that are more difficult to detect initially.

Inability to concentrate or a sort of “brain fog,” along with a loss of taste and smell, are some of these symptoms that persist after COVID-19 infections in the long-haulers (4). So far, the exact cause of these symptoms are poorly understood. Dr. Anthony Fauci, among other experts, believes that these symptoms are the result of something called myalgic encephalomyelitis/chronic fatigue syndrome (ME/CFS), which is not well understood (8). Prior to the
COVID-19 pandemic, it was estimated that around two and a half million Americans suffered from this syndrome (3). If there is a potential link between COVID-19 infection and ME/CFS, then it is likely the prevalence of this syndrome will increase, even after the pandemic is thought to be over.

These long haulers are not only another example of why we need public health measures such as social distancing, testing, and contact tracing to control the spread of the virus. They are also a sobering reminder of how much more we must learn about this disease. There is a substantial need for more research into long hauler COVID-19. We need answers to the questions like “What determines if an individual will develop lasting symptoms of COVID-19?”, “How long will symptoms of long COVID-19 persist?”, and “What can we do to treat patients with long COVID-19?”.

A good place to begin unraveling these mysteries would be to create a more comprehensive understanding of how COVID-19 is able to compromise each of the body systems it is able to infect. In doing so, hopefully more light will be shed onto the biological determinants of different outcomes associated with COVID-19, and potential avenues of treatment for each of these outcomes, including long hauler COVID-19. So far, we know how COVID-19 is able to infect a diverse set of body cells and tissue types. It is well established that the virus uses its spike protein, specifically, the S1 subunit, to bind to certain receptors on human cells (the ACE2 receptors) and enter them to begin replicating more virus (9). This receptor is found on many different cell types, including those of
the lungs, vascular system, kidneys, heart, and intestines, leading to the varied and numerous symptoms of COVID-19 infection.

What is still unclear is how this contributes to the symptoms observed in the long term. There are a few proposed ideas that seek to explain the phenomena of long hauler COVID-19 cases, but none have been experimentally verified yet. One theorized explanation is that the damage that is done to the tissues during the active infection becomes apparent later, and this is what is being observed in long hauler COVID-19 cases (1). What this does not explain well, however, is why all individuals who become infected with COVID-19 do not go on to develop long hauler COVID symptoms.

Equally important as understanding the pathology of COVID-19, creating standard diagnostic criteria that can detect symptoms of long hauler COVID-19 is another area we need to develop further to provide care for the COVID-19 long-haulers. We would be able to not only identify individuals who may be long haulers more readily but would also have an idea of the duration of the long-term effects of the disease through routine check-ups by primary care physicians and other medical practitioners.

One thing that is certain is that there are many survivor accounts describing the effects that long hauler COVID-19 has on them (6). These individuals are still suffering effects of this potentially fatal disease after the infection should supposedly have been cleared from the body. Its imaginable that this would cause a great deal of
stress and emotional harm to these individuals on top of the physical harm they are continually experiencing as the days and weeks pass by. Therefore, this issue requires much care, attention, and compassion. COVID-19 long haulers are just as important in the battle against this pandemic as those with active infection, and more work needs to be done to help them heal as well.
PREDICTIVE INEQUITY: ALGORITHMIC INJUSTICE IS AN EMERGING PUBLIC HEALTH CHALLENGE

Taylor Robinson, MPH Candidate, Epidemiology

James Karabin, Science Policy Fellow at the IDA Science and Technology Policy Institute

Nathan Lampenfeld, MPH Candidate, Health Policy and Management

Introduction

Racism is being increasingly recognized as a public health issue due to increased consciousness of anti-Black racial injustices, mass anti-police brutality protests, and the disproportionate affects the COVID-19 pandemic has had on racial and ethnic minorities.1 More than 100 public health entities in the U.S., including local governments, have declared racism a public health crisis in the last two years.2 The National Institutes of Health and Centers for Disease Control and Prevention have recently acknowledged the presence of racism in the biomedical research enterprise and
racism as a contributing factor to health inequities. Many solutions have been proposed to reduce racial health inequities, including through the use of algorithms driven by advances in analytics such as artificial intelligence (AI) and machine learning (ML).

The potential utility of advanced algorithms has been demonstrated and implemented in numerous ways, such as improved diagnostics, more accurate patient outcome predictions, and improved resource allocation (e.g., vaccine distribution, extra patient care). However, advanced algorithms also have the potential to create new or exacerbate existing health inequities experienced by Black communities. In particular, algorithms may create results that are biased or lead to biased interpretations, often referred to as algorithmic bias. Algorithmic bias refers to the systematic errors created by human bias embedded within an algorithm that leads to prejudiced results. An algorithm’s results may be biased in particular directions, resulting in better or worse predictions for some groups. Bias may be the result of a number of factors, including through biased inputs (e.g., with non-representative data or data that captures historical injustices), how the algorithm was developed to capture certain factors or exclude others, or how the algorithm is used in practice. Racial inequities may occur as a result of bias, and many algorithms have been demonstrated to be biased in numerous ways against Black individuals and populations.

This article provides a short introduction to how algorithmic bias
can impact the health of Black communities. We provide examples in health settings and beyond to show the numerous ways algorithmic bias can create new or exacerbate existing health inequities. These examples also serve to show that algorithms deployed outside of health settings still have health implications. We also explore recent advances towards reducing algorithmic bias, such as through the work of organizations and through policy advances. Lastly, we highlight critical views that caution reliance on seemingly easy technological fixes and point out some of the wider social implications of these advanced technologies.

Algorithmic Bias and Health

Algorithms have been implemented in a multitude of contexts within the healthcare industry and use of algorithms is expected to increase in rate and scale.14,15 For example, algorithms are used in risk prediction tools that help to identify and manage which patients need extra care, and are estimated to be applied to 200 million people in the U.S. per year. One study found that an algorithmic risk-prediction tool used by a major U.S. hospital gave lower risk scores to Black patients despite being considerably sicker than white patients with the same score, resulting in the prioritization of white patients’ health care needs.16 The researchers concluded that this bias resulted from using health care costs as a proxy for health needs, as Black individuals had lower average health expenses which was interpreted as having lower health needs.16 This lower expenditure could be attributed
to the effects of systemic and structural racism, such as barriers in access to care, which contributes to health care disparities. Using health care costs as a proxy for health care needs has been cautioned against and serves as an example of the importance of having adequate knowledge of the relationship between a potential proxy variable and race. Furthermore, this study highlights how improper interpretation of results can result in racial health inequities.

As another example, electronic health record (EHR) data is being leveraged to support patient-related decisions and complete tasks like patient outcome prediction and disease inference. While these records may be data rich, the use of EHRs carries a number of limitations. It has been demonstrated that incomplete EHR data can result in biased outputs from ML-based algorithms. If the EHR data used by an algorithm is incomplete or missing a subset of a population, thus nonrepresentative, the outputs may be biased in favor of the population represented in the data, or the algorithm may not be applicable when applied to a larger or more diverse population. Algorithms trained with EHR data can also capture the explicit or implicit racial biases of practitioners and perpetuate differential treatment, while presenting the decisions as objective and evidence-driven.

Though the previous examples highlight algorithms in health settings, it should be noted that they are increasingly deployed in contexts linked to social determinants of health. For example, algorithms used in hiring processes by extension determine
eligibility for health care for many Americans as health insurance and health care is often connected to someone’s employment and financial resources. Algorithms used in hiring processes have proliferated in the last year, and some have been demonstrated to be racially biased as recently as 2020.

Algorithms have also shaped incarceration — a key social determinant of health — in recent years and will increasingly shape incarceration as more states adopt or require the use of risk assessments in judicial decision-making. Some algorithms used in processes of incarceration, including in policing and sentencing, have been demonstrated to be racially biased. For example, algorithms used to predict where crime will occur have been widely criticized for their potential to continue the over-policing of Black neighborhoods. Though algorithms have been suggested as a way to reduce judicial bias, algorithms used in sentencing and to determine parole have similarly been demonstrated to have racial biases against Black individuals, potentially leading to harsher sentencing. Existing crime-related data captures racism in the criminal justice system, such as the over-policing of Black neighborhoods and more frequent and severe sentencing of Black individuals. These biases in the data become the foundation for predictions. Additionally, algorithms meant to be racially neutral may inadvertently capture race through proxy, such as through geographic location or socioeconomic status. However, many steps are being taken to address algorithmic bias in processes of incarceration, including correcting for bias or halting the use of these algorithms.
Addressing Algorithmic Bias

There have been strides at local and national levels to combat algorithmic bias. At the local level, some companies, institutions, and public policy organizations have made efforts to counteract existing biases and establish measures to ensure equity in AI development. These efforts include more diverse programmers, correcting historically inaccurate data, and working to counteract perpetuated, generational disparities. Organizations, such as Data for Black Lives and the Algorithmic Justice League, both of which are devoted to racial justice at the intersections of race and technology, are working to apply data and science for the betterment of Black communities and to reduce algorithmic injustices, including bias. The Center for Privacy and Technology at Georgetown Law works in the area of privacy rights, particularly for marginalized groups as technology becomes more integrated into people’s lives. The Brookings Institution, an influential nonpartisan public policy organization, conducted a round table of 40 industry and academic leaders across multiple disciplines related to algorithmic bias to develop policy and practical solutions for diminishing algorithmic bias and advancing the science and implementation of AI. The National Academies of Science, Engineering, and Medicine also suggested that new data scientists could take a Data Science Oath, much like the Hippocratic Oath required for physicians, to ensure ethical use and proper evaluation of potential implications of algorithms on communities.
Beyond the work of organizations, limited progress has occurred through legislatures and executive actions. At the state level, legislation has only been introduced in a handful of states and has not passed.33 From a national standpoint, there have been some attempts to address algorithmic bias through legislative and executive actions, such as the previously proposed Algorithmic Accountability Act and the December 2020 Executive Order on Promoting the Use of Trustworthy Artificial Intelligence.34,35 The Algorithm Accountability Act aims to add stringent review and remediation of algorithms that result in bias or discrimination. This act has been lauded for progress towards algorithmic equality, but has also faced criticism for being overly restrictive and inhibiting AI innovation.36 The recent executive order outlines the manner in which AI should be designed, developed, acquired, and used by executive departments and agencies. Though it does not explicitly mention bias, the principles include that AI must be accurate, reliable, effective, transparent, and accountable.

Conclusion

The past year has led to new conversations around the role of racism in public health and how racism is embedded in society. The disproportionate affects the COVID-19 pandemic has had on racial and ethnic minorities and the recent declarations to combat racism in public health underscore the urgency of addressing racial health inequities. As advanced algorithms become used more often in health settings and beyond, addressing algorithmic bias is a step
towards reducing new or existing health inequities. There are opportunities to counteract this bias locally and nationally through multidisciplinary collaboration, state-level legislation, and national legislative and executive actions. Beyond governmental or organizational entities, there is also the potential to individually research algorithmic bias, educate others on algorithmic justice, maintain or create a Data Science Oath, and facilitate conversations in communities when algorithms are deployed in that context.

Though this article focuses primarily on algorithmic bias, addressing algorithmic injustice will require more than just reducing bias. There are also concerns about the trustworthiness of the algorithms, regardless of their accuracy, in part because of a lack of transparency in how the models are developed and how they work. A lack of transparency is in some cases due to the algorithms being privately held, but is also a technical and inherent problem with current AI and ML techniques. The processes through which outputs, including predictions, are generated remain unclear, even for experts in the field. As advanced algorithms become increasingly used for health-related decisions, explainability remains a key barrier in ensuring decisions using advanced algorithms are equitable, especially when a wrong decision is made.

At the same time, the focus on algorithms as a solution to health inequities can create new problems and entrench old ones. As Ruha Benjamin cautions, the combination of coded bias and
imagined objectivity risks deepening discrimination through technoscientific advances that appear objective and necessary. Rather than addressing health inequities through technological ‘fixes,’ some argue that the ways in which health inequities arise in the first place (e.g., through poverty, institutional racism, lack of access to resources) must also be illuminated and considered.

While much of the attention of this article has centered on examples of bias and efforts to address them, the presence of bias indicates something broader about society. As noted by Sandra Mayson in her Yale Law Review article, “All prediction looks to the past to make guesses about future events. In a racially stratified world, any method of prediction will project the inequalities of the past into the future.” Predictions do not just make guesses about future events, but also shape which futures become imaginable and which actually become reality. The focus on algorithmic solutions and the biased outputs provide both risks and opportunities. While the benefits of algorithm-driven decision-making may be realized, there is a larger opportunity to pay attention to what these biases reveal and interrogate the types of futures we want to create, and who is included in that process. Through this, it may be possible to not only avoid algorithmic injustices, but to also move towards algorithmic justice.
Taylor Robinson  
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James Karabin  
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Nathan Lampenfeld  
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ATTENDANCE OF GROUP CHILDBIRTH EDUCATION CLASSES AND THE IMPACT ON CESAREAN SECTION AND LABOR INDUCTION

By Deena Blumenfeld
ERYT, RPYT, LCCE, FACCE
MPH Candidate,
Behavioral and Community Health Sciences

This piece summarizes Deena Blumenfeld's Masters Thesis

Since the 1930s, physicians, nurses, and public health workers offered group childbirth education classes to pregnant people, with more formalized classes emerging in the 1950s. In the ninety years since the advent of childbirth education, researchers rarely examined birth outcomes or medical interventions during labor for class attendees. This mixed studies review aims to synthesize knowledge on the current available evidence of childbirth education programs on birth interventions and obstetric outcomes since 2000, specifically focusing on cesarean section and labor induction, and to provide recommendations to improve future
Research question: To what extent does attendance of childbirth education classes impact the use of obstetrical interventions for low risk, primipara women with a singleton pregnancy? Specifically, does attendance of childbirth education classes impact the usage of cesarean section and/or labor induction for this population?

The existing literature’s heterogeneous nature does not permit for an aggregate data analysis. Researchers controlled for and reported on a wide range of variables with no two studies comparing similar childbirth education classes. Future research should have greater controls for the variability of class duration, structure, and teaching methods. Researchers should consider having a childbirth educator as a consultant when studying childbirth education classes to ensure a deep understanding of class mechanics and inclusion criteria for variables.
In the last decade, the world’s population of migrants and refugees has grown at an alarming rate due to climate change, civil conflict, poverty, and human rights violations. In 2019, the levels of displacement were the highest on record with 70.8 million forcibly displaced people and 244 million migrants worldwide (UNHCR, 2020). It is vital that host and asylum countries respond appropriately to incoming migrants and refugees as this trend is not soon to cease. As women represent almost half of all migrants and over half of the worldwide refugee population, understanding their experiences, opinions, needs, and priorities is integral to ensuring the responses and policies designed to protect and assist them are relevant and adequate.
One of the most important institutional responses to ensure that migrant and refugee women (MRW) are well-resettled is from the health care system. As Mengesha, Perz, Dune, Ussher (2018) and Hawkey, Ussher, Perz, and Metusela (2017) found, there are differences between and within MRW groups regarding levels of health knowledge, attitudes, and practices. This is especially true for health issues that may be culturally and religiously associated with shame and secrecy, such as menarche, menstruation, and menopause. The different levels of knowledge and preparedness have implications for both health care programs and services for MRW and MRW’s interaction with their local health care system. Multi-level approaches to migrant health problems also highlight the value of bringing MRW voices into the process of designing solutions.

Although menstruation is a physiological process, menstrual knowledge, attitudes, and practices of women and girls are influenced by the sociocultural environment in which they live. In many non-Western countries, restrictive behaviors during menstruation are reinforced by beliefs that associate menstruation with impurity and dirtiness (Bennett, 1983; Cameron, 1998; Morrison Basnet, Bhatta, Kimbanjar & Baral, 2016). This can lead to menstrual shame for many women and girls. Experiencing menstrual shame is linked to poor health, risky sexual behavior, and embarrassment towards breastfeeding and childbirth (Hawkey, et al., 2017). It is essential to understand the cultural, societal, and religious influences on how women and girls experience menstruation, given that negative attitudes associated
with menstruation can lead to negative health outcomes (Ussher et al., 2017; Sommer, Hirsch, Nathanson & Parker, 2015; Austin, Guy, Lee-Jones, McGinn & Schlecht, 2008; Swenson, Erickson, Ehlinger, Carlson & Swaney, 1989).

MRW may experience menstruation differently than non-MRW. MRW must simultaneously negotiate often divergent cultural ideologies of menstruation (Salad, Verdonk, de Boer & Abma, 2015; Ussher, Rhyder-Obid, Perz, Rae, Wong & Newman, 2012). When MRW have prolonged, continuous contact with individuals and systems within a host country, it can result in changes at both the individual level, such as beliefs, attitudes, and identities, as well as at the group level, such as societal and cultural systems (Tadmor, Tetlock & Peng, 2009). This multidimensional process is recognized as acculturation. The ability to acculturate in Western countries is positively associated with both improved women’s health (Leybas-Amedia, Nuno & Garcia, 2005), as well as health risks (Pilver, Kasl, Desai & Levy, 2011), including sexual and reproductive health (SRH) (Lee & Hahm, 2010). Within the migrant and refugee population in the United States, as with all countries receiving migrants and refugees, understanding menstrual beliefs and behaviors of migrants and refugees is essential for designing and delivering appropriate public health messaging, health care and menstrual education.

Since 2005, approximately 7,000-10,000 Nepali-speaking Bhutanese refugees have resettled in the Pittsburgh, Pennsylvania, region of the United States. Since then, Pittsburgh has become a
hub for primary and secondary migration of Bhutanese refugees of Nepalese origin. This project examined how women in the Bhutanese community of Pittsburgh reconstruct culturally and religiously rooted menstrual practices to fit into their current socio-milieu. The findings support previous research that demonstrates menstrual behaviors and practices constantly change over space and time within certain communities.

The literature review for this project drew on the history of menstruation in public health and on the work of researchers prominent in the areas of migrant and refugee health, menstrual health, and culturally and religiously informed menstrual behaviors, with a specific focus on Southeast Asia. Findings from the literature review identified intersections within and between various bodies of literature and the current gaps on MRW’s menstrual health in Western countries. The literature review also supported the design of all three data collection instruments. This thesis gathered data from KII to inform the design of the interview and FGD schedule, as well as the survey. Semi-structured interviews were conducted with four women from the Nepali-speaking Bhutanese community of Pittsburgh, and two FGDs were held with attendees of the Bhutanese Community Association of Pittsburgh’s (BCAP) monthly women’s group, all of whom were members of the community. Thirty-one responses from the survey were collected as well. Data from all three sources was then analyzed and major themes were identified.

Findings from this study suggest that migration influences
menstrual practices in the context of the Nepali-Bhutanese community in Pittsburgh. As these women’s socio-milieu transformed during migration to Nepal and subsequently to the United States, so did their construction of and response to menstruation. This research demonstrates that women’s menstrual practices are influenced by their individual knowledge and understanding of menstruation, their access to and affordability of improved menstrual technologies, and their social reconstruction, all of which are altered by migration. Women have adapted their menstrual practices to make sense of and accommodate the context in which they live.

Different living patterns (social reconstruction), continued menstrual education (individual knowledge), and access to new sanitary products (material environment and technology change) have enabled women to exercise more autonomy over decisions surrounding behaviors during menstruation. Examining participants’ material experiences and situations allows for an understanding of how their sociocultural context has impacted their practice of restrictive behavior during menstruation. The data indicate that because of a lack of a coherent framework to understand menstruation, many women initially associated shame and impurity with menstruation prior to and after their first period. As newer sanitary products became available and living patterns changed, women had the ability to explore and re-create their own constructs of menstruation.

With this exploration often came the awareness of menstruation
as a physiological process. Women have used their circumstances and new tools available to them (time, space, and separation from in-laws) to develop new understandings of menstruation and alter restrictive behaviors. New living arrangements in Pittsburgh supported changing behaviors by giving women a choice when and where to practice them under certain conditions. The research shows that respect towards elders still heavily influences a woman’s decision to practice restrictive behaviors. This suggests that as the younger generation gets older, these practices may become less relevant. An exception to this is restriction from religious practices or attending temple. This paradox—believing menstruation is natural and not a sin but still refraining from going to temple or participating in religious activities because of the sin that would create—is still common among many women’s menstrual behaviors.

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