

The Undergraduate Journal of Public Health



at the University of Michigan

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Letter from the Editors

Dear Readers,

We are incredibly pleased to present the second volume of the *Undergraduate Journal of Public Health* at the University of Michigan. Embarking upon this journey for the second time, we have been struck by the continued drive, vision, and tenacity of our student researchers and editorial board. It has been an honor to see how organizations and publications such as ours contribute to the accessibility of public health initiatives and experience for undergraduate students.

For the first time, we chose a theme to guide our writers and bring light to an issue we feel is pressing both locally and globally: “Social Determinants of Health: Health disparities and Health inequalities.” A survey of some of the most pressing health concerns around the world leads us to conclude that the sociality driving our health and health outcomes cannot be ignored. Addressing the intersections of health and race, geography, and socioeconomic status, is the key to making healthcare more equitable for all. It has been inspiring to see students embody this belief and address the unique challenges faced by women of color, undocumented college students, the LGBTQ community, low socioeconomic communities, and more. We are proud to feature these voices that might otherwise be ignored.

We continue to be grateful for the support of the University of Michigan community and its various institutions. We would like to thank the School of Public Health for its multifaceted support, both financial and advisory. The mentorship from our faculty advisor, Dr. Eduardo Villamor, and the expertise and knowledge from our PhD student review board have been essential to the fruition of this publication. We further thank Michigan Publishing for their continued support and infrastructure. Finally, we extend our greatest thanks and commendations towards our undergraduate student editorial board: your drive and passion inspire us every day and we are so lucky to have shared this journey with you.

It is with great fondness that we reflect upon our time here, at the University of Michigan and with *UJPH*. After a long four years, we are proud to take stock of what we have accomplished and eager for what is still yet to come. We continue to be humbled and inspired by the dedication and prowess of our student colleagues who remind us of why we started this endeavor in the first place. We walk away from this university emboldened in our belief in the power of research, education and communication to make change.



It is with great pride that we close this chapter, knowing that we are leaving the journal in strong and capable hands. And so, for today, good-bye. For tomorrow, good-luck. And forever, go blue!

Thank you,
Sonia Ahluwalia and Krittika Pant

FIELD NOTES

Undocumented College Student Immigrants and Their Health Care Safety Net

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Abstract:

Undocumented immigrants in the United States face multifold barriers to health care, including access to health insurance and transportation, language barriers, and implicit bias in patient-provider interactions. These barriers are strongly influenced by public policy and access to higher education. Higher education institutions, therefore, have a unique role in providing a health care safety net for undocumented students. A case study of accessible University of Michigan resources for undocumented students was completed, in addition to a review of available information regarding barriers to health care access, available health care services, and education access for undocumented immigrants in the United States and in Michigan. Policy affecting higher education access, including Deferred Action for Childhood Arrivals (DACA) Act and the Development, Relief and Education for Alien Minors (DREAM) Act, was also analyzed, and implications of changes in these policies were discussed in the context of the current political climate. The University of Michigan case study, as an ideal example, demonstrates the potential impact that increased higher education access for undocumented immigrants can have on health outcomes for this population.

Keywords: Immigration, Higher Education, Healthcare, DACA, Deportation

Introduction

The United States has a tumultuous history of immigration policy that has become more or less strict over time in the context of international political interference, refugee crises, and terrorist action. Due to the ever-changing policy, immigrants who are unable to obtain legal residency status and permission of entry are forced to enter the country through other means. These immigrants, in various situations, have been given the terms “illegal,” “unauthorized,” or “undocumented” immigrants, which are titles that can carry a stigma and may not be appropriate for all cases. For the purposes of this article, they will be referred

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to as undocumented immigrants to reduce any implied stigma. With the United States' proximity to Mexico and the rest of Latin America, as well as continued U.S. influence in many of the countries within this region, a large proportion of undocumented immigrants in the United States are from those countries. As of 2014, the estimated undocumented immigrant population in the United States is approximately 11,100,000. In 2007, the population peaked, but since then the numbers have declined and stabilized (Mitchell, 2016b).

The number of undocumented immigrants from Mexico, at an estimated 5,850,000, constitutes the largest proportion of the total undocumented immigrant population. Other Latino countries with significant shares of this population include El Salvador (700,000), Guatemala (525,000), Honduras (325,000), and the Dominican Republic (170,000). Overall, there are an estimated 1,700,000 undocumented immigrants from Central America and 650,000 from South America. Once settled in the United States, the highest proportion of undocumented immigrants take residence in California (2,350,000) and Texas (1,650,000). Michigan is estimated to have 130,000 undocumented immigrants, which represents 1.3% of the overall Hispanic undocumented immigrant population in the United States (Mitchell, 2016a).

Social determinants of health are key drivers of health disparities and negative health outcomes. However, immigration status as an important determinant of health is often minimized in research. Undocumented individuals in the United States are restricted in their ability to access health-protective resources beyond direct health care services. Castañeda et al. (2015), in a comprehensive literature review examining research on immigration as health determinant, described how immigrants are directly excluded from some societal resources that documented residents can access, such as labor protections. In addition, Castañeda et al. discussed how undocumented immigrants experience similar challenges to those of low-income communities of color, such as poor housing quality and neighborhood safety. Furthermore, racism, lack of status, and societal exclusion can significantly affect mental health, leading to further barriers to access (Castañeda et al., 2015). A multisystem approach to examine these barriers further is needed in continued research. For the purposes of this article, social determinants of health as barriers to health care services will be the major focus in the context of the intersection of higher education and increased health care access.

Undocumented immigrants in the United States face unique obstacles in access to health care. Due to their lack of legal permanent resident status, undocumented immigrants are often unable to obtain health insurance and access regular health care practices. This is generally a combination of fear of being caught and facing deportation and being unable to afford health care services without the assistance of insurance programs (Ortega, Rodriguez, & Bustamante, 2015). Undocumented immigrants do not have social security numbers, which limits access to banks, insurance plans, and primary care settings. Furthermore, undocumented immigrants commonly face a language barrier, which can reduce their understanding of available options. Despite pushback against providing additional options for this population due to nonlegal residency, when considering racial and socioeconomic health disparities in the context of this population, undocumented immigrants are severely disadvantaged and in need of extra health care resources.

The undocumented student population is especially relevant in the context of the Development, Relief and Education for Alien Minors (DREAM) Act, a proposed 6-year conditional path to citizenship for undocumented immigrants, and the future of DACA, the Deferred Action for Childhood Arrivals Act that offers deferred action on removal proceedings for up to 2 years,

for individuals in the changing political climate. The purpose of this study was to investigate whether undocumented students have differential access to health care resources from college campuses than nonstudent undocumented immigrants. In this article, I will first discuss health care accessibility for all undocumented immigrants based on federal, state, and local provisions and focus on education access and the added health care resources that are available to college student undocumented immigrants through a case study of the University of Michigan. I will then conclude with a discussion of possible future policy reform that could affect health care access for this population.

Methodology

This comprehensive review of the undocumented immigrant student population's access to higher education and resulting health care resources was conducted through a basic literature review, professional interviews with field experts, and a case study analysis of University of Michigan—Ann Arbor's resources and policies for undocumented students. The case study consisted of email consultations with University of Michigan—Ann Arbor on-campus resources (counseling, sexual assault, and general health care services) and a review of University policy regarding in-state tuition and admission procedures based on public online University resources.

Barriers to Health Care

Undocumented immigrants face different barriers to health care for access and quality than other populations within the United States. In a literature review performed by Hacker, Anies, Folb, and Zallman (2015), the inability to purchase health insurance plans and the resulting financial burden that occurs were identified as likely the most difficult barriers to overcome. Furthermore, Hacker et al. reported that many undocumented immigrants are afraid to seek care without being able to provide identification or any documentation. Discrimination while receiving care has been cited as another issue in health care quality, in addition to language barriers that affect patient-provider communication efforts, the diagnostic process, and patient understanding of the health care system, available services, and treatment plans (Hacker et al., 2015).

Many undocumented immigrants cannot afford to take time away from working or providing for the family to seek out and receive health care services for themselves or for their children. This issue is exacerbated by lack of convenient transportation methods. Some undocumented immigrants state that there is a stigma around receiving health care services as many do not want to place a burden on the health care system in their new place of residency and that receiving care in general is stigmatized in their countries of origin and carried over to the United States, despite increased health service availability (Hacker et al., 2015).

Finally, a monumental barrier to health care access is the extreme concern about deportation. Although related to not being able to provide documentation, undocumented immigrants face constant stress over being discovered and sent back to their countries of origin. This stress often leads to fear of leaving homes or neighboring communities, which restricts access to any available health care services outside of these smaller regions (Hacker et al., 2015). A particular aspect of this extreme fear is the added stress of possible home raids. A study completed by Lopez et al. demonstrated that after raids occur in Latino communities, participants are less likely to engage with social networks, feel less able to use government services including

health care services, and report higher levels of stress. This stress is translated into emotional, psychosocial, and physical effects in the body, which can be exacerbated with less usage of health care services (Lopez et al., 2016). Stress can influence physical health directly through biological changes and indirectly through encouragement of unhealthy actions. As both people of low socioeconomic status and minority groups experience more daily stressors, this is a major concern for the undocumented immigrant population.

Current Undocumented Immigrant Policy

Health Care Access

Emergency Departments (EDs) in hospitals, through the Emergency Medical Treatment and Active Labor Act, have a mandate to provide emergency room services to all entering patients, regardless of the documentation or legal residency status. Patients who receive this form of care are still billed for medical costs, however, and are not treated for nonemergent conditions or any future complications of this specific emergency care. Furthermore, they are not provided any follow-up care (Sommers, 2013). An alternative to paying the full emergency care bill for low-income undocumented immigrants is Emergency Medicaid, which provides emergency acute care services to individuals who are eligible for Medicaid in every way except for documentation status (Sommers, 2013). Emergency Medicaid is granted through state Medicaid departments on a case-by-case basis. Emergency Medicaid cannot be applied beforehand but can be granted after emergency care has been received if a case is deemed eligible (MyMedicare.com, n.d.).

Federally Qualified Health Centers (FQHCs) are health care provision centers that receive grants in the form of Medicare/Medicaid reimbursement from the Health Resources and Services Administration through the Public Health Services Act. FQHCs are required to serve underserved communities or populations, including undocumented immigrants (HRSA.gov, n.d.). Goldman, Chu, Tran, and Stafford (2012) demonstrated that for certain ambulatory care measures, FQHC performance is equal to or better than private practice primary care physicians, despite the health complexities of their patient populations. In Michigan, specifically, there are three types of FQHCs: Community Health Centers (CHCs), Migrant Health Centers (MHCs), and Health Care for the Homeless (HCH) Centers (America's Health Care Safety Net Providers, 2010). These health centers provide a valuable resource for undocumented immigrants in search of nonemergency care (Sommers, 2013).

At the local level, undocumented immigrants rely on volunteer-run free health clinics that are frequently charity-based health centers or rely on local organizational support (Sommers, 2013). Michigan has more than 50 free health care clinics that vary in service provision but serve thousands of patients each year. Other free health care centers can be affiliated with local health departments or hospitals. These health centers generally provide care without regard to legal status and allow for quality and accessible health care in the communities in which undocumented immigrants reside (MPCA.net, n.d.).

Education Access

Educational status is a major predictor of health outcomes, as education increases an individual's skill set, health literacy, and resources that can be used to access care (Zimmerman, Woolf, & Haley, 2015). Therefore, education access, especially to higher education institutions, is integral to understanding access to health care and overall health status.

Undocumented immigrant children are eligible to obtain free education through enrollment in the public-school system in all 50 states from kindergarten to 12th grade (*Plyler v. Doe*, 1982). Public state universities also accept undocumented students with or without social security numbers and often encourage undocumented students to apply to their programs (Bozick & Miller, 2013). Private universities set their own policies, however often do not require social security numbers either. Sixteen states have enacted policy to provide in-state tuition for undocumented students at state colleges/universities, and 14 of those 16 provide this through state legislation (Bozick & Miller, 2013). Many universities in states without these policies have recently started to offer in-state tuition rates through financial aid programs for undocumented students who have resided in the state for a certain time period and who have attended the public-school system for a certain number of years (Bozick & Miller, 2013). In the state of Michigan, for example, Western Michigan University, the University of Michigan, Saginaw Valley State University, and Wayne State University are among the universities that offer in-state tuition for undocumented students (Office of Public Affairs, 2013). For the University of Michigan, undocumented students are granted in-state tuition if they attended Michigan schools for at least 5 years in middle school and high school (Office of Public Affairs, 2013). There are also several special scholarships that undocumented students are able to apply for offered through universities and outside organizations (Office of Public Affairs, 2016). The majority of these scholarships, however, only benefit a small number of students due to specific eligibility requirements. An example of a national scholarship available to undocumented students is the Science Ambassador Scholarship, which offers full tuition coverage for young women pursuing the sciences (E4FC.org, 2016).

One of the most significant policies affecting undocumented students is DACA. The diminishing fear of deportation and eligibility for individuals attending higher education institutions make this an important policy for undocumented students regarding access to education and access to health care. DACA is an executive action enacted by President Obama that offers deferred action on removal proceedings for up to 2 years for individuals who meet specific guidelines. These guidelines include age, time of immigration, time in the United States, school attendance, and criminal records. DACAmented individuals are often eligible for employee authorization, and therefore social security numbers as well (USCIS.gov, n.d.). At the end of 2 years upon the same conditional basis, DACAmented individuals are eligible to apply for renewal of their status.

Health Care for Undocumented College Students: University of Michigan as a Case Study

All students at the University of Michigan have access to a guaranteed set of health services through the University Health Service (UHS), which is covered through the health service fee in the University's tuition (UHS, n.d.-b). These services include most medical clinic visits, eye care for medical reasons (excluding general vision checkups), nutrition counseling, physical therapy, most laboratory tests, telephone medical advice, and use of the Wolverine Wellness center, which provides support, resources, and referrals for wellness areas such as sexual health and drug and alcohol use (UHS, n.d.-c). Furthermore, students have full access to services provided through departments such as the Sexual Assault Prevention and Awareness Center (SAPAC), to aid with sexual assault, intimate partner violence, stalking, and survivor emotional support, and the U-M Counseling and Psychological Services (CAPS), to provide

mental health support (including resources for urgent or emergency situations) (CAPS, n.d.; SAPAC, n.d.). Students do not need to provide a social security number to access these resources and services, which allows undocumented students to receive any of these offered services (N. Thomas, personal communication, November 29, 2016).

The University of Michigan also offers a Domestic Student Health Insurance Program (DSHIP) that allows students to purchase health insurance through Aetna, a large U.S.-based health care company. DSHIP complies with the Affordable Care Act and is equivalent to a gold plan in insurance exchanges. Spouses and eligible dependents of students up to 26 years old can be added to this plan, and the insurance covers a variety of services that are specifically tailored to student needs (UHS, n.d.-a). GradCare is another health insurance program offered for graduate students at the University of Michigan. Students do not need to have social security numbers to purchase either of these health insurance plans; thus, undocumented students are availed access that their nonstudent counterparts do not enjoy (N. Thomas, personal communication, November 29, 2016).

This ability to access free preventive care, clinic visits, and minimal specialty care places the undocumented college student population at a unique advantage over the general undocumented immigrant population (W. Lopez, personal communication, November 10, 2016). Student health care plans are available without need of a social security number, and services in the areas of mental health, sexual health, and alcohol and drug use add an extra layer of health care for this specific population that is not accessible to nonstudent undocumented immigrants. Furthermore, DACA decreases the fear of deportation in DACAmented students, which reduces the likelihood of resultant stress-induced health consequences. The University of Michigan—Ann Arbor's health care offerings for students, including undocumented students, may be particularly generous and comparisons with other institutions would help fill out the landscape. For the purposes of this analysis, the University of Michigan context shows, although from a possible best-case scenario, that undocumented students have health care access advantages in this setting. A limitation of this method is that due to privacy and safety concerns, it was not possible to include feedback from undocumented students about actual experiences as users of these services.

Future Policy Directions

The future of undocumented immigrant population policy will greatly affect the health care of both nonstudent and student undocumented immigrants. The revocation of DACA, for example, was proposed by President Donald Trump on September 5, 2017, to be rolled out in 6 months, and Congress is allowed that period of time to design a legislative solution before the renewal of permits stops (Slagter, 2017). DACA is central to providing undocumented immigrants access to higher education, as higher education attendance is one of the qualifying factors for DACAmentation. As described previously, undocumented immigrants who attend universities have an added layer of health care protection not available to those who do not attend a higher education institution. However, if DACA is fully revoked, the number of students who will be able to attend higher education will decrease, thereby reducing access to those health care services for those individuals. Regarding the nonstudent undocumented population, DACA allows for undocumented immigrants to obtain employment authorization and social security numbers (United States Citizenship and Immigration Services [USCIS]). With the ability to legally work in the United States and capability to work higher paying jobs,

undocumented immigrants in these cases would be more able to afford health care services and possibly seek out these services without the fear of deportation as an issue (Gonzales & Bautista-Chavez, 2014). DACA also reduces the chronic stress of deportation that many undocumented families experience daily (Brindis et al., 2014). As mentioned previously, chronic stress can significantly harm one's physical and psychological health, primarily in the form of chronic illnesses and increased risk of mortality. The health consequences of this extreme fear can be severe, furthering the need for health care that may not be available to undocumented immigrants (Zimmerman et al., 2015). If DACA is revoked, many families will no longer have the temporary feeling of safety in their communities (Lo Wang, 2016).

An additional policy that has been proposed multiple times since its initial introduction in 2001 is the DREAM Act. The DREAM Act, most recently re-proposed by the Obama Administration, would provide a 6-year conditional path to citizenship for undocumented immigrants who entered the country before they turned 16 and will attend higher education or serve in the U.S. military for 2 or more years (WhiteHouse.gov, n.d.). This legislation would primarily target the estimated 65,000 undocumented high school seniors who graduate each year and hope to attend college, but would also provide an alternative option to higher education with the military service pathway (WhiteHouse.gov, n.d.). During the 6-year time frame, eligible DREAM Act individuals would be granted conditional legal permanent residence until the requirements and time period have been fulfilled (WhiteHouse.gov, n.d.). Because of the DREAM Act's relationship with encouraging young undocumented immigrants to pursue degrees from higher education institutions, its implementation would provide recipients of this conditional permanent residential status access to the on-campus resources available to college/university students, as described previously. Despite being proposed multiple times in Congress, however, the DREAM Act has still not been passed. In an interview with *TIME* Magazine, at the time President-elect Donald Trump said, "I want Dreamers for our children also. We're going to work something out" (TIME Staff, 2016). Although not in direct support of the DREAM Act, his statements reflect that he acknowledges the importance of working out a solution for this specific population. However, this directly contradicts his vocal opposition of DACA.

Conclusion

Undocumented immigrants in the United States face multifold barriers to health care services through policy, health system design, and individual circumstances. An expansion on barriers from policy and health system design demonstrated that undocumented immigrants have limited resources available for health care services. FQHCs, emergency Medicaid, ED treatment mandates, and charity/volunteer-based care centers make up the majority of accessible services due to lack of documentation. However, without the ability to purchase health care insurance or to receive coverage through the employee mandate or regular Medicaid, the financial burden of these obtainable resources places an extra barrier to the already limited options available to undocumented immigrants.

Through the University of Michigan – Ann Arbor case study, it is clear that university students, including undocumented students, have access to various health and wellness resources on campus for free, that other undocumented immigrants do not have access to at all. Furthermore, university-sponsored health insurance programs for students do not require social security numbers, which allows undocumented students to be able to purchase health insurance plans,

which again is not possible for nonstudent undocumented immigrants. This health care safety net that undocumented students have at the University of Michigan—Ann Arbor is perhaps a best case; however, it is likely to be present to some extent in other traditional university/college campus settings. Therefore, undocumented students with these resources have an important health care advantage over the general undocumented population.

Amid the current contentious political atmosphere, it is likely that the ability for undocumented students to access higher education will change in the upcoming years. If DACA is revoked, undocumented immigrants will find it more difficult to feel secure enough to pursue higher education and therefore will not be able to benefit from university health resources. In contrast, if the DREAM Act is implemented (in addition to DACA or not), more students will be capable of attending higher education institutions and would, as a result, be able to obtain this additional level of health care security. Many universities are committed to supporting DACA, however, and more than 640 university and college presidents signed a letter emphasizing this support (Hansler, 2017). Overall, undocumented immigrants, both students and nonstudents, are still in need of additional health care provisions to reduce the negative health disparities that affect the immigrant population.

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LITERATURE REVIEWS

A Comparison of LMP-Based and Ultrasound-Based Estimates of Gestational Age for Evaluating Preterm Birth in Low-Resource Areas

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Abstract

Adverse birth outcomes such as preterm birth and low birth weight are some of the most common causes of infant morbidity and mortality. The rates of adverse birth outcomes vary greatly with important social measures, such as race and socioeconomic status; therefore, more research should be conducted to better understand the link between adverse outcomes and social status. For such research, it is important to evaluate specific prenatal measurement methods in regard to their reliability and accessibility. Ultrasonography is generally accepted to be a more accurate predictor of gestational age; however, last menstrual period (LMP) is a more accessible and cost-effective method. The aim of this article is to determine the extent of possible error associated with LMP-based estimates and to evaluate whether they can accurately date pregnancies. Primary literature was analyzed through a literature review of the concepts of adverse birth outcomes, health disparities, and gestational age estimation using electronic databases such as PubMed, Embase, and Web of Science. The articles show that LMP tends to systematically overestimate gestational age, with LMP-based estimates having a larger range and more variation. Despite this, the difference between ultrasound and LMP estimates, while significant, was small, indicating that estimation by LMP is suitable for clinical use and research, especially for studies evaluating birth outcomes in low-resource settings. However, the accuracy of LMP-based estimation changes with meaningful maternal characteristics, demonstrating that additional research needs to be done to elucidate the effects of specific maternal characteristics on gestational age estimation.

Keywords: Last Menstrual Period, Gestational Age, Pregnancy Dating, Ultrasonography, Ultrasound Estimates, Birth Outcome, Maternal Characteristics

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Introduction

Preterm birth continues to be the leading cause of death for children under the age of 5 (Lehtonen, Gimeno, Parra-Llorca, & Vento, 2017). Preterm birth can result in many serious and long-term complications, such as hearing impairment, neurodevelopmental delays, retinopathy, chronic lung disease, respiratory distress syndrome, and emotional and behavioral problems (Moster, Lie, & Markestad, 2008; Ward & Beachy, 2003). As of 2010, the global rate of preterm births was 11.1% of all live births; however, this is highly variable with respect to geography and socioeconomic measures (Blencowe et al., 2012). Of these measures, differences in socioeconomic status and racial background continue to be the most significant source of disparities in preterm birth rates (Blumenshine, Egerter, Barclay, Cubbin, & Braveman, 2010; Kramer et al., 2001; Nkansah-Amankra, Dhawain, Hussey, & Luchok, 2010; Smith, Draper, Manktelow, Dorling, & Field, 2007). Notably, women from low-income neighborhoods possess a greater risk due to inadequate resources and social support (Blumenshine et al., 2010; Nkansah-Amankra et al., 2010; Smith et al., 2007). The rate of preterm birth among non-Hispanic Black women is nearly twice the rate among non-Hispanic White women (McKinnon et al., 2016; Nkansah-Amankra et al., 2010). For example, Nkansah-Amankra et al. (2010) found, in South Carolina, the rate of preterm birth in non-Hispanic Black women to be 14.2% of all live births, whereas the rate of preterm birth in non-Hispanic White women was 8.8% of all live births ($p < .0001$). Income inequality is also a predictor of disparities in birth outcomes. Preterm birth rates are increasingly higher across neighborhood income quintiles from highest to lowest, with the preterm birth rate being 6.7% in the richest neighborhoods and 8.2% in the poorest neighborhoods ($p < .001$; Luo, Wilkins, Kramer, & Fetal and Infant Health Study Group of the Canadian Perinatal Surveillance System, 2006). A similar trend is observed with maternal education level, with women with higher levels of education having a lower risk of preterm birth and women with lower levels of education having a higher risk of preterm birth (Luo et al., 2006; Nkansah-Amankra et al., 2010). Given these disparities, understanding the social determinants of adverse birth outcomes is a critical area of research.

Because of the importance of this research, it is essential that all relevant study techniques be evaluated to ensure significant and reliable evidence. In terms of research focusing on birth outcomes, it is important to evaluate prenatal measurements based not only on their accuracy and reliability but also on their accessibility and practicality. In addition to its importance in ensuring accuracy and statistical significance in epidemiological research studies evaluating factors related to different birth outcomes, accurate assessment of gestational age (GA) is also critical for determining global preterm birth rates and for achieving optimal standards of patient care in the clinical setting. Inaccuracy in GA estimates could lead to birth outcome misclassification, which leads to a distortion of findings in studies focused on evaluating factors associated with preterm or postterm births. Ultrasonography is considered to be the gold standard for estimating GA; however, self-reported last menstrual period (LMP) is generally a more accessible and cost-effective method for estimating GA, especially in regard to large-scale studies or clinical care in low-resource areas. Therefore, in low-resource areas where there is limited accessibility to ultrasound equipment, self-reported LMP may serve as a reasonable alternative for estimating GA (Dietz et al., 2007; Gernand et al., 2016). The aim of this article is to analyze past studies that focused on investigating methods of GA estimation to deduce whether LMP is a valid method of measurement. LMP estimates will be compared with ultrasound estimates to determine the extent of difference between the two methods; a

clinically insignificant difference would suggest that LMP is a reliable method of estimation. A clinically meaningful difference is a difference that is large enough to affect a patient's health or treatment; for this purpose, it will be defined as a difference between the two estimation methods that is more than 3 days. Differences below this will have little effect on both patient care and birth outcome research, especially when data are collected in terms of categories, such as preterm versus term births, rather than specific days.

Determining this difference and evaluating the accuracy of LMP estimates are especially pertinent for research in low-resource settings focused on investigating inequalities in maternal health and the social determinants of adverse birth outcomes as LMP estimates could serve as a valuable measurement method for these studies. However, the extent of difference between these methods of estimation varies with respect to important maternal characteristics (Hoffman et al., 2008; Kullinger, Wesström, Kieler, & Skalkidou, 2016; Tunon, Eik-Nes, & Grottnum, 1996). Therefore, additional research needs to be done in more diverse populations of women to evaluate the accuracy of self-reported last menstrual period for estimating GA for different subsets of the population.

Method

The search for relevant literature was conducted through the use of three electronic journal databases: PubMed at the University of Michigan, Embase, and Web of Science. The initial broad search strategy was aimed at selecting keywords and evaluating the extent and scope of literature that focused on pregnancy dating methods and disparities in birth outcomes. From there, prospective papers were sorted into two categories based on their central study topic: (a) methods and analysis of GA estimation, and (b) social disparities and trends in adverse birth outcomes and maternal health. For each category, a keyword search was conducted using electronic databases and candidate paper abstracts were scanned for content and study design. Additional relevant articles were identified from the references sections of articles obtained from the database search. Relevant journal article citations were formatted using Mendeley Reference Manager.

For the GA estimation methods category, the keywords used were "last menstrual period," "gestational age," "pregnancy dating," and "ultrasound." This generated 92, 108, and 154 results from PubMed, Embase, and Web of Science, respectively. Papers were chosen if they directly compared last menstrual period with another method of GA estimation, and selection was limited to peer-reviewed articles. An additional inclusion criterion was research designs that either analyzed cohorts of women participating in community-based trials or governmental birth programs or reviewed population-based registers and birth records. Small case studies and observational studies were excluded. Selection was not limited by original language, age of material, or location of research. Studies were excluded if they did not solely analyze live births and if their analysis included births to multiple children. Applying these criteria, six articles were selected from the databases, and other suitable papers were obtained from the references section of the selected papers.

For the second category, the database search was done using different combinations of the keywords "preterm," "low birth weight," "racial disparity," "adverse birth outcomes," maternal characteristics," "socioeconomic status," and "low resource setting." Each search yielded more than 100 results. Inclusion criteria were studies that described rates of adverse birth

outcomes in relation to maternal characteristics or socioeconomic status and peer-reviewed journals. No restriction was placed on date of publication, research design, original language, or geography. With these criteria, papers were selected that focused on important modern-day health issues, such as hypertension, diabetes, obesity, and mental illness, as well as relevant health care disparities, including race/ethnicity and income. The article by Blencowe et al. was also included to report current trends and rates of preterm birth nationally and worldwide.

Results

The 2008 research study conducted by Hoffman et al. compared the estimated GAs based on the self-reported last menstrual period and ultrasonography, both obtained during the first trimester of pregnancy, to investigate their relative accuracy. The authors analyzed data obtained from singleton births to 1,867 women enrolled in a prospective study cohort; these data included the self-reported LMP, ultrasound data, and documentation of maternal and infant characteristics. Evidence suggests that an early report of LMP can “reasonably approximate” the GA compared with ultrasonography done in the first trimester of pregnancy (Hoffman et al., 2008). In fact, both methods had the same median estimated GA of 276 days, or 39 weeks, and the difference between the two means was 0.8 days ($SD = 8.0$ days), with the LMP-based GA being slightly longer than the ultrasound-based age. The LMP-derived GAs also had more variation and a larger range in comparison with the ultrasound-derived ages, and a larger proportion of the births were classified as preterm and postterm. However, only the difference between the proportions of postterm classification was significant; this suggests that estimation by self-reported last menstrual period is still a reliable method of estimation for studies that research determinants of preterm birth rather than postterm birth (Hoffman et al., 2008). It should be noted that this conclusion is based on LMP and ultrasound data obtained early on in the pregnancy, and it may not be applicable to studies that obtained this information in the second trimester of pregnancy. This is an important consideration given the increased rate of error associated with an LMP that is recalled following a longer period of time (Pearl, Wier, & Kharrazi, 2007).

Considering this difference, there are several existing studies that have examined the difference between LMP-derived GA estimates and ultrasound estimates at different stages of a woman’s pregnancy. For example, Tunon et al. compared LMP estimates with estimates from ultrasounds performed at around the women’s 18th week of pregnancy. Using these ultrasound data, the authors concluded that the ultrasound method of estimation is better than the LMP method of estimation for predicting the day of delivery; specifically, a larger percentage of women delivered within 7 days of the predicted date using ultrasound methods compared with the predicted date using LMP methods (Tunon et al., 1996). However, although ultrasound was better at predicting the specific day of delivery, for women with regular menstrual periods and for spontaneous births (labor was not induced), there was no significant difference in the measured rate of preterm births between the LMP dating methods and the ultrasound dating methods. Because preterm birth classification encompasses a broad range of GAs, slight variations in estimates have little effect on risk rates, and this supports the idea that LMP-based estimation methods are sufficient for studies evaluating factors related to preterm birth (Tunon et al., 1996).

It is important to note, however, that such findings are based on results from healthy women with regular periods and may not be applicable to populations of women with irregular periods and/or other health challenges. For example, irregular menstrual periods are associated with diabetes, hypertension, and sexually transmitted diseases (STDs; $p < .00$; Geetha, Chenchuprasad, Sathyavathi, Bharathi, & Reddy, 2016). The prevalence of type II diabetes and hypertension is higher among women of low socioeconomic status, whereas the rates of STDs are higher among ethnic and racial minorities (Conen, Glynn, Ridker, Buring, & Albert, 2009; Harling, Subramanian, Bärnighausen, & Kawachi, 2013; Newbern, Miller, Schoenbach, & Kaufman, 2004; Ross, Gilmour, & Dasgupta, 2010). In addition to this, women from low SES neighborhoods tend to be burdened with higher amounts of chronic stress (Kramer et al., 2001). High chronic stress is positively correlated with menstrual period irregularities, and this supports the idea that socioeconomically disadvantaged women are more likely to have irregular menstrual periods (Yamamoto, Okazaki, Sakamoto, & Funatsu, 2009). Moreover, obesity, which, in developed countries, is more prevalent in areas of low income, is strongly associated with menstrual period irregularities (Houle, 2013; Wei, Schmidt, Dwyer, Norman, & Venn, 2009). Because these morbidities are more prevalent in low SES areas and are associated with irregular menstrual periods, women from socioeconomic disadvantaged backgrounds are more likely to have irregular menstrual periods. With this in mind, although previous studies have found LMP to be suitable for predicting preterm birth rates, it may be a less reliable method of estimation in socially disadvantaged areas. Conversely, the accuracy of ultrasound estimates is also compromised by obesity, which suggests that maternal morbidity may lead to inaccuracies in both methods of GA estimation (Simic, Wahlin, Marsál, & Källén, 2010). More research needs to be done to elucidate the exact effects that maternal morbidities have on GA estimates, especially given that many important health conditions are more common in areas of low SES. In the meantime, given that both methods of estimation tend to be affected by maternal health conditions, LMP may still serve as a reasonable method of estimation in low-resource areas that cannot support ultrasound examination.

In addition to these discrepancies, both Tunon et al. and Savitz et al. found that LMP-based estimates tend to overestimate the GA in comparison with ultrasound estimates. The authors found that LMP estimates were longer than ultrasonography estimates by about 2 to 3 days (Savitz et al., 2002; Tunon et al., 1996). In other words, both Tunon et al. and Savitz et al. found a small, but significant, discrepancy between LMP and ultrasound estimates. While these differences are significant, they are only on the order of days. In addition, these studies obtained self-reported LMPs later in the pregnancy; the difference between ultrasound-based estimates and LMP-based estimates is even smaller when the self-reported LMP is obtained in the first trimester of pregnancy (0.8 days; Hoffman et al., 2008). Furthermore, for research studies investigating the determinants of preterm birth, the categories of GA are much broader (preterm, term, and postterm), so differences in days may be less significant. However, because LMP systematically overestimates GA, it may not be a sufficient measure of estimation for studies investigating postterm birth rates. This systematic overestimation has less of an effect on preterm birth rates; thus, LMP is a suitable option of estimation for studies only looking at preterm birth rates and not postterm birth rates. Despite these findings, an earlier study published in *Obstetrics and Gynecology* found no significant difference between the errors in estimating GA between pregnancies dated using LMP and pregnancies with a known date of conception (in vitro fertilization pregnancies; Rossavik & Fishburne,

1989). This study suggests that LMP methods may be an accurate way of estimating GA. In summary, LMP-based GA estimates systematically overestimate GA in comparison with ultrasound-based estimates; however, this overestimation tends to be small, which indicates that it may be tolerable for large-scale studies investigating preterm birth rates.

In addition to the potential inaccuracies in GA estimation by LMP and ultrasound caused by maternal morbidities, differences in GA estimate between the two methods of estimation vary in relation to critical maternal characteristics. For example, Hoffman et al. found that in women less than 20 years old, with low education level, single marital status, and underweight or overweight body mass indices (BMIs), there was a larger difference between the LMP GA estimate and the ultrasound estimate (Hoffman et al., 2008). In addition, the LMP estimate was more likely to be greater than the ultrasound estimate for women of Hispanic ethnicity compared with non-Hispanic White women. However, the sample of Hispanic women in the Hoffman article was small and nonrandom, so more research needs to be done on this specific topic to accurately assess this association (Hoffman et al., 2008). It has also been found that LMP estimates are even greater than ultrasound estimates for births to male children and in cases of multiparity (birth to more than one child; Kullinger et al., 2016). Conversely, many factors have been found to be associated with an LMP estimate that is significantly lower than the ultrasound estimate. These factors include nonoptimal BMI, unemployment, smoking, young maternal age, and female fetus (Kullinger et al., 2016). Such factors may be important for studies evaluating preterm birth and its possible determinants.

Conclusion

Overall, most studies found that there was either no difference between LMP and ultrasound GA estimates or a small but significant difference. Nonetheless, most studies also concluded that there was no difference in the rate of preterm delivery between the two methods, and this indicates that estimates derived from the self-reported last menstrual period may be a suitable method for predicting GA for studies focusing on the determinants of preterm birth. Therefore, given that most studies have found that there is no clinically meaningful difference between estimates by LMP and ultrasound, LMP-based estimates are a valid and accurate method for approximating GA. Not only this, but also because of the practicality and cost-effectiveness of LMP estimates, this method may be preferred over ultrasound estimates, especially in cases of large-scale studies in low-resource areas. This is an important consideration as preterm birth rates tend to be highest in socioeconomically disadvantaged locations, and studies evaluating this phenomenon are greatly needed. As it has been demonstrated in several past studies, LMP GA estimates are a promising alternative to ultrasonography-based estimates in disadvantaged areas that may not have a sufficient amount of trained medical professional or funds needed to perform ultrasound examinations. Therefore, given that these findings demonstrate both the validity and the accessibility of LMP estimates, this measurement should be accepted as a legitimate estimation method for GA, both in clinical settings and in research initiatives. Using LMP-based estimates over ultrasound-based estimates would open the door for more comprehensive research focused on disparities in adverse birth outcomes to be conducted in critical low-resource areas.

Nonetheless, although LMP has been demonstrated to be an accurate estimation method for GA, there are still some ways in which its accuracy can be improved, and this improvement would incentivize more researchers to use it as their main method of estimation in their

research. One potential target for improvement could be maximizing each mother's certainty in the date of her self-reported last menstrual period. Uncertainties in this date greatly contribute to inaccuracies in LMP-based estimates. In fact, Hoffman et al. found that the average difference between LMP- and ultrasound-based estimates for women who were "very sure" and "pretty sure" was 0.5 and 0.6 days, respectively. However, the difference was greater than 2 days for women who were "somewhat sure" and "very uncertain" ($p < .001$) (Hoffman et al., 2008). Therefore, simply giving each woman who is enrolled in a study a calendar to help them track their menstrual cycle may significantly increase the accuracy of LMP estimates by increasing the certainty in the women's self-reported last menstrual period. It has also been found that there is a digit preference for dates that are multiples of 5 when women self-report their last menstrual period (Hoffman et al., 2008; Pearl et al., 2007). One way to overcome this phenomenon could be to provide women with calendar that has the days of the week and week numbers but does not have the date numbers and then ask them to estimate their LMP from that calendar. This may lead women to base their estimates on days of the week rather than on the digits of the date, which would decrease the inconsistencies caused by digit preference.

In addition to strategies aimed at decreasing the uncertainty in the recall of the last menstrual period, some maternal and fetal characteristics are associated with a greater discrepancy in GA estimation, and these factors should be considered in future analyses. Both maternal morbidities, such as diabetes and hypertension, and maternal characteristics, such as age, education level, and marital status, contribute to greater discrepancies between LMP-based GA estimates and ultrasound estimates. Given this, it would be valuable for more studies that evaluate the effects of specific maternal characteristics on GA estimates to be conducted. Once more information is known on these variants, GA estimates can be appropriately adjusted to account for these discrepancies, and this would further optimize the accuracy of the LMP-based method of GA estimation. However, although the accuracy of self-reported LMP estimates vary with respect to critical maternal characteristics, several studies have demonstrated the accuracy and validity of LMP estimation for most healthy women with regular menstrual cycles. Therefore, LMP-based estimates can serve as a valuable and valid alternative to ultrasound-based estimates in studies evaluating preterm birth in low-resource areas.

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LITERATURE REVIEWS

How Low Socioeconomic Factors Influence TB Drug Resistance in South Africa: A Scoping Review

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Abstract:

Tuberculosis (TB) is an infectious disease caused by the bacterium *Mycobacterium tuberculosis*. TB is one of the top 10 causes of death worldwide. In 2016, 10.4 million

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people were affected with TB worldwide and 1.7 million died from the disease. More than 95% of these deaths occur in low- and middle-income countries, such as South Africa. Resistance to antibiotics is one of the challenges that people living with TB face every day. The purpose of this scoping review is to examine the high prevalence of TB among individuals with low socioeconomic status and how this pattern highlights the health disparity in South Africa. Twenty-three research papers were studied, and three themes were identified: (a) poor treatment and retreatment of TB, (b) factors of default—stopping the treatment prematurely, and (c) intervention strategies. Our results demonstrate that TB treatment is crucial to stop the disease from amplifying prevalence and mortality rates. Achieving these goals requires a holistic approach, by not solely focusing on the biomedical perspective but considering social implications to curb the epidemic. Poverty decreases the chances of a patient completing treatment, which leads to a greater risk of developing drug-resistant TB. Further studies should be done to examine the correlation between low socioeconomic status and the rising incidence rate of drug-resistant TB in South Africa.

Keywords: Tuberculosis, Socioeconomic Status, MDR-TB, South Africa, TB Drug Resistance, TB, Prevalence, Poverty

Introduction

Tuberculosis (TB) is the leading cause of bacteria-related deaths according to the World Health Organization (WHO). One-third of the global population is infected due to easy transmission through close contact and the inability of the immune system to destroy the intracellular organism, *Mycobacterium tuberculosis*. The bacterium usually attacks the lungs, but it can also attack any part of the body such as kidney, spine, and brain. Not all those infected with TB have symptoms, spread the disease, or become sick. This form of TB, called latent TB, is the most common. Many people who breathe in the bacterium and get latent TB infection never develop the disease; however, latent TB may become active if the immune system becomes compromised. TB is one of the top 10 causes of death worldwide, but it is curable.

There are two types of active TB—drug-sensitive, which responds to the four antibiotics that target the bacterium, and drug-resistant, which also has two other forms. Multidrug-resistant TB (MDR-TB) does not respond to two of the four antibiotics; extremely drug-resistant TB (XDR-TB) is an aggravated form of MDR-TB caused by bacteria that do not respond to second-line treatment drugs, leaving the patients without treatment options in many cases (Ebonwu, Tint, & Ihekweazu, 2013, p. 1043). These forms of resistant TB are a concern especially for people living with HIV or any other conditions that can weaken the immune system. Without treatment, 45% of HIV-negative and all HIV-positive people will die (WHO, 2016, p. 12). Second-line treatment drugs are limited, 50 to 200 times more expensive than the drugs for sensitive TB, and require a more aggressive treatment of 2 years. According to the WHO, there were 480,000 new cases of MDR-TB in 2015 that needed second-line treatment drugs worldwide. MDR-TB arises when anti-TB medicines are used inappropriately, for example, incorrect prescription, inadequate quality drugs, or patients stopping treatment prematurely.

TB is often known as a “disease of the poor” because the burden of TB is influenced by a strong socioeconomic gradient. As a result, the poorest countries and the poorest communities of those countries tend to have the highest incidence and prevalence of TB (Barter, Agboola, Murray, & Bärnighausen, 2012, p. 2). This is because they often live in overcrowded areas and

have poor working conditions and nutrition, which causes the immune system to become more vulnerable to invading organisms such as *Mycobacterium tuberculosis*. TB can also be a factor that increases poverty because it reduces the patient's physical strength and ability to work. Financial constraints, such as the costs of medication and the time costs associated with utilizing health care, have also predicted non-adherence to TB medication (Spence, Hotchkiss, Williams, & Davies, 1993, p. 760).

TB is one of the world's deadliest diseases, having one-third of the world's population infected and reporting 1.7 million deaths during 2016, according to the WHO. In the United States, the number of people who die of TB and the incidence rates have decreased in the past decade for all racial and ethnic groups. However, other countries, such as India, Indonesia, China, Nigeria, Pakistan, and South Africa, are still reporting high numbers of TB cases (WHO, 2016, p. 67). Our study was focused on South Africa because of the high incidence, prevalence, and mortality rates of TB in this country.

South Africa is a middle-income country, where the low working class accounts for the vast majority of TB cases. This country has the largest burden of MDR-TB in Africa, with a steady increase in the number of cases since 2004. As shown in Conradie et al. (2014), the number of MDR-TB cases has increased all around the country. For example, Eastern and Western Cape, two of the most important provinces, detected 300+ cases in 2004, and this number spiked to 2,200+ cases in 2012. In 2013, default rates greater than 20% were reported in South Africa (Kendall et al., 2013, p. 2). South Africa has seen cases of TB since the 17th century, but it was not until 20th century that the disease was made notifiable throughout the whole country due to the spiking numbers. Denial, lack of political will, and poor implementation of policies and programs worsen the situation (Kanabus, 2017). The high number of HIV incidence and prevalence is also driving the TB epidemic with TB/HIV co-infection rates above 60%.

The aim of this scoping review was to gather information on TB drug resistance in relation to socioeconomic status in different provinces of South Africa. The high prevalence of TB among low socioeconomic status highlights the social and health disparities in South Africa. This assisted us in the development of our research question, "How do socioeconomic factors influence TB drug resistance in South Africa?" Our goal is to bring light to the gaps in literature studies of this issue and allow us to have a greater understanding to better target one of the factors that plays a role in TB drug resistance.

Methodology

A scoping review seeks to condense and map the key components in a research area by the main sources and available evidence. The review can stand as its own entity, especially if the interest is in an area that has not been researched extensively before (Arksey & O'Malley, 2005, p. 5). However, a scoping study aims to take the available literature and condense it to provide detailed coverage (Mays, Roberts, & Popay, 2001, p. 194). We used Levac, Colquhoun, and O'Brien's (2010) PCC mnemonic to construct our research question, focusing on the population, concept, and context.

In our search, we utilized various search engines, including PubMed, JSTOR, ProQuest, and Google Scholar. The keywords and terms used were Tuberculosis, socioeconomic status, MDR-TB, South Africa, TB drug resistance, TB, prevalence, and poverty. Articles selected were

peer-reviewed and published in or after 2010, with the exception of the article “Tuberculosis and poverty” (Spence et al., 1993).

Initially, we decided to limit our research to Western Cape, but realized that the demographics were not an accurate representation of South Africa. Given the higher socioeconomic status of Western Cape, we would not be able to accurately capture the influence of different socioeconomic levels on TB prevalence. Thus, we widened our search to include all nine provinces in South Africa: Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga, Northern Cape, North West, and Western Cape. Although we found 20 articles relating to our topic, through inclusion and exclusion criteria such as study location, population, and important results, only 16 articles produced relevant information. After selecting the articles, the data were charted chronologically in an excel spreadsheet. The spreadsheet included author(s), year of publication, study location, study population, aims of study, and outcome measures/important results. We only included articles that mentioned TB and drug-resistant TB, that attempted to focus on South Africa, or that related to socioeconomic status.

Findings

Inadequate Treatment and Retreatment of TB

One of the themes found throughout the articles was the inadequate treatment and retreatment of TB and how it leads to a higher risk of developing MDR-TB. The lack of efficient treatment was found to be a major indicator of drug-resistant TB and MDR-TB and has been an ongoing issue since the past (Green et al., 2010, pp. 7–8). Another crucial factor that adds to the increase in MDR-TB cases is the number of patients who prematurely stop the treatment and require retreatment. According to Ebonwu et al. (2013), 80% of MDR-TB patients, out of a population of 900, were found to have previous history of anti-TB treatment. There is a strong association between retreatment and drug resistance, which suggests that is how patients acquire resistance. Most of the MDR-TB cases in South Africa are due to inadequate treatment programs. For example, there is a large gap between the number of diagnosed MDR-TB cases and the number of those who started treatment in Gauteng (Ebonwu et al., 2013, p. 1043). These findings are similar to the national picture.

When treatment is delayed, or not started, the risk of morbidity and further transmission of MDR-TB is much higher. Poor access to treatment is also a barrier for successful MDR-TB treatment (Ebonwu et al., 2013, pp. 1047–1048). The high incidence of drug-sensitive TB and MDR-TB, along with the low treatment rates, has led to the perpetuation of XDR-TB emergence. In addition, XDR-TB susceptibility is not routinely provided (Streicher et al., 2012, p. 693). Drugs with a very low resistance are not accessible in South Africa, and access to new drugs is limited by the need to include at least four effective drugs in the regimen (McNerney, 2016, p. S68). South Africa’s budget toward this growing epidemic could play a significant role in the lack of access to new drugs. Approximately 70% of the budget, set to fight TB, goes to the treatment of MDR-TB cases (Streicher et al., 2012 p. 687), thereby affecting the efficient use of resources that could be used to combat the drug-susceptible TB epidemic. According to Streicher et al. (2012), a diagnostic policy was implemented that focused on high-risk patients being treatment failure cases, retreatment cases, and contacts of drug-resistant cases. Although this was used as a strategy to be cost-effective, it could play a role in the increasing number of drug-resistant cases. Even when conditions are controlled extremely well, highly

resistant forms of TB are still able to spread rapidly. This demonstrates how MDR-TB could spread and affect populations at the global level, especially in areas where clinical health care systems are subpar (p. 693). This is important because even if conditions are ideal, the bacterium will still exist. Therefore, the quality and efficiency of treatment need to be addressed to suppress the epidemic of drug-resistant TB in South Africa.

Factors of Default

Prematurely ending treatment and the factors leading to defaulting from treatment is another theme found throughout the articles. Those living in poverty might prematurely stop treatment due to lack of education, lack of income, and lack of transportation to visit the hospitals to receive their treatments. Kendall et al. (2013) found that prematurely stopping MDR-TB treatment is a major barrier to controlling the epidemic (p. 1). When reviewing the articles, low socioeconomic status proved to have a substantial impact on TB drug resistance. This resistance is often times caused by default in treatment and was supported by several articles. Although TB treatment and diagnosis are free, according to the national policy guidelines on the management of drug-resistant TB, direct and indirect costs still proved to be a major barrier. Direct costs were found to include nonprescribed medications bought by patients, consultation fees and diagnostic tests from private practitioners, transportation, nutritional dietary supplements, and food during their clinic visits. Indirect costs were found to include the inability to work and loss of home productivity (Ramma et al., 2015, pp. 1513–1514). Studies showed how TB contributes to the burden of poverty by making patients incur direct and indirect costs of the treatment. These direct and indirect patient costs for TB patients and their households can be troublesome for average income earners. Due to financial constraints, when patients start feeling better, they typically end up stopping treatment early which leads to higher rates of retreatment. All these costs make up 11% of the average annual income of the family (Barter et al., 2012, p. 11). Ramma et al. (2015) found that as many as 56% of patients reported having no source of income before treatment and 47% of patients reported having no source of income after treatment. It is likely that treatment costs, as well as other costs associated with treatment, were catastrophic for a large number of patients and could push those with no source of income further into poverty (p. 1517). Therefore, TB can cause or exacerbate poverty (Barter et al., 2012, p. 15). This shows how the association of TB and poverty is cyclical. Furthermore, the time between symptoms and diagnosis has been found to be the highest amount of direct costs. A lot of these costs were mainly toward nutritional supplements. Prior to treatment, 72% of income loss was found (Foster et al., 2015, p. 46). These studies show how direct and indirect costs can be a factor of default because those of low socioeconomic status are unable to financially support the treatment.

Poverty is one of the common predictive factors independently associated with nonadherence to anti-TB drugs. Naidoo et al. (2013) emphasized that poverty stands in the way of behavior that promotes health, such as being able to adhere to a treatment program. This is because those who face economic barriers do not typically live in an environment that promotes or facilitates behavior that leads to better health outcomes (p. 7). For example, in KwaZulu-Natal, Maharaj, Ross, Maharaj, and Campbell (2016, p. 3) found that out of the 380 patients questioned with MDR-TB, 76.9% were not currently employed and 66.5% reported a household income of less than R3,000 (US\$243.86). This unemployment rate is drastically higher than the overall unemployment rate of 24% in KwaZulu-Natal, according to the 2017 Quarterly Labour Force Survey from Statistics South Africa (2017, p. 11). In addition to these

findings, Kendall et al. (2013) found younger age, unmarried status, unemployment, informal dwelling, rural address, and diagnosis of MDR-TB at a mobile clinic as other risk factors for default (p. 4). These studies capture how lower socioeconomic status, as opposed to those in higher socioeconomic communities, exacerbates the likelihood of default. This shows why poverty has led to a greater number of drug-sensitive and MDR-TB cases.

Strategies to Increase Compliance

In the past, default from MDR-TB treatment completion has been proven to be challenging due to the long duration of treatment of 18 to 24 months, high pill burden, requirement of injections, and frequent side effects. Due to recognition of these challenges, a new shorter treatment regimen has been implemented in 2016. The new WHO guidelines recommend a standardized 9 to 12 months shorter treatment regimen. Of the 7,665 MDR-TB patients studied, 84% completed treatment with the shorter MDR-TB regimen, whereas only 62% completed treatment with the longer regimen. The new, shorter treatment also increases the demands for diagnostics of TB and MDR-TB. Line-probe assay (LPA) technology is a molecular method that is used to detect resistance to rifampicin and isoniazid. LPA typically only takes several days to complete and is a preferred diagnostic approach. Seventy countries that are considered to be low and middle income were found to have more than 500 laboratories capable of performing LPA technology (Falzon et al., 2017, p. 9). Gelmanova et al. (2011) used the Sputnik intervention to treat high-risk default patients. The program differed from standard care by putting more emphasis on caregiving. More providers are made available to be able to establish more of a relationship with the patient, helping to ensure easier access specialists, psychological support, and default searching. Sputnik care providers are with the patient from the beginning to end of treatment. The intervention was found to increase adherence to treatment (p. 1374). Other intervention strategies that were suggested included consistent directly observed treatment (DOT), specifically with a community health worker (CHW) rather than a health care worker in a facility or nurse. The use of a standardized regimen was found to be more effective than individualized regimens. In addition, smaller group sizes in regard to the treatment program by decentralizing services and patient education were all found to reduce default rates. The strategies were found to be inexpensive, effective, more community-based, and patient-centered affecting compliance to interventions (Toczek, Cox, du Cros, Cooke, & Ford, 2013, p. 302).

According to Streicher et al.'s (2012) study, low treatment rates of drug-sensitive TB and MDR-TB have perpetuated the emergence of XDR-TB (p. 693). This shows the importance of developing intervention strategies for XDR-TB patients. Income support was one of the imperative needs stressed by patients and their families to relieve the burden of XDR-TB treatment. A way to provide income support was vocational facilities to improve economic opportunities and provide income (Senthilingam et al., 2015, p. 1159). Overall, the patient-level factors regarding poverty need to be looked at in a holistic manner to improve treatment success.

Recommendations and Conclusion

Recommendations

After reviewing the 16 publications regarding the prevalent issue of low socioeconomic factors and how it affects TB drug resistance, the intervention strategies noticed were as follows: shorter regimen, more diagnostics, psychological evaluations, substance abuse rehabilitation, transportation, food aid, and income support. This system has several gaps and further

intervention methods needed. The continuation of studies on various stages of treatment and the cost effects are crucial in lowering the income burden of TB patients. Past research demonstrates that patients who are diagnosed at mobile clinics exhibit higher default rates. Therefore, further studies on the quality of health care systems in rural environments in South Africa need to be done. Furthermore, drug susceptibility testing is needed to ensure that the new regimen is effective for patients and to further prevent the spread of MDR-TB and emergence of XDR-TB. The new 2016 regimen is based on the likelihood of each medicine's effectiveness, which should be determined, in part, by drug susceptibility testing (Falzon et al., 2017, p. 6). After reviewing the literature and considering our experience at hospitals and clinics in Cape Town and Nelspruit, we recognized a need for a better scheduling system that increases the efficiency of the patient's visit to health care facilities. This is because health care facilities are often overcrowded and lack organization, which leads to increased risk of transmission and possible deterrent of patients returning and increases the direct and indirect costs of the visit.

Conclusion

From this study, we conclude that low socioeconomic factors, for example, income, transportation, and food availability, play a crucial role in drug-resistant TB in South Africa. Our goal to bring light to the gaps in literature allowed us to address the issue of high prevalence of TB and how default rates are caused and heightened by poverty. TB is a disease that carries heavy consequences other than to an individual's health. This disease is spread airborne by coughing and close contact. Those living in close, underdeveloped, and polluted environments are at a higher risk of infection. This is detrimental for those living in poverty because these individuals already struggle financially. Therefore, they would not be able to afford treatment or simply getting themselves to a government hospital. This means these individuals go about their daily lives infected, which is how TB continues to spread rapidly in these settings. Even if an individual was able to take off work to go to the hospital, the inefficiency of the system and queue would not guarantee the individual would be seen by the doctor.

However, some individuals living in poverty do receive treatment, although the quality is much lower, and incidence of defaulting is much higher. Poor treatment and retreatment contribute to an increased risk of TB in poverty-stricken areas. Just because an individual begins treatment does not necessarily mean they will physically and economically be able to complete the treatment, which is defaulting. An unfinished treatment does not cure a person and actually only harms them further. Having to continually begin treatments over again increases the incidence of drug-resistant TB, which has been a growing problem. As mentioned in the recommendations, more research, drug susceptibility testing, and better scheduling systems need to be implemented to curb the consequences from the direct and indirect costs of extra medication, consultation fees, transportation costs, inability to work, and so forth. Without any action, there will be no breakthrough in lowering the incidence of TB, and it could possibly only get worse.

In reviewing the articles, we found many intervention strategies to begin solving the issue and were able to develop some of our own, as mentioned above. The amount of literature on low socioeconomic factors and how it affects TB has increased. However, feasible strategies are needed to combat TB and drug-resistant TB. Further studies should be done to examine the correlation between low socioeconomic status and the rising incidence rate of drug-resistant TB in South Africa.

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LITERATURE REVIEWS

Mother Nurture: Making Baby-Friendly Hospital Policies More Health Equitable for African American Women

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Abstract:

In the United States, the benefits of breastfeeding are well known, but, despite numerous efforts to increase breastfeeding rates, Black women continue to breastfeed at lower rate than women of other races. Barriers that contribute to low breastfeeding participation among African American women include social position (e.g., race and socioeconomic status) and limited access to pre- and postnatal care tailored to their needs. This literature review discusses the disparities in breastfeeding rate between Black women and women of other races, the role of Baby-Friendly hospitals in promoting breastfeeding, and the significance of family in Black women infant-feeding decisions. A systematic search of online databases and gray literature was conducted. The results identify barriers and influencers of infant-feeding decision-making for Black women and highlight protective factors that should be incorporated into Baby-Friendly hospital policies. Finally, the findings of the literature were used to suggest how evidence-based Baby-Friendly practices should be culturally adapted to reflect the lived experiences of African American women to effectively eliminate breastfeeding rate disparities.

Keywords: African American, Baby-Friendly, Baby-Friendly Hospital Initiative, Breastfeeding, Breastfeeding Duration, Breastfeeding Rate, Cultural Adaption, Evidence-Based Practice, Family, Support, Ten Steps to Successful Breastfeeding

Introduction

For decades, breastfeeding awareness campaigns have promoted breastfeeding and its benefits to mothers (Kukla, 2006; Wolf, 2003). If 90% of the mothers exclusively breastfed for 6 months, as advised by the World Health Organization (WHO), nearly 1,000 infant deaths would be prevented annually in the United States (Bartick et al., 2016). If these mothers continued to breastfeed for a year, 2,619 maternal deaths would also be avoided (Bartick et al., 2016).

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“Breastfeeding is the natural biological conclusion to pregnancy and an important mechanism for the continued normal development of the infant” (Baby-Friendly USA, n.d.). Human milk is species-specific, making it superior to other feeding options, providing perfect nutrition and immune protection to the infant. Maternal benefits of breastfeeding include reduced risk of breast and ovarian cancer, postpartum depression, diabetes, and heart disease (Eidelman et al., 2012). Beyond individual benefits, breastfeeding has many public health benefits by decreasing the incidence and/or severity of communicable and chronic diseases. In addition, breastfeeding generates family, environmental, and economic benefits at the community level. For example, if 90% of the U.S. families breastfed exclusively for 6 months, the United States would save US\$13 billion per year in health care expenditures (Bartick & Reinhold, 2010). Because of the immense societal impact of breastfeeding, infant feeding should not be considered an individual lifestyle choice, but rather a basic health issue, as the American Academy of Pediatrics stated in 2012 (Eidelman et al., 2012). Therefore, advocacy and support for breastfeeding by providers in health facilities are essential for the achievement of this public health objective.

Increasing breastfeeding rates and duration is a frequent goal of public health professionals and organizations. This can be demonstrated in The Surgeon General’s Call to Action to Support Breastfeeding 2011 and Healthy People 2020 (Healthy People, 2018; U.S. Department of Health and Human Services, 2011). Although there have been significant advancements that have occurred over the years in the scientific knowledge of the benefits of breastfeeding, the processes behind these benefits, and the clinical management of breastfeeding, the U.S. breastfeeding rate has been remarkably low compared with other developed nations (Organisation for Economic Co-operation and Development (OECD)—Social Policy Division—Directorate of Employment, Labour and Social Affairs, 2009). The United States consistently falls short of its own Healthy People targets for breastfeeding. Even more troubling, U.S. Black women have even worse breastfeeding rates compared with women of other races in the United States. Data from the Centers for Disease Control and Prevention (CDC) show that 58.1% of African American women breastfed in the early postpartum period, with 27.5% still breastfeeding at 6 months postpartum, compared with 77.7% and 45.1% of White women, respectively, and 80.6% and 46% of Hispanic women, respectively, during the same periods in 2010 (Reeves & Woods-Giscombé, 2015). In addition to the benefits of breastfeeding previously discussed, increased participation in breastfeeding among the African American population will decrease the infant mortality disparity and foster mother-child bonding, which could contribute to stronger familial ties, healthier relationships, and emotionally healthier adults, improving the health of the African American population long term (Reeves & Woods-Giscombé, 2015). Black women’s general lack of agency amid social constraint often limits their access to holistic post- and pre-natal care that is specific to their needs. Moreover, the disproportionate allocation and assurance of health and social programs constructs inequity in the health care system and collectively contributes to the breastfeeding rate disparity among Black women compared with women of other races.

Baby-Friendly Hospitals’ Role in Breastfeeding Promotion

One in three mothers stops breastfeeding without hospital support, underscoring the need for hospital lactation support (CDC, 2017). The Baby-Friendly Hospital Initiative (BFHI) is

Table 1. Ten Steps to Successful Breastfeeding

Have a written breastfeeding policy that is routinely communicated to all health care staff.
Train all health care staff in the skills necessary to implement this policy.
Inform all pregnant women about the benefits and management of breastfeeding.
Help mothers initiate breastfeeding within one hour of birth.
Show mothers how to breastfeed and how to maintain lactation, even if they are separated from their infants.
Give infants no food or drink other than breast-milk, unless medically indicated.
Practice rooming in - allow mothers and infants to remain together 24 hours a day.
Encourage breastfeeding on demand.
Give no pacifiers or artificial nipples to breastfeeding infants.
Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or birth center.

Table 1. The Ten Steps to Successful Breastfeeding that hospitals must abide by as a Baby-Friendly hospital (Baby-Friendly USA, 2010).

a Global Strategy for Infant and Young Child Feeding launched by the WHO and United Nations International Children's Emergency Fund (UNICEF) in 1991. The initiative seeks to ensure that all mothers successfully initiate breastfeeding and exclusively breastfeed for 6 months with the support of hospital facilities and support programs. There are 461 U.S. designated Baby-Friendly hospitals and birthing centers in all 50 states, the District of Columbia, and the Commonwealth of Puerto Rico (Baby-Friendly USA, 2017). About 22% of annual births (approximately 881,700 births) occur at these facilities (Baby-Friendly USA, 2017). The goal of this initiative is to implement practices and policies that protect, promote, and support breastfeeding (WHO, 2016). To do this, hospitals adhere to the *Ten Steps to Successful Breastfeeding* that include policy changes, specific provider training, and certain support services that can be made available to patients (Table 1).

The *Ten Steps* are evidence-based (Figure 1) and are proven to increase breastfeeding and duration rates by offering an optimal level of care for infant feeding and mother-baby bonding (Baby-Friendly USA, n.d.; Pérez-Escamilla, Martinez, & Segura-Pérez, 2016). On average, Baby-Friendly designated hospitals have greater breastfeeding initiation and exclusivity rates than the national average (Merewood, Mehta, Chamberlain, Philipp, & Bauchner, 2005; "One Hospital at a Time Overcoming Barriers to Breastfeeding," 2011; Philipp et al., 2001). That said, there is limited research that has studied the impact of Baby-Friendly facilities on Black women's breastfeeding rates. A 2009 study of all the Baby-Friendly hospitals in California shows that although Baby-Friendly hospitals consistently outperform the state-wide percentage of exclusive breastfeeding across every race, there is still a disparity of breastfeeding exclusivity between Black women and women of other races ("One Hospital at a Time Overcoming Barriers to Breastfeeding," 2011). There is significant room for improvement in bettering Baby-Friendly hospital policies for African American women (Miller, Louis-Jacques, Deubel, & Hernandez, 2018). This literature review will assess potential factors that influence African American women's infant-feeding decisions—this will be represented in the results section. Hopefully, the results provide insight on the reasons for the persistent disparities in breastfeeding between Black women and women of other races that



Figure 1. Components of Evidence-Based Practices

Figure 1. Evidence-based practices integrate clinical expertise, scientific evidence, and client/patient/caregiver values to provide high-quality services (Duke University Medical Center, 2017).

are deliberated in the discussion. Finally, the literature review and findings will inform recommendations for Baby-Friendly hospital policies that strive to improve breastfeeding rates and outcomes for African American women.

Methods

The University of Michigan Library, National Library of Medicine at the National Institutes of Health, National Center for Biotechnology Information, PubMed, JSTOR, Google Scholar, and Sage Journals databases were used to conduct a literature search. To gather resources, specified terms and Boolean connectors (AND/OR) were used: African American OR Black AND breastfeeding AND exclusively AND benefits; African American OR Black AND breastfeeding AND health disparity; African American OR Black AND breastfeeding AND rates OR duration, African American OR Black AND breastfeeding AND support AND culture; African American OR Black AND breastfeeding AND rates AND barriers AND socio-ecological; Breastfeeding AND Baby-Friendly Hospitals AND Impact; African American OR Black AND breastfeeding AND Baby-Friendly Hospitals. Results were also filtered for English language, scholarly journals, peer-reviewed, and the exclusion of newspaper articles. Most of the articles selected were qualitative studies that reflected on the personal reflections of African American women. Common qualitative research methods used were ethnographic and observational studies, surveys, focus groups, interviews, and literature reviews. Additional informational and statistical data were extracted from organizations such as the WHO, the CDC, and Baby-Friendly USA. A total of 27 articles and 10 additional sources were selected. Elected articles concentrated on Black women in the United States, breastfeeding experiences, beliefs, barriers, breastfeeding disparities between Black and White mothers, and the impact of Baby-Friendly Hospitals on breastfeeding behavior. In six instances, the bibliographic snowball method (finding articles from the bibliography of others) was used to identify additional sources. Relevant information and data from each publication were used to analyze the impact of Baby-Friendly Hospitals on breastfeeding rates for African American women and the significance of family in African American breastfeeding rates.

Results: Black Women's Unique Experiences and Social Position

The Role and Importance of Support

Following an extensive literature review, an emerging theme arose. Social support, specifically familial support, has been found by several studies to be a significant predictor of intention to breastfeed among pregnant African American women (Spencer & Grassley, 2013). Researchers consistently point to the extended family networks as a key foundation of resilience for Black families in general (Coles, 2006; McKinney, 2012). This resilience is demonstrated in the form of a sense of communalism among extensive networks of both blood relatives and nonkin among the Black community (McKinney, 2012). This asset of the Black community is exemplified in the sharing of resources across networks, households, and generations that allows for flexibility and quick adjustments to barriers. That said, three main motives illuminate the necessity of social support for Black women: encouragement and empowerment, the transfer of knowledge, and role models.

Encouragement and empowerment.

Positive social support can foster self-confidence and self-efficacy in the mother's ability to breastfeed. Empowerment to breastfeed, as defined by breastfeeding mothers, includes being equipped with the knowledge and skill for breastfeeding, feeling adequate in their ability and supply, overcoming barriers to breastfeeding, being accurately informed on the value of breastfeeding, and perceiving comprehensive support for breastfeeding (Heidari, Kohan, & Keshvari, 2017). The family unit as one of the main vessels to harvest this empowerment and encouragement is crucial to increase breastfeeding initiation and duration rates. Women who receive support for breastfeeding from the father of their infant are more likely to breastfeed, especially if they cohabitate (Reeves & Woods-Giscombé, 2015). In a study where mothers were surveyed in a hospital, the most significant factor that led mothers to initiate bottle-feeding was their perception of the father's attitude—family support was another influencer (Arora, McJunkin, Wehrer, & Kuhn, 2000). In addition to the infant's father, the maternal grandmother also is a significant influencer (Kessler, Gielen, Diener-West, & Paige, 1995). Breastfeeding advocacy by grandmothers in the form of valuing breastfeeding and loving encouragement is a need and want of mothers (Grassley & Eschiti, 2008).

Although familial protective factors are known, there is a disproportionate lack of family as well as peer support for African American women (Ringel-Kulka et al., 2011; Spencer & Grassley, 2013). This lack of support and encouragement connects to decreased initiation and duration of breastfeeding among African American women (Odom, Li, Scanlon, Perrine, & Grummer-Strawn, 2014). Support programs are another avenue in which Black women attain empowerment to initiate and continue breastfeeding (Asiodu, Waters, Dailey, & Lyndon, 2017). Community resources and programs create a supportive environment ideal for lengthening breastfeeding duration. Some evidence suggests that community-based breastfeeding support interventions that are designed and implemented for predominantly Black women have been successful (Mickens, Modeste, Montgomery, & Taylor, 2009).

Transfer of knowledge.

Given the fact that in the Black community marriage is less common and fathers are less likely to reside with their children (when compared with other races), Black homes are

typically headed by a matriarch (i.e., grandmother; McKinney, 2012). The role of the grandmother in African American families is imperative, involving the preservation of extended family and the communication of ideals, values, and cultural beliefs (McKinney, 2012). The transferring of knowledge and practices instills intergenerational support in a fluid and flexible family system (Franklin, 1997; McKinney, 2012). However, myths and false information about breastfeeding are often transferred in the family unit across generations. That said, maternal grandmothers are likely to be a primary source of parenting support and guidance for African American mothers (Hunter, 1997; McKinney, 2012). As maternal grandmothers bring their own infant-feeding practices and beliefs along with their support, they are great influencers of African American women's infant-feeding practices (Grassley & Eschiti, 2008). Mothers need and want grandmothers' support; however, their advice and concerns may reflect cultural beliefs that are in opposition to breastfeeding (Grassley & Eschiti, 2008). Moreover, a mother's decision to breastfeed is often swayed by the perspectives and values of the people in their social networks (i.e., family members, friends, co-workers, and church members; Asiodu et al., 2017). As breastfeeding occurs within the context of an extended family, it is important to educate grandmothers on breastfeeding benefits and best practices as well.

Role models.

Socialization occurs through the family unit:

... An important phenomenon to consider for families of color is the socialization of health behavior and attitudes. Bandura's (1986) social learning theory asserts that people learn indirectly by observing and modeling the behaviors and attitudes of others with whom they identify. (McKinney, 2012)

With that in mind, family breastfeeding history is an important predictor of breastfeeding initiation.

Knowing a family member or friend who has breastfed successfully in the past is a protective factor and significant predictor of breastfeeding initiation (Spencer & Grassley, 2013). There is a positive linear relationship between exposure to breastfeeding and a mother's confidence to breastfeed (Reeves & Woods-Giscombé, 2015). In a qualitative study of 80 African American Women, Infants, and Children (WIC) participants, it was a common theme that their early breastfeeding experiences and memories (i.e., watching your mom breastfeed your younger sibling or observing your best friend breastfeed their first child successfully) played a significant role in their current infant-feeding beliefs and preferences (Asiodu et al., 2017). There is also a positive relationship between exposure to breastfeeding and a mother's confidence to breastfeed (Reeves & Woods-Giscombé, 2015). Normalizing breastfeeding and creating role models that exhibit breastfeeding are important in the Black community. Creating positive visual experiences and memories related to breastfeeding and producing role models are crucial—for example, providing educational pamphlets that picture Black women breastfeeding rather than pamphlets that picture solely White women.

Discussion

Social support (especially familial support) was identified as a major influencer for African American women's infant-feeding decisions. Furthermore, three motivators highlight the

role of social support: encouragement and empowerment, the transfer of knowledge, and role models. These findings are important because many Black mothers intend to exclusively breastfeed but discontinue before the suggested 6 months, making them breastfeed at much lower rates than women of other races. The current Baby-Friendly hospital policies that have been implemented in clinical settings to promote and support breastfeeding do not address familial support or educating the family.

For unique family systems among families of color, it is important to study the impact of the family's ability to foster healthy development (McKinney, 2012). The strength of culture in Black families is collected in its sense of communalism (McKinney, 2012). African American families have many nonkin support persons within their social network, creating that sense of communalism. In African American families, grandmothers are central to multigenerational and extended family constructions. Grandmothers function as caregivers and cultural teachers having considerable authority and influence on childrearing decision-making (McKinney, 2012). In addition, marriage tends to be less common among African American families than families of other races (McKinney, 2012).

Researchers agree that the family is a prime source of socialization and is highly influential in human development and health. Due to the more collective culture of African Americans than mainstream Americans paired with their higher likelihood to live in multigenerational homes, a broader concept of the family is needed (McKinney, 2012). The consideration of the family and the support it provides could lead to a more comprehensive understanding of the risk and protective factors related to breastfeeding among the African American population, opening a whole new dimension of patient care.

It is crucial that health care professionals both provide adequate support and encouragement to mothers and remove any passive and active barriers that prevent mothers from breastfeeding. Cultural adaptation of the evidence-based Baby-Friendly hospital policies in real practice settings to incorporate the role of family is crucial.

Limitations and Cultural Adaption of Evidence-Based Programs

There are many benefits to implementing evidence-based programs to promote breastfeeding. However, cultural adaption is an essential action to consider when adopting an evidence-based intervention (EBI) with racial/ethnic and other minority groups (Marsiglia & Booth, 2015). Culturally grounded community work practice is extremely important in the domain of public health interventions. Although breastfeeding initiation rates at Baby-Friendly hospitals surpass the breastfeeding initiation rates at non-Baby-Friendly hospitals, there is still a disparity for Black women even at Baby-Friendly facilities. The Baby-Friendly Initiative stresses the role of health care professionals in protecting, promoting, and supporting breastfeeding, but does not encompass the economic, cultural, and political understanding of infant-feeding decisions and behaviors. Black women's breastfeeding behavior is a product of their unique experiences throughout their lifetime, influenced by environmental, cultural, and social factors (Figure 2). These factors are not addressed in the elements of evidence-based practices displayed in Figure 1.

A large benefit of EBIs is that they have been clinically proven and researched to be effective. That said, these interventions are often designed for and tested using middle-class White Americans, with the assumption that evidence of efficacy with this group can be

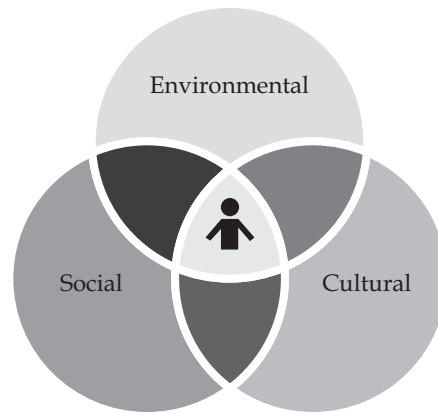


Figure 2. Factors that affect Breastfeeding Behaviors of Black Women at Individual Level

Figure 2. The interconnected social, cultural, and environmental factors that affect breastfeeding behaviors of Black women

transferred to nonmajority populations, which may or may not be the case (Marsiglia & Booth, 2015). EBIs that lack "... relevance to the needs and preferences of a subcultural group, even if the intervention could be administered with complete fidelity, would exhibit low levels of effectiveness ..." (Castro, Barrera, & Holleran Steiker, 2010). The cultural adaptation of evidence-based programs, practices, and policies has emerged as an intervention strategy and grown because of two trends: (a) the growing demand for EBIs and (b) the growing diversification of the American population (Castro et al., 2010). Cultural adaptation aims to enhance the effectiveness of interventions by grounding them in the lived experience of the participants. This process requires the systemic adaption of interventions to ensure a more optimal cultural fit without compromising scientific merit (Marsiglia & Booth, 2015).

More importantly, tailored community social and health programs (Geronimus, 2001) will be more successful in solving the root causes of health disparities that are unique to the personal biographies of the target population. Culturally adapted interventions allow providers to address specific risk factors and build on identified protective factors (Marsiglia & Booth, 2015). Culturally adapted programs also have the potential to improve client engagement in treatment and outcomes. Adapting interventions in partnership with communities enhances the community's commitment to the implementation of the intervention and improves the likelihood that the program will be sustained over time (Castro, Barrera, & Martinez, 2004). An

... intervention that is high in cultural relevance is characterized by (a) comprehension: understandable content that is matched to the linguistic, educational, and/or developmental needs of the consumer group; (b) motivation: content that is interesting and important to this group; and (c) relevance: content and materials that are applicable to participants' everyday lives. (Castro et al., 2010)

To achieve this level of cultural sensitivity, an intervention creator must develop a deep structural understanding of a subcultural group's culture (i.e., thought patterns, value systems, and norms) to develop a culturally relevant and effective EBI (Castro et al., 2010).

Breastfeeding should be encouraged as a cultural norm requiring family and societal support for African American mothers. The effect of cultural diversity on breastfeeding attitudes and practices must be acknowledged for effective interventions (Gartner et al., 2005). If this more holistic approach is incorporated into the *Ten Steps to Successful Breastfeeding*, Baby-Friendly hospital policies will become more health equitable for African American women, yielding high and equal breastfeeding initiation rates across all races. Currently, there is a lot of research pointing to the need for more attention on the influence of family in research and intervention development among Black women breastfeeding rates. However, there is little to no research on concrete strategies to improve breastfeeding rates, especially in relation to cultural adaptation.

Recommendations

Research to eliminate current disparities in rates of breastfeeding should be incorporated into clinical practice. One way to address this public health issue is to add an 11th step to the *Ten Steps to Successful Breastfeeding* that focuses on family-based interventions: *Educate family, friends, and other support persons about the benefits and management of breastfeeding*. This education should begin early in pregnancy and extend into the postpartum period. Education for families will help to dispel myths held within the Black community, such as breast milk being less adequate for babies than formula (Johnson, Kirk, Rooks, & Muzik, 2016). In addition, there should be educational pamphlets designed specifically for fathers and grandparents about their roles in supporting breastfeeding, and these should be distributed throughout hospitals, during breastfeeding classes, and during prenatal appointments. Family members and close support persons should also be encouraged to attend all pre- and postnatal visits as well as breastfeeding support programs with the mother. The implementation of these interventions should mirror the psychological, social, cultural, and societal needs of African American mothers (Johnson, Kirk, Rosenblum, & Muzik, 2015).

Moving Forward: Additional Measures to Consider

1. Foster protective factors that encourage African American women to initiate and continue breastfeeding.
2. Improve participation in Step 10: Help start breastfeeding support groups and refer mothers to them.
3. Increase the number of Baby-Friendly Hospitals in cities with high Black and African American populations.
4. Collect all breastfeeding data from Baby-Friendly hospitals in one large data set and categorize by race and other specific identity groups.
5. Increase research on the impact of BFHI on Black women breastfeeding behaviors.

Conclusion

Breastfeeding is the cornerstone of infant health, having many benefits for the mother, child, and community. However, Black women breastfeed at much lower rates than women of other races. Baby-Friendly hospital policies should address cultural and social barriers by connecting hospitals with communities, peers, and families. In addition, providing services

specific to the intersectional lives and narratives of Black women is the difference between equal and equitable Baby-Friendly policies. Further research on familial determinants of health disparities among the African American population is necessary to overcome this public health issue.

Every child deserves the best start in life. Our babies are our future.

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LITERATURE REVIEWS

Sexual Assault on College Campuses and American Culture of “Rape” and Masculinity: Identifying Fundamental Flaws in Education Initiatives

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Abstract:

Sexual assault on college campuses, specifically, is a prevalent issue in America. It is a fundamental manifestation of American culture and its degrading attitudes toward women. Sexual assault is a constant threat to the physical and mental health of women, which can carry significant consequences. A growing number of initiatives to address the problem of sexual assault have been developed and instituted at universities. This article aims to identify the underlying risk factors of sexual assault perpetration and to critically analyze shortcomings in education initiatives and policies. To obtain the necessary information, I engaged with journal articles and sexual assault survey findings and analyzed University of Michigan sexual assault educational programs. Through this analysis, I offer suggestions to address sexual assault in more meaningful and effective ways.

Keywords: Sexual Assault, Culture, Masculinity, Education

Introduction

The prevalence of sexual assault against women, on American college campuses and nationally, is both an alarming statistic and an indication of severely flawed social gender norms and constructs. The pervasive issues of sexual assault and intimate partner violence (IPV) are prominent barriers to achieving adequate women’s health, as females are forced to live under the constant threat of sexual violence. In recent years, universities around the United States have increasingly addressed the issue through policy formation and education initiatives. For example, in 2015, the State of Michigan granted more than US\$500,000 of funding to sexual assault prevention efforts at public universities (Elger, 2015). However, instances of sexual violence and assault against women continue to occur at an alarmingly high rate. In

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fact, a survey conducted by University of Michigan (U-M) researchers found that as many as 22.5% of undergraduate women at Michigan reported having been sexually assaulted (Survey Sciences Group, 2015, p. 4). While this number is sufficiently concerning, it is estimated that studies underestimate total assault rates possibly by a significant amount (Axinn, Bardos, & West, 2016, p. 8) because of a variety of limitations. According to research and literature on the perpetration of sexual assault, the underlying reasons for the frequency of this disturbing crime can be traced to society and its degrading view of females. Despite continuous efforts to decrease instances of sexual assault on college campuses and institutions around the United States, policies and initiatives have failed as a result of their narrow focus and their inability to address the fundamental cause of the issue. Sexual assault prevention programs inadvertently perpetuate gender roles and harmful stereotypes by focusing primarily on “how not to become a victim” rather than “how not to become a perpetrator.” Policies and programs aiming to reduce rates of sexual violence should target potential perpetrators and the fundamental risk factors for perpetration rather than solely targeting surface-level contributors, such as binge drinking and bystander intervention, that can only provide a temporary solution to a pervasive issue.

Literature Review

Sexual assault is a broad topic that has received increased attention in recent years. Although a large portion of sexual assault research focuses on surveys and collects data related to prevalence, the literature chosen for this review is primarily invested in the underlying psychological reasons assault occurs and how American culture upholds and develops harmful gender-role ideologies. Much of the literature chosen focuses on the fundamental societal and cultural risk factors that psychologically affect potential perpetrators over the course of their lives. Consideration of these factors is often absent from sexual assault prevention initiatives and should be taken into greater consideration when developing university programs.

One of the main risk factors for sexual assault cited in the literature is American rape culture, which is upheld by nearly every aspect of society. The most prominent and visible aspect of American society and culture is, arguably, the booming businesses of mass media, television, and advertising. Children grow up in an environment where degrading and objectifying images of women are readily available through these omnipresent sources. Early exposure to degrading representations of women through mass media normalizes sexual violence against women and the objectification of the female body, which increases a male’s likelihood of becoming a perpetrator of assault. While this exposure may not consciously affect a young male, it may affect his subconscious views or feelings toward women and lead him to treat them in more disrespectful ways. The content of mass-produced advertisements, video games, movies, and TV shows often focuses on sexualizing and objectifying the female body. These representations, in turn, influence and shape society’s view of women in an unfavorable way. In particular, the media’s presentation of society as a rape culture or “. . . a social and political landscape that upholds rape myth acceptance . . .” and “. . . creates a dangerous and victimizing atmosphere for survivors of rape and sexual assault . . .” (Forni, 2014, p. 6) is specifically influential for society’s view of women.

American culture is one that upholds the assumption of masculine superiority and contributes to the widespread issue and social acceptance of violence against females (Forni, 2014, p. 6). The media is a prominent portion of culture that not only supports this traditional

patriarchal and hegemonic masculine viewpoint (Forni, 2014, p. 8) but also maintains it through its oppressing representations of women. According to Harway and Steel's (2015) article in the *Psychology of Men & Masculinity*, the media reinforces associations of masculinity by consistently portraying events that display aggression, strength, dominance, and sexual conquests on behalf of males (p. 376). Observing these seemingly casual instances of violence on television, in movies, or in video games leads young males to believe from an early age that committing such acts is acceptable and not worthy of consequence. In fact, "... Hollywood fetishizes and stylizes rape in the name of dramatic effect ..." (Forni, 2014, p. 21), further contributing to this pervasive social issue. Because the media provides its consumers with instances of sexual violence that have insincere physical, emotional, or legal consequences, men in American society are led to believe that they, along with the female victim or survivor, will not experience these consequences either. Moreover, the cycle of victim blaming is heavily present in media, which indirectly contributes to the rape culture on college campuses and a male's tendency to blame the victim rather than himself (Forni, 2014, p. 8). Although there are a plethora of individuals with the power to distribute positive messages through the media, most are caught up in the male-dominant culture and defend the culture rather than strive to change it. Without the positive agency of those with media influence, it will not be feasible to decrease incidents of assault in college environments.

Although women have continuously gained greater equality and opportunities in society over the past few decades, American culture certainly remains rooted in patriarchy. The prevalence of this harmful viewpoint is evident through media, biased sexual assault education, and countless other prominent aspects of culture. Through society's encouragement and affirmation of male-dominant gender roles, young males develop a psychological and physical sense of superiority over females. This praise of masculinity is not only a defining cultural affirmation but also a factor contributing to high rates of gendered violence on college campuses. Although college campuses have increased efforts to provide support and counseling for survivors of sexual assault and rape, Harway and Steel argue that understanding the male perpetrators of these crimes is equally important to end the significant problem of assault on college campuses.

Analyzing and understanding American culture, one that has created and continuously promoted a particular conception of masculinity (Harway & Steel, 2015), allow for a broader understanding of the flawed aspects of culture and society and the ways in which they condone violence (p. 375). This gender-role ideology is one that emphasizes a male's need of and desire for sex (Franklin, Bouffard, & Pratt, 2012, p. 1473). It has been hypothesized that certain social constructions of masculinity may be a serious risk factor of sexual assault (McDermott & Kilmartin, 2015, p. 358). Harway and Steel (2015) argue that the two most prominent social influences on male perpetrators of assault are the social construction of masculinity and "the gender role strain" (p. 375). The social construction of masculinity is one that heavily reaffirms traditional gender roles that label women as inferior to men in all aspects of life. It values aggression, strength, and dominance, which all contribute to a male's subconscious self-image. It is an outdated and degrading social construction that contributes to the preservation of gender roles.

The gender-role strain theory "referred to by Harway and Steel" emphasizes how men internalize cultural belief systems about masculinity and gender roles and embodies the idea that

the subcultures that sexual assault perpetrators are involved in have very prominent influence over their propensity to commit sexual violence (Harway & Steel, 2015, p. 375). In addition, the confluence model, as outlined by McDermott and Kilmartin (2015), is a widely used framework in sexual assault perpetration research that emphasizes how some men struggle with an insecure, hostile masculinity that predisposes them toward sexual assault offending (p. 356). These theories uphold that it is primarily the damaging culture of America that shapes men and their views toward women. One of the major challenges with breaking down traditional gender roles is the lack of agency from individuals with the ability to alter them.

One study sought to investigate the combined ability of specific variables that have been identified as contributing factors to perpetration to predict the likelihood that sexually aggressive behavior will occur. The study enlisted 325 undergraduate men, who identified mostly as White and heterosexual, at a large Midwestern university. The study measured six risk factors: attitudes and beliefs (measured using the Hypergender Ideology Scale), social norms and/or peer influences (which measured reactions to offensive language and behavior), personality (which assesses the degree of internalization of prosocial values and beliefs), level of alcohol use, token resistance, and sexual aggression (measured by the Sexual Experiences Survey; Koss & Oros, 1982; Loh, Gidycz, Lobo, & Luthra, 2005, p. 1331).

The results of the study found a compelling correlation between gender-role ideologies, alcohol use, fraternity membership, and the perpetration of assault. It was determined that individuals who aligned themselves with more traditional gender-role ideologies were more likely to accept rape myths, more likely to be in fraternities, more likely to drink larger amounts of alcohol, more willing to use token resistance in sexual situations, and felt more comfortable in situations where women were being mistreated (Loh et al., 2005, p. 1332). This study indicated that antiquated gender roles and stereotypes upheld by certain aspects of society negatively affect people psychologically and threaten women and the level of respect they receive from others. The study also identified fraternities as institutions that are particularly supportive of these ideologies and encourage their persistence in American culture. Further research examining why fraternities specifically reinforce these types of values would be insightful for future policies aimed at reforming the college Greek system to be more progressive and accepting toward women.

Although alcohol consumption and party/hookup culture cannot be identified as fundamental causes of sexual assault, the environments in which they take place (such as fraternities) often reinforce traditional gender-role ideologies that are harmful to women. The male-dominant values maintained in society have a damaging impact when incorporated into the often free and reckless college environment. While the hookup and no-strings-attached culture of college campuses has been argued to be positive and empowering for women in some ways, the alcohol-centric and irresponsible college party culture upholds established associations of masculinity, leaves women vulnerable, and normalizes incidences of sexual assault. On most college campuses, "... alcohol use is consistently associated with hooking-up ..." (Sutton & Simmons, 2015) and is frequently accompanied by unplanned sexual encounters and unwanted sex. Many college students rely on alcohol and the party environment to partake in sexual activities as "... alcohol lowers inhibitions and allows students to approach potential hook-up partners ..." (Sutton & Simmons, 2015) with greater ease and confidence. However, binge drinking, and alcohol use in general, is a significant portion of college rape culture and is a reliable predictor of sexual assault victimization and perpetration (Sutton & Simmons, 2015). The correlation between alcohol use and assault rates is largely due to alcohol's physically

and mentally impairing abilities. For example, alcohol makes males more likely to act in an instinctual, aggressive manner and to misinterpret, or outright ignore, social cues. Moreover, "... the unplanned, casual, and ambiguous nature of the hook-up experience ..." gives men an opportunity to act aggressively toward a woman in order to obtain sex, and alcohol use only makes these behaviors more likely (Sutton & Simmons, 2015).

Aside from the immediate threats of binge drinking and the party/hookup culture, the general culture of college campuses is one that supports and preserves the masculine values of society. Much like the media and general American culture, college campuses are characterized by rape culture. Sutton and Simmons (2015) cite the rape culture hypothesis in their study of college campuses and sexual assault, which proposes that "... college campuses are environments that support the sexual domination of men over women through certain behavior ..." (Sutton & Simmons, 2015). These behaviors primarily include binge drinking, casual sex, and attitudes toward sexuality, such as the acceptance of rape myths (Sutton & Simmons, 2015). In fact, Sutton and Simmons (2015) found that the hookup culture of college campuses does foster an atmosphere that is conducive to the occurrence of sexual assault. This finding suggests that the combination and intersection of these individual factors in an alcohol-charged environment ultimately lead to a higher risk of sexual assault for women.

It is evident that the psychology of masculinity, which is upheld by certain aspects of society, is what allows potential perpetrators to develop negative attitudes toward women, which fundamentally drives sexual violence. Policies and prevention efforts are often aimed at teaching students how to avoid being assaulted, rather than examining how society can work together to reconstruct associations of masculinity to be more inclusive of "and fair to" women.

Relevance

The risk of sexual violence is a constant threat to health and safety that women have no choice but to live with. They are forced to adjust their lives by doing things such as watching what they wear, being careful how much they drink, and traveling everywhere in groups so that they can avoid being assaulted. As harmful associations of masculinity continue to be perpetuated in society, women are faced with situations that have the potential to negatively affect their physical, psychological, and social health. The following discussion highlights programs specific to U-M that seek to raise awareness of assault, educate students about it, and decrease its instance on campus.

The U-M Sexual Assault Prevention and Awareness Center (SAPAC; n.d.) outlines its programs and initiatives that aim to address sexual assault at every level of the social-ecological model. This public health model includes the individual, relationship, community, and societal levels. On all the levels, most of the university initiatives focus on education. For example, there is a first-year workshop in residence halls focused on "healthy relationship promotion" and a required sexual assault education module that addresses sexual assault and alcohol-related issues (SAPAC, n.d.). Relationship Remix, the first-year residence hall workshop, emphasizes communication and teaches how to properly give and receive consent in sexual situations. While this workshop is considered mandatory, there are no major consequences to missing it, and students often do not attend. In fact, the U-M campus survey indicates that 51.4% of female undergraduates and only 39.2% of male undergraduates attended their Relationship Remix workshop. Moreover, although the workshop addresses

issues of misinterpreting signals and indications of consent in sexual situations, it does not fundamentally address issues that contribute to sexual assault such as verbal pressure, "... which occurs in most cases of unwanted sexual penetration" Verbal pressure often occurs after the victim has already said no, and Relationship Remix does not necessarily provide tools for potential victims to counter this unfortunate fact.

In addition, the AlcoholEdu and Haven modules are a required educational component of the First-Year Experience that aims to inform students about issues involving alcohol and sexual assault. The AlcoholEdu portion is centered on responsible alcohol consumption and educates incoming students about how the consumption of alcohol affects a person's mental and physical state. The second portion of the program, Haven, helps incoming students to understand sexual assault and teaches them what may qualify as an assault crime. While the intention is promising, the modules suggest that alcohol consumption and sexual assault are always correlated and that alcohol is a more significant risk factor for assault than the individual perpetrator's actions and behaviors. Both Relationship Remix and AlcoholEdu/Haven fail to identify and confront more fundamental risk factors of perpetration and seem to focus solely on the individual, relationship, and community levels of the social-ecological model.

The creation of these modules is reflective of one of the university's broader strategies for assault prevention. In fact, the results of the U-M campus climate survey for sexual misconduct identify one of its goals as reducing the prevalence of campus alcohol consumption and, therefore, eliminating the potential for poor communication regarding consent in hookup situations (Survey Sciences Group, 2015, p. 12). The survey found that in most cases of unwanted penetration at U-M, the assault occurred under the influence of alcohol or drugs, which is why the university aims to teach responsible alcohol consumption (Survey Sciences Group, 2015, p. 4). While alcohol use is consistently associated with hooking up and is frequently accompanied by unplanned sexual encounters and unwanted sex, targeting alcohol use as the source of high assault rates is merely a temporary solution to a larger societal issue. Identifying heavy alcohol use as a primary risk factor for sexual assault encourages victim blaming and deems alcohol responsible for the crime rather than the actual perpetrator. It displaces the blame and discredits the survivor's experience. Policies and initiatives that identify alcohol use as the cause of sexual assault fail to address structural notions of masculinity and male dominance that foster a hostile environment for females.

Another U-M program that largely misses the mark is Change it Up!, a workshop aimed at developing student's bystander intervention skills. The workshop identifies a variety of situations where an intoxicated person is either unable to properly consent or a potential perpetrator is failing to pick up on signals that the potential victim does not want to engage in sexual activity. Students learn how to effectively intervene in these circumstances to help prevent these interactions from escalating to the point of assault. The workshop aims to place responsibility on an individual bystander and relies on their actions to determine the outcome of a situation. The basis of the Change it Up! program displaces blame from the perpetrator by attributing alcohol's effects and a bystander's failure to intervene as the cause of sexual assault. Although the program encourages students to be more aware of warning signs, and may be effective in increasing instances of bystander intervention, the workshop fails to recognize the true cause of the issue, which lies in the perpetrator and his behaviors.

There is a specific, promising branch of SAPAC that focuses primarily on potential perpetrators of assault and aims to educate college men about the issue. The Men's Activism Program holds a discussion series on men's role in the movement to end sexual assault, current associations of masculinity, and altering the culture. The intentions of this program are promising as they target the essential risk factors embedded within cultural associations surrounding masculinity and educate possible perpetrators rather than possible victims. In this way, the Men's Activism Program truly works on prevention at the most basic, societal level and works to displace blame from the victims or survivors to the perpetrators. However, the discussion series is not mandatory, is not advertised, and is relatively difficult to access. For instance, on SAPAC's website, there has not been an update on the program and its volunteers since the 2014 to 2015 academic year, yet the discussion series remains listed as a prevention initiative within the social-ecological model. The U-M community could certainly benefit from a more prominent focus on men's activism and men's place in the movement toward addressing sexual assault.

Future Directions

In future research and policies aimed at addressing sexual assault, the effectiveness could be improved by consistently involving the perpetrators in the discussion. It is essential to fully understand their motives, why they hold certain attitudes toward women, and how the college environment often supports these principles to create the most comprehensive, thoughtful, and effective sexual assault prevention initiatives. While speaking with and listening to the perspective of perpetrators can be controversial, they are a necessary voice that researchers and policymakers must consider. Future efforts, at universities in particular, should target populations who are at the highest risk of becoming perpetrators. Moreover, branches of SAPAC, such as the Men's Activism Program, should be expanded and improved upon by requiring mandatory discussion series and education to college men. This would open up a dialogue around the culture of masculinity and its harmful manifestations in society. A specific, male-centered, and accessible community to target would be fraternities. Policymakers should identify ways the program could appeal to men to attract more volunteers and participants. In addition, programs such as Relationship Remix and Change it Up! should undergo a fundamental reformation that maintains education on the individual, relationship, and community levels, but primarily acknowledges structural risk factors as fundamental contributors to assault. While the educational aspects should not be lost, both programs would benefit from activities and exercises that do not place responsibility on the victim/survivor, bystander, or alcohol, but on cultural stereotypes themselves.

Conclusion

The prevalence of assault and violence against women in college environments is disturbingly common and must be permanently decreased. Although universities have made significant efforts to lower rates of sexual assault, primarily through policy formation and prevention education, these programs are often too narrow in their focus. It is clear that the frequency of this crime is the indirect product of an extensive social and cultural problem that requires significant attention. Violence against women and the sexualization of their bodies is normalized by the hegemonic masculine media, and traditional gender roles are upheld by the media and countless other powerful aspects of American society as well. These values and principles then

carry over to college, where a patriarchal environment, alcohol, sex, and partying intersect in a potentially harmful way. Most importantly, sexual assault education initiatives are typically one-sided and involve instructing the female on how to avoid being assaulted.

However, to truly decrease the prevalence of assault crimes, it is essential that males are taught how not to assault. One of the ways this can be achieved is through mandatory education programs, or the expansion of existing programs such as the Men's Activism Program at U-M, that facilitate a discussion around risk factors within current cultural beliefs and how to actively work to alter them. In addition, including perpetrators in discussions of sexual assault would provide researchers and citizens alike with unique insight into what psychologically drives an individual to commit an assault. While it is difficult to open up and listen to a criminal, until perpetrators are incorporated into discussions, sexual assault prevention initiatives will be mostly one-sided and, therefore, ineffective. Despite the importance of making immediate changes, the social construction of gender roles is a deep-seated issue at the heart of this major social problem. Evidently, reversing the course of sexual assault and violence against women will require much more than university policy changes and comprehensive education. Reducing sexual assault rates will necessitate an extreme alteration in society's way of thinking that will only be facilitated through significant waves of reformation in nearly all portions of American culture.

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PERSPECTIVES

A Letter to the Next Leader of U.S. Public Health Policy

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Abstract:

Written after the resignation of Secretary of Health and Human Services Tom Price in September 2017, this article clarifies misconceptions regarding immunizations and vaccination policy. This article explores the retracted 1998 study by Andrew Wakefield that claimed to show a connection between the MMR (measles, mumps, and rubella) vaccine and autism, as well as four studies that disprove Wakefield's claim and the false beliefs that were created. These studies reflect on current vaccination rates and its consequences, the rise of measles, causes of undervaccination, and the impact social media has on the spread of false information. While they vary in the methods that target the antivaccination movement, these studies suggest that vaccinations are important in protecting the health of the country as a whole. Through an open letter addressed to the next Secretary of Health and Human Services, it is hoped that the controversies and newest findings presented will shape future health policy.

Keywords: Immunization, Vaccination, Herd Immunity, Policy

To the next Secretary of Health and Human Services,

To begin, I would like to tell you the story of a 10-year-old boy named Ben. Unlike most kids, he cannot go to school every day and play with his friends on the playground. Instead, he spends his day in a hospital room to be treated for acute lymphoblastic leukemia, a type of cancer of the blood and bone marrow. He was just 2 years old when he was diagnosed in 2010 and is in the midst of 3 years (at best) of chemotherapy and steroid treatment. This results in a compromised immune system, so he is susceptible to every germ that comes his way. Before diagnosis and since, Ben has received all his vaccines with the exception of live ones such as varicella (chickenpox) and MMR (measles, mumps and rubella) because of his immune response. While Ben attempted to receive his first doses of both varicella and MMR, his body

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did not respond well, so he has no protection against it. He and many others rely on herd immunity, an indirect protection from disease when a large percentage of the population is immune to an infection, to protect them from vaccine-preventable diseases. Unfortunately, many people are choosing not to vaccinate their children because of a public misbelief of vaccinations causing autism, disrupting this immunity (Helft, 2017).

Our current political leaders are not doing much to help those with compromised systems. President Donald Trump (2014) has reaffirmed his anti-vaccination stance, once tweeting, "Healthy young child goes to doctor, gets pumped with massive shot of many vaccines, doesn't feel good and changes – AUTISM. Many such cases!" Many studies have proven that there is no link between autism and vaccines, and the leader of this influential nation should not spread such misinformation. Although he does not have direct authority over vaccination policy, he does have the power to continue to spread this doubt of vaccinations and fill his administration with anti-vaccinators, such as Tom Price. Price, the recent Secretary of Health and Human Services, was in charge of overseeing the public health community and its services (Goldstein, 2017). He believed that vaccination policies should be left up to the states to decide; however, because of his recent resignation, the current health policy system is open for change. You, the next Secretary of this department, have the power to change Ben's life and many others' for the better. A number of actions are needed, such as creating legislation establishing vaccination requirements nationwide, strengthening our health care practices, reducing missed opportunities to immunization, and shrinking the amount of misinformation in the public sphere. Instead of focusing on all of these issues, we should divert our attention to educating the unsure public to create a pro-vaccination atmosphere.

The biggest problem with our vaccination system right now is the portion of the public unprotected by herd immunity and its long-term consequences. Ellen Tolsma, a lawyer interested in the possible legal and medical practices of mandatory vaccinations, wrote an article in the *Journal of Gender, Race & Justice* to voice her support for increased vaccinations and how it aids herd immunity. For herd immunity to be attainable, Tolsma states that

according to the CDC (Center for Disease Control and Prevention), the coverage target is greater than or equal to 95% vaccination coverage for the following vaccines: MMR, diphtheria, tetanus toxoid, and acellular pertussis (DTaP); poliovirus; hepatitis B (HepB); and varicella.

She also mentions the California outbreak of pertussis to highlight how far we are from reaching these numbers:

The CDC conducted a survey of kindergarten students in the United States during the 2011–2012 school year in which only 83% of kindergarten students had been vaccinated against pertussis, and of those who were unvaccinated, 4.2% were due to a medical exemption and 12.8% were due to a nonmedical exemption. (Tolsma, 2015)

This number falls well below the required percentage for herd immunity to be effective. Herd immunity against measles requires that 90% to 95% of the entire population is immune, whereas vaccination coverage is measured as the percentage vaccinated of the target population—which only includes people who are eligible for vaccination. This population does not include the sick people in the hospital, those without a fully working immune system, those with HIV, newborn babies who are too young to be vaccinated, the elderly population, and those on

chemotherapy treatment, such as Ben. To achieve 95% immunity in the population for measles, vaccination coverage needs to be higher than 95%. This is the scientific argument for a public health policy that aims at 100% vaccination coverage ("Herd Immunity (Herd Protection)," 2016). Without people vaccinating their children, those like Ben cannot be protected from preventable diseases that could possibly kill them because of their damaged immune systems. If we do not increase the number of vaccinated people, outbreaks like California's will continue to rise in number. Measles, a disease once eliminated in 2000, is making a comeback in the United States. According to a University of Minnesota study, 70.6% of the 667 measles cases from 2014 had no vaccination history (Matt, 2016). But why does it matter if just a few families decide against vaccination? Vaccines have meant far fewer deaths, hospitalizations, and disabilities than at any other time in history. The 667 measles cases could have been so much worse. If there were no measles vaccine, we would have at least 4 million cases in the United States every year. Before the introduction of the vaccine in 1963, nearly every one acquired the disease in childhood, and on average, 440 kids died from it annually in the decade prior ("Herd Immunity (Herd Protection)," 2016). As there is an increase in the number of vaccine-preventable disease cases, the chance for total herd immunity is growing smaller and the people who rely on the vaccination of others will become sicker. Even by convincing this small percentage of families that decide against vaccinations, we can increase our percentage rates so that our weakened immunity population can be more protected. By changing people's minds about vaccines, we can work to lower the amount of vaccine-preventable diseases.

To do that, we have to educate our public on the benefits of vaccines. Our opponents claim that vaccines are too expensive and autism is correlated with vaccines because the symptoms for autism are most prevalent after children receive their first dose of the MMR vaccine. Eula Biss, a nonfiction author who has written a *New York Times* bestseller on the vaccination of children, argues that most people think that the parents who do not choose to vaccinate their kids are poor and cannot afford to do so, resulting in the rise of the current unvaccinated pool. Despite what many assume,

unvaccinated children, according to a 2004 analysis of CDC data, are more likely than undervaccinated children to be white and to live in households with an income of \$75,000 . . . undervaccinated children, meaning children who have received some but not all of their recommended immunizations, are more likely to be black, to have younger, unmarried mothers, and to live in poverty. (Biss, 2013, p. 34)

While undervaccination is also a problem, the focus lies on the unvaccinated who disrupt herd immunity. Although the opposition is correct in the fact that health care is expensive in the United States, with US\$3.4 trillion being spent by the government nationwide (Bloom, 2017), Biss's argument shows that this detail does not play a role in the number of people being vaccinated. The problem is not money, it is mindset. While you cannot solve the pressing poverty issue our country faces, you can win the public trust of vaccines.

The anti-vaccination movement was sparked by researcher Andrew Wakefield et al.'s (1998) study that claimed to show a connection between MMR and autism:

The MMR vaccine, which contains a live virus, can cause in susceptible children a chronic measles infection. This in turn leads to gastrointestinal disturbances, which allows for toxins and chemicals to enter the bloodstream where they can access and damage the developing brain.

Although hundreds of studies have disproven Wakefield's claim causing the article to be retracted, he sparked a firestorm that still exists today. Those who support this movement have continued to voice their views through social media, spreading the movement's platform further in manipulative ways. A study from June 2017 focusing on social media trends found that this negative network focused on organizational bodies, such as the CDC, vaccine industry, doctors, mainstream media, and pharmaceutical companies, and framed around skepticism and distrust of government organizations that communicate scientific evidence supporting positive vaccine benefits (Kang et al., 2017). Rather than focusing on the scientific facts dispelling their claims, this movement spreads the lies further, creating a public misbelief. To move forward from this and to enforce pro-vaccination policy, you need to communicate the health benefits and continue to dispel myths on a larger scale. Thanks to your political power as the Secretary of Health and Human Services, this will be an easy feat. Through social media, talking with top executives in your department, and campaigning for vaccines, we can work our way to an immunized and healthy nation.

Each and every one of us has a Ben in our lives, and we would do anything to protect them. My Ben was my 6-year-old cousin Mariel, who was the little sister I never had. She was diagnosed in 2009 with a rare form of ovarian cancer and fought for her life every day until she passed away right as she began fifth grade. Just like Ben, she could not get the live vaccines, relied on herd immunity to stabilize her own health, and spent the best years of her childhood in a hospital room surrounded by machines and getting pricked by needles. While I cannot go back and change Mariel's fate, we can change the lives of the Bens and Mariels of today.

Secretary, you have a unique position only 23 people have ever had (All Secretaries of Health and Human Services, n.d.), and I hope you use it to serve the people of our nation. Claims about the unsafety of vaccines have been disproven countless of times, yet their importance has not hit the American public. Nationwide, the lives of the millions who are not eligible for vaccination are at risk. And by rewriting the vaccination narrative and informing our misled people, we can champion this deadly public health crisis. With your help, our nation—particularly our children—will see a brighter, healthier future.

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PERSPECTIVES

“Losing It”: Defining Virginity and Its Consequences for LGBTQ Women

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Abstract:

The social construction of virginity reduces sex to be a heterosexual, reproductive action that prioritizes cis-men's pleasure and orgasm. In reality, people's reported experiences of “virginity loss” are diverse and influenced by their sexual identity, preferences, and sexual violence. It not only ignores the sexual lives and experiences of lesbian, gay, bisexual, transgender, or queer (LGBTQ) women but also disempowers those of them who are survivors of sexual assault. This article argues that the conceptualization of virginity marginalizes the nuances of women's sexuality and further potentiates LGBTQ women's poorer sexual and emotional health outcomes. Using a feminist framework to critically engage with how the onset of sexual behavior is typically conceptualized in both science and culture, academics and clinicians should support the sexual experiences of LGBTQ women to promote inclusion and better access to and quality of health care.

Keywords: Sexual Health, Sexuality, Virginity, LGBTQ Women, Sexual Victimization

Feminist scholarship and theory comments on the sexual objectification of women and gendering of women as passive sexual actors, challenging the reduction of sex as a reproductive, heterosexual act. Gender constructions are further enforced by the conceptualization of virginity, which prescribes heteronormative, androcentric values to sexual activity. Reducing the essence of sexual intercourse to these tenets problematizes lesbian, gay, bisexual, transgender, or queer (LGBTQ) women's sexual experiences. At its best, it ignores and silences LGBTQ women's sexualities. At its worst, it further potentiates their vulnerability to experience sexual violence; the Human Rights Campaign (HRC, 2017) estimates that half of transgender and bisexual women will experience sexual violence in their lifetime, and discrimination surrounding their sexual and gender identities prevents access to help. Although many heterosexual individuals are awarded social capital following the loss of their virginity, LGBTQ women must newly navigate sexual experiences that are considered socially abnormal, which

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can obscure understandings of consent and disempower survivors, leading to poorer health outcomes. Virginity is a social construction that marginalizes the sexual experiences of LGBTQ women by privileging heteronormative sexual activities, such as penile–vaginal intercourse (PVI), and excluding ideas of female orgasm or pleasure. The general definition of virginity loss overlooks experiences of sexual violence and rape, for which LGBTQ women are at higher risk of victimization than heterosexual women. By using qualitative studies and empowering the experiences of LGBTQ women, cultural understandings of virginity and sex can be more inclusive, accurate, and feminist.

Virginity is the state of a person who has never had sex, which American society generally defines as PVI. This idea is proliferated through contemporary vernacular about sexuality, like going to “third base” or hitting a “home run.” It posits that the “goal” of sexual activity is PVI, which excludes a great number of women who have sex with other women. In Western culture, other sexual behaviors are colloquially called oral “sex” and anal “sex,” although they are generally conceptualized as steps to the end “goal” of PVI. However, younger communities’ voices show increasing ambiguity surrounding sexual behaviors and their respective terminologies by varying their definition of virginity based on contextual factors (Trotter & Alderson, 2007). In a study by Carpenter (2001) of university students’ sexual experiences and classifications, 25% to 56% of the participants included oral and anal sex in their definitions of virginity loss, and 80% believed virginity loss could be experienced with a same-sex partner. About half of the participants’ standards for virginity loss changed based on whether it was between same- and opposite-sex partners, and LGBTQ students were “considerably more likely than heterosexual women and men to say that vaginal, oral, and anal sex would all result in virginity loss, regardless of the sex of the actor” (Carpenter, 2001, p. 132). Definitions of virginity loss typically focus on genital contact, but many lesbian women consider providing or receiving stimulation through sex aids such as vibrators or strap-ons to be “definitely sex” (Horowitz & Spicer, 2013). This evidence suggests that traditional sexual scripts that define sex and virginity loss to exclusively PVI are not relevant to a large proportion of young adults—especially LGBTQ women.

Sexual intercourse is also typically defined by the presence of a male orgasm; male orgasm through masturbation is not usually considered a loss of virginity, so this again is dependent on the genital contact between sexual partners with specific emphasis on PVI (Randall & Byers, 2003). Our current sexual scripts not only narrow the definition of sex to PVI but also view sexual behavior as goal-directed, “completed” when an orgasm has been “achieved.” The presence of orgasm significantly increases the likelihood that people will consider a sexual encounter as “sex” and qualify it as virginity loss (Randall & Byers, 2003). Male orgasms specifically are seen as not just a common characteristic of sex but also an expected one. According to a study by Frederick, John, Garcia, and Lloyd (2017), 95% of heterosexual men said they usually or always orgasmed when sexually intimate, compared with 86% of lesbian women, 66% of bisexual women, and 65% of heterosexual women. Research on female orgasms is generally limited to heterosexual accounts, and both men and women report that the most common concern for a lack of female orgasm is its negative impact on the male partner’s ego (Salisbury & Fisher, 2014). Cultural emphasis on a male orgasm during sex and virginity loss overlooks both heterosexual and LGBTQ female pleasure by compartmentalizing female orgasms as evidence for a man’s sexual ability. Focusing sex on male pleasure, orgasm, and ego allows men’s sexual experiences to dominate cultural scripts of typical sexual acts, relying on a binary model of gendered sexual behaviors that postulate that women

are passive and are responsible for both pleasuring and receiving pleasure from their male sexual partners.

LGBTQ women's experiences with virginity are further nuanced by sexual violence. Virginity is stated as something that is "lost," or in some instances "given," but we rarely speak about experiences when it is "taken." People's ideas about virginity tend to vary in terms of whether rape could constitute virginity loss, and men are more likely to consider survivors of rape no longer virgins (Carpenter, 2001). The ambiguity of the virginity status of rape survivors contradicts the mainstream interpretation of virginity as a "gift" exchanged between sexual partners, symbolizing intimacy and maturity. However, imagining virginity as a "gift" associates it with meanings of purity and morality, which can disempower women after virginity loss (Carpenter, 2002). The conversation about whether or not nonconsensual interactions can constitute virginity loss further stigmatizes and marginalizes the experiences of sexual assault survivors. Women who identify as LGBTQ are statistically more likely than their heterosexual counterparts to experience sexual violence at some point of their lives. For example, according to the Centers for Disease Control and Prevention's 2010 National Intimate Partner and Sexual Violence Survey, 44% of lesbians and 61% of bisexual women experience sexual violence, including rape, compared with 35% of heterosexual women (Black et al., 2011). The National Coalition on Anti-Violence Prevention reports that 85% of advocates have worked with LGBTQ survivors who have been denied services because of their sexuality or gender identity (Black et al., 2011). Furthermore, as awareness of sexual assault rises in higher education, survivors are still constructed by societal norms to be heterosexual women, excluding LGBTQ women from sexual violence activism, dialogue, and treatment (Wooten, 2016). The frequency of sexual assault against people with marginalized sexual identities obscures our cultural scripts about virginity loss occurring heterosexually and consensually.

Excluding sexual violence from conversations about virginity silences survivors' poorer mental and sexual health outcomes, especially among LGBTQ women. Stigmas about being both a survivor of sexual violence and an LGBTQ woman intersect to create a unique and heightened vulnerability for experiencing chronic psychiatric distress. Following their assault, more than half of survivors meet clinical criteria for mental and sexual dysfunctions, including posttraumatic stress disorder, fear of sex, lack of sexual desire, and arousal disorders (Becker, 1982). They may also cope with their trauma by engaging in risky sexual behavior, including unprotected sexual intercourse or sexual activity with multiple partners, which can lead to the spread of sexually transmitted infections (Finkelhor & Browne, 1985). Sexual abuse occurring during childhood and adolescence can further disturb survivors' health by corrupting normal sexual development; 48% of bisexual women rape survivors were first raped between 11 and 17 years of age (HRC, 2017). Conceptualizations of virginity do not typically address sexual violence, preventing awareness and support for LGBTQ women survivors who not only experience poorer health outcomes because of their assault but are also more likely to be denied treatment from medical professionals and community organizations.

The social construction of virginity disregards and invalidates the experiences of LGBTQ women by focusing on PVI and male orgasms while marking survivors of rape as impure, victimized, and nonvirgins without offering inclusive support or advocacy. By deconstructing the definition of virginity and asking LGBTQ women about their diverse sexual experiences and opinions, one is prompted to ask the following question: Who does the conversation about

virginity and sex serve if it not only ignores the experiences of nonheterosexual women but also further marginalizes them? Qualitative studies and lived experiences evidence the ambiguity of virginity loss as a definition and a construct, despite the immense value society gives it. As cultural messages about virginity and sex continue to permeate younger individuals' ideas and knowledge about sexuality, it is important to critically analyze what gets communicated. People of all sexualities, genders, and other identities should feel that their sexual experience or inexperience is valid because many people will continue to navigate their sexualities throughout their lifetimes. The fluidity of sexuality and, therefore, virginity should be embraced as we promote positive messages about safe, consensual, and healthy sex for every person and every community.

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PERSPECTIVES

Mistrust Among Parents Discourages the Uptake of HPV Vaccine: How Did Rhode Island Institute an HPV Vaccine Mandate?

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Abstract:

Human papillomavirus (HPV) presents a significant threat to high rates of cervical cancer but is almost entirely preventable with HPV vaccine, available for teenage girls and boys. However, the introduction of the vaccine has been met with considerable controversy and objections, particularly from anti-vaccine parents who are clashing with the public health community, judiciary, school systems, health care providers, and pharmaceutical companies. However, Rhode Island was able to successfully overcome these obstacles and implement a school enrollment requirement of the HPV vaccine in 2015, a new addition to their required vaccine schedule for the state. As a result, it is expected that Rhode Island will be a case study of significantly reducing HPV through the implementation of the vaccine statewide and thus will have important public health implications for the entire country.

Keywords: Human Papillomavirus, Cervical Cancer, Vaccine, Stakeholders, Mandate

Human Papillomavirus and Cervical Cancer

Human papillomavirus (HPV) is a sexually transmitted disease that can lead to cancers of the mouth, throat, anus, penis, vagina, and, most prominently, cervix (Centers for Disease Control and Prevention [CDC], 2017). HPV is considered a sexually transmitted infection (STI) of “global importance,” affecting 630 million people worldwide every year (Osazuwa-Peters, 2013). Nearly 100% of cervical cancers are caused by HPV, which kills 300,000 people per year worldwide, with its highest concentration of prevalence in the adolescent population (Osazuwa-Peters, 2013). Moreover, nearly all sexually active Americans will be infected with HPV at some point in their lifetime (Osazuwa-Peters, 2013). HPV has a prevalence of 26.8% in U.S. females aged between 14 and 59 years and a prevalence of 24.5% in U.S. females aged between 14 and 19 years (Dunne et al., 2007). Despite the clear benefits of the vaccine and the evident costs, a significant amount of parents are not vaccinating their children and are creating immense risk for the greater population in doing so.

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Stakeholder Arguments

Since the introduction of vaccines of any kind, there have been groups that have resisted vaccines and policies requiring vaccines for school enrollment. Historically, people have disagreed about the nature and causes of disease. Some think that diseases are caused by contagions due to the poor environmental conditions of the poor or believe that diseases are mechanisms of God to control the balance between the “blessed and damned” or the rich and the poor (Hodge & Gostin, 2001). Parents with more modern arguments are worried that vaccines transmit other diseases and cause harmful effects. They object on the grounds of religious and philosophical principles, stating that government interference with human autonomy and liberty is unwarranted (Hodge & Gostin, 2001). Many view vaccinating their children for any disease as a risk that they are not willing to take for the greater good of society (Hodge & Gostin, 2001). While some may consider these objections to be valiant, they are more consistent with libertarian views than mainstream American politics.

Many parents who are specifically against the implementation of the HPV vaccine are more concerned with the particular association between the vaccine and sex, given that HPV is a sexually transmitted disease. Of the parents surveyed, 6% to 12% were concerned that vaccination would promote adolescent sexual behavior (Brewer & Fazekas, 2007). Ultimately, the uptake of the vaccine has been suboptimal, largely because of the aforementioned widely held opinions of parents. Importantly, it was found that awareness about the vaccine was high among parents, but scientific knowledge about the vaccine was low (Allen et al., 2010). In all, 24% of parents have not decided as to whether they will get their child vaccinated and 24% have already decided that they will not get their children vaccinated (Allen et al., 2010). Within this study, it was secondarily found that parents of color were less aware of the availability of the vaccine and that parents who chose to have their children vaccinated had higher level of trust in pharmaceutical companies (Allen et al., 2010). This follows a long history of distrust in the medical community, specifically among the Black community, for valid reasons, and professionals in these fields must acknowledge the validity of these fears and work to address them. Examples like the Tuskegee Study and the mass sterilization of Black women have not set a good precedent for the medical community in relation to Black patients and have, therefore, had significant residual effects on doctor-patient relationships.

The opinions of anti-vaccine parents directly contrast with public health professionals, the judicial system, school systems, and health care providers. While parents who do not condone vaccination for religious reasons are mostly exempt from the vaccination requirements, the same exemptions are not presented to parents with philosophical objections in most states, as it would aggravate the challenges of immunity for the public health sector (Hinman et al., 2002). Moreover, it is a widely held assertion among public health experts that public health should act when necessary with reasonable means to provide for and protect the common good (Hodge & Gostin, 2001). Similarly, it has been said that “the right to practice religion freely does not include liberty to expose the community or the child to communicable disease or the latter to ill health or death” (Hodge & Gostin, 2001). Ultimately, studies show that childhood vaccination schedules have been historically effective, highly economical, and are an efficient use of society’s resources (Hodge & Gostin, 2001). It is, therefore, no surprise that professionals across disciplines support vaccine integration and school requirements.

The judicial system has backed the evidence provided by public health in several suits filed by disenfranchised parents. In 1905, the court first ruled in *Jacobsen v United States* that the

state has the power to compel vaccination (Hodge & Gostin, 2001). Historically, the judiciary has aligned itself with stakeholders that are pro-vaccine, collectively supporting the preservation of communal well-being. One important case in which the court found vaccines to be constitutionally legal was the one in which a parent argued that the school enrollment requirement interfered with the child's constitutional right for education. The court argued that education is not a constitutional right (Hodge & Gostin, 2001). In fact, a right more central to our democracy is the right to be healthy and to be protected. Ultimately, institutions like schools will value the health of the majority and a child's right to attend school with as limited a risk for infection as possible.

Unfortunately, school systems are not given much agency in this particular policy because it is instituted by the state. However, the sentiment of teachers and school administration can indirectly affect general public sentiment about school enrollment policy. After one educational intervention, 90% of the staff believe that HPV and vaccine education was worthwhile and that school could be an appropriate venue for this education (Reiter, Stubbs, Panozzo, Whitesell, & Brewer, 2011). In addition, 85% of the staff supported school-based vaccination clinics after the intervention (Reiter et al., 2011). Schools, alongside doctors and other essential stakeholders, have united collectively in support of universal vaccination.

Health care providers have generally followed the lead of public health professionals in passionately encouraging vaccination because of its efficacy and efficiency. However, providers are less comfortable vaccinating younger teenagers for HPV and feel that the endorsement of a large professional organization could help them in convincing parents to vaccinate for HPV (Zimet, 2005). Health care providers have such an important role in this issue because parents value the information provided by pediatricians, and these doctors serve as a connecting point between public health and the public. Given the benefits of vaccination, doctors have become frustrated with noncompliant parents. The Academy of Pediatrics Committee on Bioethics recommended that "clinicians respectfully listen to parental concern while discussing the risks of non-vaccination" (Omer, Salmon, Orenstein, deHart, & Halsey, 2009). Evidently, pharmaceutical companies stand behind the public health and biomedical sectors because of the proven efficacies of vaccines and because the use of vaccines economically benefits them. Ultimately, vaccine acceptance depends on the individual's willingness, parent's willingness, and health care provider's willingness to be compliant with vaccine requirement.

Legal Ramifications

As aforementioned, judiciaries have served as the representatives of the national government's stance on the requirement of vaccinations by determining whether it is constitutional. The police powers authorize states to compel vaccination for the public good but do not require it. Therefore, the states are legally left to make decisions about vaccinations. Rhode Island serves as an example; it has created more binding school-mandated vaccination schedules by adding HPV to the requirement. However, an overwhelming majority of states within the country have not yet added HPV to the vaccine requirement. The police powers give Rhode Island the ability to have this agency. Differences in demographic compositions and political party affiliation within other states may slow acceptance of mandatory vaccine policies. However, one effect of this variation is that, nationally, the awareness of HPV is very limited because there is no central consensus nationwide on policy (Pitts & Clarke, 2002).

Rhode Island Policy and Its Consequences

Rhode Island is one of the few states in the country that require HPV vaccine for school enrollment along with the nationally recommended vaccine schedule (CDC, 2017). Due to Rhode Island's policy (and similar policies from other states and nations) having been instituted recently, no studies have been published yet assessing coverage and HPV incidence before and after the policy was instituted. However, it is evident that school mandates have uniformly improved vaccination rates for other diseases (Gostin, 2011). HPV vaccine coverage nationally has risen from 26.7% to 32% but remains much lower than Rhode Island's coverage of 65% (CDC, 2017). Although the accomplishments of Rhode Island cannot be easily administered in other states because of differing populations and general political affiliations, it has and will continue to serve as an example of successful public health intervention, despite argumentation from anti-vaccine parents. The policy is limited in terms of scope when considering that religious affiliations still exempt children from requiring the vaccine. However, the policy is successful in targeting those who did not have religious exemptions but were still not receiving the vaccine, as evident by the increasing state coverage. Rhode Island had plenty of anti-vaccine parents fighting the policy when it was first proposed. However, the state was able to achieve their goal by offering the vaccine free of charge, advertising the benefits of the vaccine, employing the support of local physicians, and expanding in-school vaccination programs (Freyer, 2016). These tactics may be considered by other states who wish to expand their vaccination coverage to gain more support from constituents.

Conclusion

Overall, the vaccine has proven to be highly immunogenic and safe, inducing a high degree of protection against HPV and associated cervical lesions (Harper et al., 2006). However, these scientific conclusions have not affected any of the stakeholders' positions on the HPV vaccine, namely, anti-vaccine parents. Despite this, Rhode Island was able to implement HPV vaccine policy. Looking forward, the public health community will expect the effects of the Rhode Island policy to be published and encourage other states to replicate this policy, furthering national public health and immunity. To continue to make strides toward increasing immunity nationally, the general public must participate in the conversation, support local public health officials and doctors in providing responsible preventive care, and encourage local and national representatives to vote in favor of pro-vaccination policies.

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