Distribution Agreement

In presenting this thesis or dissertation as a partial fulfillment of the requirements for an advanced degree from Emory University, I hereby grant to Emory University and its agents the non-exclusive license to archive, make accessible, and display my thesis or dissertation in whole or in part in all forms of media, now or hereafter known, including display on the world wide web. I understand that I may select some access restrictions as part of the online submission of this thesis or dissertation. I retain all ownership rights to the copyright of the thesis or dissertation. I also retain the right to use in future works (such as articles or books) all or part of this thesis or dissertation.

Signature:

_____ _____

Megan E. Bleakley Date

"If men are sitting there, I will be scared and then go with fear": A thematic analysis of women's experiences of Bodily Integrity, Safety & Security, and Privacy in Tiruchirappalli, India

By:

Megan Elizabeth Bleakley

Master of Public Health

Hubert Department of Global Health

Rollins School of Public Health, Emory University

_____

Dr. Sheela Sinharoy, PhD, MPH
Committee Chair
Hubert Department of Global Health
Rollins School of Public Health, Emory University

_____

Dr. Bethany Caruso, PhD, MPH
Committee Member
Hubert Department of Global Health
Rollins School of Public Health, Emory University

"If men are sitting there, I will be scared and then go with fear": A thematic analysis of women's experiences of Bodily Integrity, Safety & Security, and Privacy in Tiruchirappalli, India

By:

Megan Elizabeth Bleakley

Master of Public Health
Hubert Department of Global Health
Rollins School of Public Health, Emory University

Bachelor of Science
Community Health
George Mason University
2018

Thesis Committee:

Dr. Sheela Sinharoy, PhD, MPH
Committee Chair

Dr. Bethany Caruso, PhD, MPH
Committee Member

An abstract submitted to the Faculty of the
Hubert Department of Global Health
Rollins School of Public Health of Emory University
in partial fulfillment of the requirements for the degree of
Master of Public Health
2021

"If men are sitting there, I will be scared and then go with fear": A thematic analysis of women's experiences of Bodily Integrity, Safety & Security, and Privacy in Tiruchirappalli, India

Abstract

Introduction: The global Water, Sanitation, and Hygiene (WASH) lens has primarily focused on the relationship between poor sanitation and infectious disease. Research has recently expanded to explore how mental and social well-being are impacted by sanitation, particularly in women and girls. The concept of women's empowerment in relation to sanitation has recently emerged, and while we generally understand the role empowerment plays on improving the mental and social well-being of women and girls around the world, little is known about how women's empowerment impacts WASH conditions or vice versa. Further, effective sanitation- related interventions play a key role in reducing WASH disparities, however, it is unclear the role of empowerment in this process. Until recently, there have been no existing WASH-specific tools to effectively measure of women's empowerment. The relationship between gender and sanitation has recently emerged as a prominent theme in India. Among the 2 billion people still without basic sanitation services in 2017, nine out of ten lived in three regions, most notably, Central and Southern Asia (749 million).

Often, women and girls are more severely impacted by inequities in the WASH environment and face additional consequences in comparison to their male counterparts. Specifically related to empowerment, women and girls often struggle with issues of privacy, safety and security, and bodily integrity when accessing their preferred sanitation methods. Women deal with harassment, teasing, poor cleanliness, and often report feeling forced to suppress urine or feces if their sanitation facility is unavailable or unclean. This thesis examines qualitative findings from the Measuring Urban Sanitation Empowerment (MUSE) study from women residing in Tiruchirappalli (Trichy), India, specifically related to bodily integrity, safety and security, and privacy.

Methods: The MUSE research team at Emory University is conducting a multiphase study to develop and validate a survey tool to measure women's empowerment in relation to urban sanitation. This thesis examines the qualitative responses from 13 cognitive interviews carried out to validate the survey, with a focus on data relating to bodily integrity, privacy, and safety & security. Women were purposively sampled based on age group and marital status (unmarried 18-25, married 25-40, and 40+). After data collection ended, the data was analyzed thematically.

Results: The identified themes that emerged within the sub domains of bodily integrity, safety and security, and privacy overlap and are frequently interconnected due to the multifaceted and complex nature of gender and sanitation. Women's opinions and experiences tended to differ based on access to their preferred sanitation method (private latrine, public shared latrine, or open defecation). In terms of *bodily integrity*, women reported only occasionally having to suppress urine or feces, typically if a public latrine or open defecation was their option. Rarely did women withhold food or water to control their urges; this was only reported by a few women if they were traveling or running errands and didn't know if a bathroom would be available. Cleanliness, smell, and fear of potential negative health outcomes were all factors

related to bodily integrity. In terms of *privacy*, women closely related their level of satisfaction with their sanitation facility to their individual experiences of privacy. Women often mentioned that overall, they had privacy when using their home latrine, but less so when using the public latrine or defecating in the open. Rarely, women mentioned that they lacked proper sanitation infrastructure (door, lock, etc.), but some mentioned that the open roof design of their latrine was inopportune because the angle of the street and the open roof sometimes led to people being able to see in. Privacy was often mentioned jointly with safety & security, and women sometimes reported feeling unsafe and vulnerable if they lacked a private place to urinate or defecate. In terms of *safety and security*, many barriers were discussed by the women, however not with the same intensity. Key themes include fearing the threat of sexual or physical harassment, barriers to safety in the sanitation environment (animals, slippery floors, broken tile, etc.), violence towards women when accessing and using sanitation (sexual and physical) and men.

Discussion: Themes related to bodily integrity, privacy, and safety and security are often interconnected due to the complex nature of gender and sanitation. While many results were found to be consistent with the current gender and sanitation literature, this thesis uncovered perspectives from the women about violence (sexual and physical) towards women when using their preferred sanitation method. While the literature shows that women often face violence when using the public latrine or OD, the results of this thesis provide evidence to further research violence against women (VAW) who use private latrines.

By: Megan E. Bleakley

"If men are sitting there, I will be scared and then go with fear": A thematic analysis of women's experiences of Bodily Integrity, Safety & Security, and Privacy in Tiruchirappalli, India

By:
Megan Elizabeth Bleakley

Master of Public Health
Hubert Department of Global Health
Rollins School of Public Health, Emory University

Bachelor of Science
Community Health
George Mason University
2018

Thesis Committee:

Dr. Sheela Sinharoy, PhD, MPH
Committee Chair

Dr. Bethany Caruso, PhD, MPH
Committee Member

A thesis submitted to the Faculty of the
Hubert Department of Global Health
Rollins School of Public Health of Emory University
in partial fulfillment of the requirements for the degree of
Master of Public Health
in the Hubert Department of Global Health
2021

Acknowledgements

Without the support of many individuals, I would have never been able to complete this thesis project, stayed sane (somewhat), or completed my Master's in Public Health. I would like to take the time to thank the many individuals who helped me along this thesis journey.

- First and foremost, I would like to thank *Dr. Sheela Sinharory,* my thesis advisor, for taking me on as her thesis student. Sheela has provided constant reassurance when I have felt overwhelmed, given me incredible feedback, and has been a great source of knowledge. Thank you for sticking with me even when I missed deadlines or did not understand something. You always came to meetings with a positive attitude and never made me feel intimidated or out of my element.

- I would also like to thank *Dr. Bethany Caruso*, a valuable thesis committee member. Bethany was also a great source of knowledge, and her expertise in gender and sanitation has helped shape the course of this thesis. Thank you both for keeping Courtney and I on track and making Friday thesis meetings bearable.

- I would also like to thank *Madeleine Patrick and Amelia Conrad*, two brilliant women on the MUSE research team who went to India and Uganda and helped facilitate data collection. Thank you both for providing valuable feedback on my methodology section and connecting me with valuable resources and literature. I hope to be as well versed in gender and sanitation as you two are one day!

- Of course, I would like to thank *Courtney Pico*, my brilliant friend and thesis colleague, because without her, there is absolutely no way I would have been able to do this project. The amount of zooms, facetimes, texts, phone calls, and brainstorm sessions have all finally led to something!! I am so proud of us; thank you thank you thank you!!!!

- I think it goes without saying how much I appreciate my two roommates, *Katie Millsaps and Beth* Ruta (and Duncan and Mia!!), however I am going to thank you anyway. I don't think I can express how much I appreciate the vent sessions, mental health support, scream sessions, bachelor nights, and cat jokes. You guys are the best and I don't think I would have been able to get through these two years without you! Katie, you are my soul sister, thank you. And Beth, you are my excel woman… what even is a pivot table?

- *Mom, Dad and Michael*, thank you! I would have never gotten to this point in my life without such an amazing family that has supported me in all my endeavors. You have always told me I can achieve whatever I put my mind to, and I am so excited for you all to see my life here in Atlanta. Also, thanks for the MAXQDA subscription!!

- Most importantly, I would like to thank the *13 women in Trichy* for sharing their invaluable experiences and voice with me. You are the real ones to recognize for all your hard work. I only hope that I can do your words justice!

Table of Contents

Acronyms and Abbreviations

BMGF- Bill & Melinda Gates Foundation

CIs- Cognitive Interviews

CTB- Community Toilet Block

CWIS- Citywide Inclusive Sanitation

DALYs- Disability Adjusted Life Years

ICA- Intercoder Agreement

IPSV- Intimate partner sexual violence

JMP- Joint Monitoring Programme

LMICs- Low- and Middle-Income Countries

MHM- Menstrual Hygiene Management

MUSE- Measuring Urban Sanitation Empowerment

NGOs- Nongovernmental organizations

NPSV- Non-partner sexual violence

NTDs- Neglected Tropical Diseases

OD- Open Defecation

PLHIV- Persons living with HIV

SDGs- Sustainable Development Goal

VAW- Violence Against Women

WASH- Water, Sanitation, and Hygiene

1. INTRODUCTION

Billions of people around the world suffer from poor and unsanitary water, sanitation, and hygiene (WASH) conditions. Worldwide, one in three people do not have access to safe drinking water, two out of five people do not have basic hand washing facilities (soap and water), and over 673 million people continue to practice open defecation (UN, 2019). Progress has gradually been made over the years, and in 2016, the UN announced 17 new Sustainable Development Goals. Sustainable Development Goal 6 is defined as ensuring access to clean water and sanitation for all by 2030 (UN, 2019).

While much attention has been placed on access to WASH services, less attention has been paid to gender equality and empowerment in the WASH sector. Within the realm of gender and WASH, much is known about the gendered roles of women and girls in the household and community. Typically, women and girls' roles include caretakers, domestic laborers, and homemakers. Women and girls are often disproportionately affected by lack of access to WASH, because of the larger role they play compared to men in domestic labor and agriculture activities (Kayser et al., 2021). While the role of women and girls in household WASH delivery is well documented, there is a need to understand how basic WASH interventions foster empowerment and autonomy in women and girls. Currently, there are no validated WASH-specific measures to gauge empowerment (B. Caruso et al., 2020). Additionally, not much is known about how women's empowerment influences specific WASH conditions and vice versa (B. Caruso et al., 2020).

Research has demonstrated that increased empowerment in women can lead to improvements in a community's sanitation behavior. For example, in one study in Kenya, women's agency to make decisions and purchases in the household was positively associated with household latrine ownership (Kayser et al., 2021). Thus, increasing women's levels of empowerment has positive effects on sanitation behaviors, but we still do not understand if sanitation interventions or conditions have led to increased women's empowerment. Assessing sanitation-related empowerment would allow stakeholders to tailor interventions and understand which programs are needed to create sustainable change within the community (Caruso, et al., 2020). While it is true that increased empowerment in women can lead to improvements in a community's sanitation behavior, that is not the only clear benefit. Increasing a woman's perceived empowerment is important in its own right.

To carry out this essential research, a team of researchers at Emory University conducted a multi-phase study called Measuring Urban Sanitation & Empowerment (MUSE) to develop and validate a package of survey tools to measure women's empowerment in the context of urban sanitation programs (B. Caruso et al., 2020). The Bill & Melinda Gates Foundation, which emphasizes gender mainstreaming and women's empowerment in its projects, funds the MUSE project. This thesis uses qualitative data collected through the MUSE project to explore three sub-domains of women's sanitation-related empowerment, specifically, bodily integrity, safety and security, and privacy in Tiruchirappalli, India.

2. LITERATURE REVIEW

General WASH and Importance

The water, sanitation, and hygiene, (WASH), sector has been growing since the 1970s (UNICEF & WHO, 2019). While there has been increased attention focused on improving the burden of disease surrounding poor and unavailable WASH conditions, billions of people worldwide still lack even basic access to WASH facilities (UNICEF & WHO, 2019). In fact, 3 in 10 (2.1 billion) people worldwide lack access to safe and readily available water in their homes. This is approximately 35% of the world's population that does not have access to improved water sources (*CDC*, 2018). However, regarding sanitation, 74% of the world's population (5.5 billion people) used at least basic sanitation services compared to 56% in 2000 (UNICEF & WHO, 2019). Despite many years of efforts to improve WASH conditions globally, the initial United Nations Millennium Development Goal of improving WASH conditions worldwide was not met, and a resulting 673 million people still currently practice open defecation due to inadequate access to sanitation facilities (UNICEF & WHO, 2019). Among the 2 billion people still without basic sanitation services in 2017, nine out of ten lived in three regions: Central and Southern Asia (749 million), sub-Saharan Africa (709 million), and Eastern and South-Eastern Asia (364 million) (UNICEF & WHO, 2019).

Providing equitable access to safe drinking water and sanitation and hygiene facilities should be a high ranking global health objective in order to propel and facilitate human development in low and middle income countries (LMIC) (Jeyakumar et al., 2020). These conditions have a direct impact on the health status of people, and as of 2015, 64.2 million

disability- adjusted life years (DALYs) worldwide are attributed to a lack of safe water and sanitation. Approximately 82% of the DALYs attributed to unsafe WASH conditions are from low and middle income countries (Jeyakumar et al., 2020). The key health and social outcomes that are most prominently associated with poor WASH are the spread of pathogenic related infectious diseases such as diarrhea and cholera, nutrition related complications, complementary food hygiene, female psychosocial stress, violence, maternal and newborn health, poor menstrual hygiene management (MHM), negative school attendance, oral vaccine performance, and increased incidence of neglected tropical diseases (NTDs) (Mills & Cumming, 2016; UNICEF & WHO, 2019). If developed and implemented properly, water, sanitation, and hygiene interventions have the potential to prevent 9.1% of the global disease burden and 6.3% of all deaths worldwide (CDC, 2018).

Among these key health and social outcomes, the impact of diarrhea on populations is prominent and results in a huge disease burden in LMICs. According to the Centers for Disease Control and Prevention (CDC) unsafe drinking water, inadequate availability of water for hygiene activities, and lack of access altogether to sanitation contributes to approximately 88% of deaths worldwide from diarrheal diseases (*CDC*, 2018). In fact, an estimated 801,000 children under 5 die from diarrhea related occurrences each year in LMIC (*CDC*, 2018). Consequently, this is about 11% of the total deaths of children under 5 in LMIC, meaning that 2,200 children are dying each day due to diarrheal diseases (CDC, 2018). If vulnerable communities received improved water sources, diarrheal deaths would be reduced by 21%, improvement of the quality of drinking water (such as point of use disinfection) could reduce deaths by 45%, and improved sanitation facilities could reduce diarrheal mortality upwards of 37.5% (CDC, 2018).

While significantly greater improvement is needed to ensure adequate WASH services for all, the Joint Monitoring Programme (JMP) of the World Health Organization and UNICEF recently published a report presenting updated national, regional, and global data on WASH in households and healthcare facilities from 2000-2017. The JMP works to monitor progress on specific targets associated with the UN Sustainable Development Goals; in particular the JMP focuses on monitoring progress associated with 6.1 ("By 2030, to achieve universal and equitable access to safe and affordable drinking water for all") and 6.2 ("By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations") (UNICEF & WHO, 2019).

Improvement in WASH delivery and service can be examined in terms of geographical location: urban versus rural setting. In terms of improvements, there has been considerable development in water and sanitation service coverage globally, and in rural areas, basic drinking water coverage increased significantly from 69% to 81% (UNICEF & WHO, 2019). Yet, between 2000 and 2017, urban coverage of at least basic drinking water services improved slightly from 95% to 97% total coverage (UNICEF & WHO, 2019). While this may seem like a small improvement, a 2% improvement with only 5% to grow is substantial progress.

Similarly, when looking at basic sanitation coverage rates between 2000-2017, there was an 18% increase overall in the world's population using at least basic sanitation services, and while coverage was higher overall in urban areas (85% in 2017), rural coverage (59%) increased more rapidly, further decreasing the gap in coverage (UNICEF & WHO, 2019). While

improvement of any sort should be celebrated and not diminished, this improvement in urban drinking water and sanitation coverage should be closely examined and not overlooked. While urban WASH access and conditions have historically been higher overall than rates in rural communities, a plateau in any case is dangerous in terms of progress, innovation, and improving the wellbeing and quality of life of people globally.

The field of WASH continuously changes due to the emergence of new evidence and research. Historically, the WASH field has been focused on removing infectious pathogens from the environment, thereby preventing contamination and exposure in communities (Chirgwin, 2018). This was done by delivering technologies and tools to communities without always taking into consideration critical elements of sustainability. As new research has emerged, practitioners and researchers in the public health field have begun to realize that by only supplying communities with WASH technology or tools and not examining the complex dynamics of community hierarchies, psychosocial triggers, emotional cues or elements of behavior, full coverage and sustainability and optimal behaviors will never be fully established (Chirgwin, 2018). Recent interventions have shifted to include behavioral outcomes, gender-transformative (or gender-sensitive) programming and evaluations, and increased research on vulnerable populations such as women and girls, refugees, persons living with HIV (PLIV), those with disabilities, etc. (Chirgwin, 2018). Progress is possible by incorporating interventions that examine and strongly emphasize social aspects, gender, community hierarches, and complex social dynamics.

Impact on women and girls

Globally, women and girls face harsher and often more dire consequences in comparison to their male counterparts when WASH is not suitably available. At the root of this disparity is that women and girls have different WASH needs (in particular, sanitation needs) than men (Sweetman & Medland, 2017). In their lifetime, women can experience menstruation, pregnancy, childbirth, and female menopause, none of which men or boys will experience firsthand. These are biological reasons why men and women have different needs, but often expected gender roles such as domestic homemaker, play a role as well. Therefore, women and girls have additional sanitation requirements which are often overlooked due to patriarchal hierarchies that consistently place heavy social stigmas and taboos on female excreta and sanitation practices (Sweetman & Medland, 2017)

Women are frequently the primary stakeholders and providers of WASH in households and communities, so when there is a lack of access to WASH, it has a direct effect on a woman's health status, education, employment, income, and level and feelings of empowerment ("Gender-Disaggregated Data on Water and Sanitation," 2010) . These detrimental health impacts can in turn have an effect on other members of the household and community. For example, women can suffer from hookworm infestation that can lead to maternal anemia, which can eventually lead to negative pregnancy outcomes (Saleem et al., 2019). In addition, women are often more susceptible to diarrheal diseases, is a leading cause of undernutrition in women of reproductive age, which worsens the existing recurring cycle of infection coupled with deterioration of women's health, particularly at the stage of pregnancy (Saleem et al., 2019). Additionally, women come in contact with human feces at a higher rate than other members of the household because of expected gender roles such as child caregivers or

domestic homemakers (Saleem et al., 2019). Women are often the caregivers and homemakers of the household, so when proper sanitation facilities are not available, there is a higher risk for cross contamination and resulting negative health outcomes.

Women are at an increased risk compared to their male counterparts of experiencing social consequences from poor WASH conditions, including episodes of violence as well as embarrassment and shame (Saleem et al., 2019). Poor sanitation access can lead to women being placed in situations where they are more vulnerable to sexual, physical, verbal, and even psychological violence (Saleem et al., 2019) .For example, women that do not have toilets in their homes often have to travel long and treacherous distances to the nearest facility to defecate or manage their menstrual needs in private (Saleem et al., 2019). This distance (often at night) can be met with the possibility of physical or sexual assault and is often time consuming which takes away time from the many household and daily obligations women are responsible for. Often, women and girls experience issues of dignity when their safety, privacy, and bodily integrity are compromised. Shame, fear, and helplessness are very common emotions women and girls express feelings of when describing their limited means of accessing sanitation facilities (Saleem et al., 2019).

In addition to effects on physical, mental, and social health, WASH affects many other aspects of the lives of women and girls (Pearson & Mcphedran, 2008). For example, improved sanitation has a positive impact on preserving the dignity and security of women and girls, improving school attendance, improving the quality of life of persons with disability, the economy, and the environment (Pearson & Mcphedran, 2008). Functional and accessible sanitation facilities can potentially lead to less open defecation, less stagnant water, less

pollution, and less disease presence in the community, consequently having a positive impact on women and girls and the environment (Pearson & Mcphedran, 2008). Research has also illustrated that improved sanitation can actually progress the local economy by attracting business and tourism since there are appropriate sanitation technologies available to visitors (Pearson & Mcphedran, 2008). When women have increased bodily integrity, privacy, and safety, their perceptions of their own bodies change positively and there can be a potential for increased income generation with the time savings that sanitation brings (Pearson & Mcphedran, 2008). Empowering women with leadership roles increase their power and voice within their household and community unit, and improved sanitation and school sanitation and hygiene education (SSHE) empowers women to become social agents of change. However, the leadership roles of women are largely dominated and directed by their specific culture (Pearson & Mcphedran, 2008). Disregard for concerns requiring gender sensitivity and a lack of available sanitation facilities leads to lower self-esteem and gives women and girls the false sense that they cannot achieve (Pearson & Mcphedran, 2008).

In order to progress further in the field of socially equitable water, sanitation, and hygiene access, public health data (all data, but in this case WASH data in particular), which is historically gender blind and not disaggregated, needs to incorporate a gender lens to identify additional evidence-based benefits or harms of underrepresented women and girls in LMIC.

WASH in India

In 2018, 600 million people in India did not have access to a toilet (*India National Family Health Survey (NFHS-4) 2015-16 [FR339]*, 2017), and according to most recent data from the

India DHS, in 2017, India had a total population of 1.3 billion (*India National Family Health Survey (NFHS-4) 2015-16 [FR339]*, 2017). Nationally in 2017, 60% of the population had access to basic sanitation, however 26% had no access to sanitation services at all (UNICEF & WHO, 2019). In comparison, in 2017, 93% of the population had access to at least basic service drinking water, with only 1% having no service (UNICEF & WHO, 2019). Additionally, 60% had access to basic level hygiene resources, and only 3% had no reported hygiene (UNICEF & WHO, 2019). This data clearly depicts that there is a national disparity in India regarding sanitation coverage compared to that of drinking water and hygiene.

Disparities in access to WASH exist in India based on several factors. While those living in rural communities in India tend to have less overall access to WASH facilities than those living in urban settings, there has been more rapid overall improvement in coverage to those in rural communities. Those living in urban settings in India make up approximately 60% of the population according to the Indian census, which is continuing to rapidly increase and places exorbitant amounts of stress on the already strained WASH services (*Partnership for Water Sanitation and Hygiene (WASH) | India | U.S. Agency for International Development*, 2019). Certain populations are also marginalized, particularly tribal populations, women and girls, and children under the age of 5 (Jeyakumar et al., 2020).

Impact on women and girls in India

India is often known for its contrasting poverty and gender related disparities, which have a significant impact on both the social and health related outcomes in the population, specifically affecting women and girls. Women in India face greater challenges than men in

accessing WASH resources to meet their daily needs, and when these needs are not adequately met, can increase their risk for certain reproductive tract illnesses, among other social and health impacts (Das et al., 2015).

Women in India often face significantly more disparities when accessing WASH services compared to men. A study in Orissa, India highlights that even when sanitation facilities seem equally available to both men and women, there can be stark differences between men and women's individual experiences of accessibility (Banka et al., 2021a)Many factors, including the environment, social, and gendered barriers, can contribute to obvious and reinforcing differences between men and women (Banka et al., 2021a). Women often face unique needs and experiences, requiring additional considerations when using sanitation facilities compared to their male counterparts, which are rarely met (Banka et al., 2021a). In India, there are clear gender hierarchies and a strict patriarchal mindset is still present in many households (Singh & Mishra, 2010). These are a few of the many rooted factors that play a role in the disparities between men and women and girls.

This social divide has become even more visible amidst the COVID-19 pandemic, and women and girls are facing increased difficulty in maintaining their sanitary needs (Singh & Mishra, 2010). A key difference that facilitates disparity between men and women in India is menstruation. Taboos and social stigma have become attached to the normal biological process of menstruation. Women who are menstruating are often seen as “dirty” by men and other community members and are not always afforded the dignified support and sanitation facilities they deserve. While the Indian Government created the “Ujjwala Sanitary Napkin” initiative in

2018, which enabled access to low-cost sanitary pads and school aged girls were provided with vending machines in schools containing menstrual materials, COVID-19 has thrown a wrench in this progress (Singh & Mishra, 2010)

Women often do not hold the decision-making power to purchase sanitation materials or improve their current facilities. Men in India are often seen as the heads of household and primary breadwinners with sole control of the families' economic finances and budget. Women are typically inserted into the role of dependent homemakers, with little economic independence (Singh & Mishra, 2010). This creates a cyclical dependence on men to purchase and provide sanitary products for women, subduing their rights, often those from marginalized and lower SES communities being affected the most (Singh & Mishra, 2010). COVID-19 has affected manufacturing abilities, and while sanitary products have been deemed essential, supply and demand has shifted, and more emphasis is being placed on production of masks and PPE (Kayser et al., 2021). The pandemic has placed a huge burden on the menstrual health and sanitation experiences of women and girls, but this is not just an isolated incident. Disparities have existed in India for women and girls prior to the onset of COVID-19.

Lack of sanitation-related independence and poor sanitation experience affects more than just the general health of women and girls in India; dignity and feelings of empowerment are significantly altered which comes with many detrimental consequences. Inadequate sanitation access in India has the potential to lead to adverse pregnancy outcomes, higher odds of gender- based non partner violence, and higher rates of maternal mortality in women and girls (B. A. Caruso et al., 2017). For example, women in Odisha, India have consistently reported

high amounts of stress from lack of privacy and difficulty in open defecation, especially when menstruating (B. A. Caruso et al., 2017). These women mention that their inability to find privacy, combined with the feelings of powerlessness at improving their current situation, has led to harmful occurrences of increased stress, fear, and anxiety (Caruso et al., 2017). In rural Odisha, India, women have expressed stress and insecurity from lack of financial or economic power, leading to inadequate sanitation experiences, and exclusion from household decision making processes (Caruso et al., 2017).

Empowerment: Bodily Integrity, Privacy, and Safety & Security

This thesis focuses specifically on women and girls' sanitation experience in India. Empowerment can be defined as "the expansion of choice and strengthening of voice through the transformation of power relations, so women and girls have more control over their lives and futures" (van Eerdewijk & Wong, 2017). Further, women's empowerment is the process by which those who have been denied the ability to make strategic life choices acquire such an ability. An individual cannot become empowered unless they have been somehow disempowered before (denied choice). Power is defined as the ability to make choices, and while some individuals cannot be empowered, they can be labeled as powerful. This review will be guided by the conceptual framework by Eerdewijk et al, which includes three domains of empowerment: agency, resources, and institutional structures (van Eerdewijk & Wong, 2017).

Agency is defined as "women and girls pursuing goals, expressing voice and influencing and making decisions free from violence and retribution", and is broken down into related subdomains: decision making, leadership, and collective action (van Eerdewijk et al., 2017).

Resources is defined as “the tangible and intangible capital and sources of power that women and girls have, own or use, individually or collectively, in the exercise of agency” (van Eerdewijk & Wong, 2017)). Resources also has related subdomains, broken down into bodily integrity, safety & security, health, privacy, critical consciousness, financial/productive assets, time, knowledge & skills, and social capital v(an Eerdewijk & Wong, 2017). Institutional structures is defined as “the social arrangements of formal and informal rules and practices that enable and constrain the agency of women and girls and govern the distribution of resources” (van Eerdewijk & Wong, 2017). This domain is composed of four subdomains; arenas, formal law & policies, norms, and relations (van Eerdewijk & Wong, 2017).

While all these domains are interrelated and of equal importance, the resources domain has emerged as a prominent area of concern, especially in urban India. As discussed in the previous paragraph, resources contain various related subdomains, many that interconnect due to the complex nature of gender and sanitation. Three significant subdomains that will be covered in this literature review are the concepts of bodily integrity, safety & security, and privacy. Safety and security and privacy are encompassed under the broad umbrella of bodily integrity, which is defined by van Eerdewijk and Wong as “the principle of security and control over one’s body, and is the fundamental human right to life, to being healthy in the broadest sense and to being secure from physical harm and assault by others” (van Eerdewijk & Wong, 2017). The definition of bodily integrity encapsulates privacy and safety & security, and experiences tend to be interwoven due to the complex nature of gender and WASH. Safety & security “enables women and girls to move, speak and act free from acts or threats of violence, force and coercion” (van Eerdewijk & Wong, 2017). While privacy is not defined in the

empowerment framework by van Eerdewijk, it is defined by Sclar et al. (2018) as “an individual's ability to feel free from observation or disturbance by others (Sclar et al., 2018).

Bodily integrity

Bodily integrity is an umbrella term that also encompasses sanitation related experiences of privacy and safety & security. In the context of sanitation, bodily integrity refers to women having control over their own bodies and sanitation related behaviors and being able to use their preferred sanitation location when necessary.

A lack of bodily integrity can take many forms. Most commonly, women in India feel forced to suppress their urge to urinate or defecate and sometimes aid this by withholding food and liquid (Sahoo et al., 2015). These actions are coined “avoidance behaviors”, and are typically halted when a private toilet is constructed or becomes available in the home, however not always (Sahoo et al., 2015). Suppression and withholding food and water are closely associated with unsafe toilets, low socioeconomic status, living in an urban slum, having no toilet in the home, and high rates of sanitation insecurity (Panchang et al., 2021). Frequent suppression can lead to poor health outcomes such as UTIs, kidney or bowel damage, which is detrimental to women’s health, and withholding of food or water can lead to malnutrition or dehydration.

A lack of cleanliness is a common factor associated with poor instances of bodily integrity. Women in India often deal with dirty public latrines, which they associate with higher risk of illness, so women frequently report avoiding public sanitation facilities and “holding it in” until they get home (if they have a private toilet facility in their home) (Panchang et al., 2021).

Some women do not have that option and are forced to deal with unclean sanitation facilities. In addition, it is commonplace for community latrines to cost money to use, and women compromise their bodily integrity when they have to choose between using their often tight budget to pay for the latrine or risk their safety and privacy by using the forest for open defecation (Sahoo et al., 2015).

Regarding sanitation related budget, women often do not hold the decision-making power within their household or communities to make choices regarding sanitation infrastructure, behavior, or access (Sahoo et al., 2015). Poor decision-making power contributes to negative instances of bodily integrity, when women are not allowed to decide how to use the household sanitation related budget on sanitation improvements, infrastructure, WASH materials (soap, menstrual materials, etc.), access to community latrines, etc. (Sahoo et al., 2015). Lastly, women in India are frequently left out of community meetings concerning sanitation decisions in their neighborhood, so future program work needs to target cultural and structural barriers related to sanitation and gender inequality (Banka et al., 2021a)

Safety & Security

Safety is often a major concern for women in LMIC when accessing sanitation facilities and engaging in sanitation-related behavior (Banka et al., 2021a). Experiences of unsafe situations related to sanitation often differ depending on the location of the sanitation facility that the woman is using (private latrine, public community toilet block (CTB) or open defecation) (Banka et al., 2021a). Safety and security can be broken down into different experiences of harassment and violence: physical, sexual, and verbal, or unsafe environmental

barriers that exist when women are accessing sanitation, practicing sanitation-related behavior, or engaging in sanitation-related decision making.

In regard to harassment, differences in sanitation type can be considered, and 25% of women in India that practice open defecation reported facing harassment, assault, or threats of violence in the past year (Banka et al., 2021a). This percentage is probably higher due to the likelihood of underreporting. Men have been known to perpetrate physical violence against women that are openly defecating by throwing stones, grabbing them, or aggressively pushing (Banka et al., 2021a). There is an ingrained fear of violence or harassment for many women in India, which often dictates the way they go about their daily life activities (Banka et al., 2021a). Women who OD often rearrange their bathroom schedules and only go at times where there will be fewer people (avoid mid-day and nighttime) to minimize their risk of an unsafe encounter (Sahoo et al., 2015).

In order to limit risk of harassment and unsafe experiences, women should provide insight on where toilets should be built to maximize safety. In urban planning dialogue, CTBs should be built in arterial roads (away from main roads or motorways), and if they are built on main roads, should not face the main road and be slightly removed to maximize privacy (Reddy et al., 2019). They need to be easily accessible and have maintained and proper sanitation infrastructure such as lighting and locks (Reddy et al., 2019). Women prefer to not be seen so close to the main road, so a toilet located slightly off the main road with less loiterers and traffic is optimal (Reddy et al., 2019). Women have reported that they do not trust men in their own settlement (Nallari, 2015) and are weary of using shared sanitation spaces because they don't trust others (Kulkarni et al., 2017), so guards should be present.

Recent research has been conducted with the aim to identify the source of violence against women in the context of sanitation. The majority of instances of violence against women (VAW) are from non-partners; in other words, women are most often abused by men with no relationship to them when accessing sanitation (Jadhav et al., 2016). Women that practice open defecation have a 2.14 times higher risk of experiencing non partner sexual violence (NPSV) compared to women that use private or public sanitation facilities (Jadhav et al., 2016). While husbands or other male family members are often a source of stress and fear of potential physical abuse, intimate partner sexual violence (IPSV) is rarely reported in the context of sanitation behavior (Kayser et al., 2021).

In addition to NPSV, women who openly defecate face many obstacles that affect their safety when relieving themselves in open fields, drains, forests, jungle, etc. Women who travel to places to openly defecate are at a higher risk for sexual violence (Khanna & Das, 2016), and despite many safety strategies that they engage in like waking up early or going in groups, women are not safe and men continue to prey upon them (Singh & Mishra, 2010). There have been attempts by WASH NGOs to separate the OD land into male and female spaces to reduce the risk of sexual violence against women, but men do not abide by this and continue to harass and assault women who are practicing OD (Bapat & Agarwal, 2003)

Despite women taking safety precautions, they often have nowhere else to go except the fields for open defecation. In India, field owners will deploy men and boys to guard the fields from women who need to OD and they face the risk of sexual assault from these men (Singh & Mishra, 2010). While women are clearly aware of the potential threat of sexual violence when practicing open defecation, many women and girls in India still prefer to gamble

with this threat than use the poorly maintained, dirty, and expensive public latrines (Khanna & Das, 2016). Women who practice OD are already vulnerable, so this is a clear assault of their dignity.

In addition to open defecation, many women face unsafe instances of harassment or violence when using community toilet blocks (CTB), also known as public latrines or community latrines. Poor sanitation infrastructure such as lack of light, broken doors, missing locks, open and roof designs are all factors that contribute to poor safety outcomes for women engaging in sanitation behaviors (B. A. Caruso et al., 2017). Men and boys frequently gather around CTBs, taunting, teasing, and using sexual slurs against women when they attempt to use the sanitation facility, leading to women feeling unsafe (Panchang et al., 2021). This can lead to avoidance behaviors such as suppression or withholding food and water to avoid having to use the CTBs frequently (Panchang et al., 2021).

In regard to environmental barriers, physical weather such as the monsoon season makes it difficult, stressful and dangerous for women to find a place to use the toilet (Khanna & Das, 2016). Women also report limited and disproportionate distribution of water in Mumbai slums, so women often have to travel far and treacherous distances to retrieve water for their latrine use (Bapat & Agarwal, 2003). This leads to embarrassment and shame of women when they must scrounge or beg for water when it runs out. Additional environmental barriers such as crossing active railways to reach defecation sites also adds stress to women (Singh & Mishra, 2010). Many women would rather use the railway tracks and face injury or death than use the dirty toilet (Singh & Mishra, 2010). Finally, women often have to pay to use the toilet, which

have long ques, are near the road, and are lacking proper sanitation infrastructure, which creates added stress and an overall poor quality of life for these women (Singh & Mishra, 2010).

Regarding women using private latrines, safety and security is still a present fear, but risk of violence or harassment against women when using a latrine in their home is lower than when practicing OD or using the community toilet. Some women report poor sanitation infrastructure in their own homes, leading to feelings of insecurity; for instance, if their latrine is an open roof design and their home is on a hill, men and passersby can still see in and yell sexual comments, tease, stalk, peep, or verbally harass (Banka et al., 2021a). Additionally, women who own a private latrine in their home often run errands, travel, or go to school and are not always able to use their private latrine. Additional research needs to be done on the safety and security experiences of women who use a private latrine in order to fully understand the scope of safety in terms of gender and sanitation in India.

Privacy

Poor privacy is commonly reported among women and girls in India when engaging in sanitation related behaviors (Sclar et al., 2018). Lack of privacy repeatedly hinders satisfaction level and sanitation experience and can lead to situations where women feel unsafe (Banka et al., 2021a). A case study in an urban slum illustrates the experience of young girls who defecate in a vacant area beside their poor settlement in Bengaluru, India. The girls expressed and greatly emphasized their fear of being exposed while passing (Saleem et al., 2019). Women and girls frequently report that finding a private location to defecate or urinate in the open is a struggle, and a vast source of psychosocial stress (Singh & Mishra, 2010). While women that practice open defecation often have the highest reports of poor privacy, women and girls that

use private sanitation or community latrines often struggle with issues of privacy as well, similar to instances of safety & security explained above. Women are rarely confined to their homes all day, and frequently run errands, travel, or go to school (Sclar et al., 2018). Sometimes, their private latrine is unavailable, and they are forced to use CTBs that lack sufficient privacy.

Lack of privacy can negatively impact the user's wellbeing, and research has established a clear link between poor privacy and increased stress levels (Sclar et al., 2018). Women who use public toilets often complain about boys gathering close to the toilet blocks, teasing, and peeping, flashing, all related to their lack of privacy, increasing their levels of stress (Sclar et al., 2018). These factors can also lead to women feeling unsafe when using sanitation facilities, which highlights the interconnectedness of these themes. Women who defecate in the open are often shamed by municipal workers or men in their cities or villages for being "dirty", and frequently report feeling shameful at how exposed they are in public (Sahoo et al., 2015).

Compared to men, women and girls have additional sanitation and hygiene related needs they must care for, most notably, menstruation. Menstruation is often considered a taboo in India, so lack of privacy fuels this problem even further. Women report feeling the need to hurry themselves when tending to their menstrual needs because their male family members can hear them and know what they are doing in the latrine, which emphasizes the link between privacy and bodily integrity (Panchang et al., 2021) . The same goes for women who use CTBs or OD; stress is increased when women need to care for their menstrual needs when they are not able to secure a private location (B. A. Caruso et al., 2017).

Privacy is closely related to bodily integrity and safety & security, and further research involving all 3 elements needs to be done to improve women's feelings of empowerment when accessing and engaging in sanitation related behaviors.

Gaps in Research

Little is published on the non-health impacts of sanitation. This thesis addresses that gap and aims to identify themes and patterns among women and girls who have different experiences with sanitation by using a refined tool to examine women's sanitation- related empowerment—thus, this thesis aims to identify how different sanitation experiences affect women and girls' perceptions and experiences of bodily integrity, safety and security, and privacy.

According to current gender and sanitation literature, a new aggregated and quantifiable measure of gender empowerment for women is necessary (Caruso et al., 2017). Quantifying empowerment is important because it implores more solid verifiability into policy (Caruso et al., 2017). Prior to the development of the MUSE study, the backbone of this thesis, no sanitation related measures of empowerment existed, and the MUSE study was a significant step in addressing the prominent gap in sanitation related empowerment in LMIC.

A previously used tool was the Gender Empowerment Measure (GEM), but it is an incomplete and biased index insufficient in measuring sanitation- related empowerment (Beteta, 2006). It fails to include those not in the highly educated and economically advantaged categories. Gender inequality among those of lower class is not accounted for since the GEM is

only measured in the formal sector, and measurement is mainly for use by high-income countries (Beteta, 2006). GEM tends to downgrade LMIC less visible improvements in empowerment; for example, decreased violence against women, a woman's right to choose, and rights to their own bodies, cornerstones of bodily integrity and safety & security (Beteta, 2006).

Another failure of GEM is that it fails to incorporate bodily and sexuality issues, legal, cultural, and religious issues. Beteta argues that incorporating these factors into the current GEM is not feasible since it will lose focus on the gender equality and decision- making power element (Beteta, 2006). Beteta suggests that modifications should focus on household and physical autonomy dimensions, and construction of a new indicator, the GEEE (Gender Empowerment Enabling Environment) (Beteta, 2006). Greater efforts to generate statistical information should be made in medium and low human development countries to avoid and reduce greater data gaps (Beteta, 2006).

While not all these examples and explanations in the previous paragraphs are explicitly sanitation-related, the framework and basis of empowerment remains interchangeable. A recently published study in 2017 serves as a foundation for future work surrounding women's sanitation related empowerment. Researchers conducted a qualitative study in Odisha, India, that eventually identified the need for a standardized term of "sanitation insecurity" (Caruso et al., 2017). This study recognized the need for further research in the sanitation realm of empowerment, and emphasized that poor sanitation access, particularly in women and girls, can lead to more than just poor physical health outcomes (Caruso et al., 2017). Women and

girls face additional blended and complex issues than just choice and toilet access, and tense gender roles in India often lead to a multitude of concerns associated with their urination, defecation, and menstruation experiences, thus restricting empowerment (Caruso et al., 2017). Further research and policy work needs to be done to address the needs, social norms, and complex innerworkings of women's sanitation experiences.

It is suggested that future research pertaining to the Resources domain of empowerment highlight the interconnected role of bodily integrity, privacy, and safety and security as a unit, instead of separately. Current research highlights the separate relationships between bodily integrity and privacy and bodily integrity and safety and security but does not identify how all 3 subdomains work together under the general umbrella of bodily integrity. This thesis, along with other work in the sanitation related empowerment realm, serves to slowly close this existing gap. While this thesis only generates discourse for 3 sub domains of empowerment (safety & security, privacy, and bodily integrity, it is one crucial step towards achieving equity and improving experiences of empowerment for women in India by examining how these three sub domains are interrelated and affect each other.

3. MANUSCRIPT

Contribution of Student

I worked with the MUSE (Measuring Urban Sanitation Empowerment) research team at Emory University on their study, funded by the Bill & Melinda Gates Foundation (BMGF). Phase 1 of the study had already been implemented in Tiruchirappalli, India, and Kampala, Uganda, so I did not take part in the study design or data collection aspect of MUSE. After completion of study activities, I received access to all three domains of translated and transcribed cognitive interviews from India. I reviewed several MUSE briefings and the empowerment framework, and after reviewing all the materials and literature, I decided on a research question that would focus on the resource's domain of empowerment: specifically bodily integrity, safety & security, and privacy. After conducting a literature review and writing the methods section, Courtney Pico (working on the same research question but with data from Kampala, Uganda), and I collaborated on a shared codebook which was used in the analysis process. A shared codebook was decided by the thesis advisors and students as the best route, so that findings from both countries could be compared and eventually presented to the country partners. After the codebook was developed, I coded the 13 individual resources transcripts from India and followed the analytic cycle to develop my results: leading to the development of the discussion and public health implications sections.

"If men are sitting there, I will be scared and then go with fear": **A thematic analysis of women's experiences of Bodily Integrity, Safety & Security, and Privacy in Tiruchirappalli, India**

Abstract

Introduction: The global Water, Sanitation, and Hygiene (WASH) lens has primarily focused on the relationship between poor sanitation and infectious disease. Research has recently expanded to explore how mental and social well-being are impacted by sanitation, particularly in women and girls. The concept of women's empowerment in relation to sanitation has recently emerged, and while we generally understand the role empowerment plays on improving the mental and social well-being of women and girls around the world, little is known about how women's empowerment impacts WASH conditions or vice versa. Further, effective sanitation- related interventions play a key role in reducing WASH disparities, however, it is unclear the role of empowerment in this process. Until recently, there have been no existing WASH-specific tools to effectively measure of women's empowerment. The relationship between gender and sanitation has recently emerged as a prominent theme in India. Among the 2 billion people still without basic sanitation services in 2017, nine out of ten lived in three regions, most notably, Central and Southern Asia (749 million).

Often, women and girls are more severely impacted by inequities in the WASH environment and face additional consequences in comparison to their male counterparts. Specifically related to empowerment, women and girls often struggle with issues of privacy, safety and security, and bodily integrity when accessing their preferred sanitation methods. Women deal with harassment, teasing, poor cleanliness, and often report feeling forced to suppress urine or feces if their sanitation facility is unavailable or unclean. This thesis examines qualitative findings from the Measuring Urban Sanitation Empowerment (MUSE) study from women residing in Tiruchirappalli (Trichy), India, specifically related to bodily integrity, safety and security, and privacy.

Methods: The MUSE research team at Emory University is conducting a multiphase study to develop and validate a survey tool to measure women's empowerment in relation to urban sanitation. This thesis examines the qualitative responses from 13 cognitive interviews carried out to validate the survey, with a focus on data relating to bodily integrity, privacy, and safety & security. Women were purposively sampled based on age group and marital status (unmarried 18-25, married 25-40, and 40+). After data collection ended, the data was analyzed thematically.

Results: The identified themes that emerged within the sub domains of bodily integrity, safety and security, and privacy overlap and are frequently interconnected due to the multifaceted and complex nature of gender and sanitation. Women's opinions and experiences tended to differ based on access to their preferred sanitation method (private latrine, public shared latrine, or open defecation). In terms of *bodily integrity*, women reported only occasionally having to suppress urine or feces, typically if a public latrine or open defecation was their option. Rarely did women withhold food or water to control their urges; this was only reported by a few women if they were traveling or running errands and didn't know if a bathroom would be available. Cleanliness, smell, and fear of potential negative health outcomes were all factors

related to bodily integrity. In terms of *privacy*, women closely related their level of satisfaction with their sanitation facility to their individual experiences of privacy. Women often mentioned that overall, they had privacy when using their home latrine, but less so when using the public latrine or defecating in the open. Rarely, women mentioned that they lacked proper sanitation infrastructure (door, lock, etc.), but some mentioned that the open roof design of their latrine was inopportune because the angle of the street and the open roof sometimes led to people being able to see in. Privacy was often mentioned jointly with safety & security, and women sometimes reported feeling unsafe and vulnerable if they lacked a private place to urinate or defecate. In terms of *safety and security*, many barriers were discussed by the women, however not with the same intensity. Key themes include fearing the threat of sexual or physical harassment, barriers to safety in the sanitation environment (animals, slippery floors, broken tile, etc.), violence towards women when accessing and using sanitation (sexual and physical) and men.

Discussion: Themes related to bodily integrity, privacy, and safety and security are often interconnected due to the complex nature of gender and sanitation. While many results were found to be consistent with the current gender and sanitation literature, this thesis uncovered perspectives from the women about violence (sexual and physical) towards women when using their preferred sanitation method. While the literature shows that women often face violence when using the public latrine or OD, the results of this thesis provide evidence to further research violence against women (VAW) who use private latrines.

By: Megan E. Bleakley

INTRODUCTION

In 2015, the UN committed to 17 Sustainable Development Goals (SGDs), with a goal of making significant progress by 2030. Of particular relevance to this thesis are SDG #5 (gender equality) and SDG #6 (clean water and sanitation for all). According to the most recent global WASH data, use of basic sanitation services has increased rapidly since 2000 (an average of 0.63%), however, sanitation coverage is not as widespread and often lower than basic water access (UNICEF & WHO, 2019). Worldwide, approximately 2.3 billion people lack access to basic sanitation services, and 892 million practice open defecation or use unimproved sanitation facilities such as pit, hanging, or bucket latrines (UNICEF & WHO, 2019). An additional 600 million people only have access to limited sanitation services, and often share with additional households (UNICEF & WHO, 2019).

The Joint Monitoring Programme (JMP) estimates that approximately 520 million people in India practice open defecation every day, despite government efforts to improve toilet coverage (UNICEF & WHO, 2019). This accounts for 90% of the 692 million people living in Southeast Asia who practice open defecation, and 59% of the 1.1 billion people worldwide (UNICEF & WHO, 2019) Additionally, in 2017, 2 billion people still went without basic sanitation services, and 749 million of those people resided in Southeast Asia (UNICEF & WHO, 2019).

While poor WASH conditions affect many diverse groups of people in India, women and girls that experience poor WASH conditions tend to be heavily impacted and face greater negative outcomes. Often, they face harsher and more dire consequences in comparison to their male counterparts when WASH facilities are not suitably available (Banka et al., 2021a).

While there are many negative health outcomes that contact with contaminated feces from open defecation and poor WASH conditions can bring, including diarrhea, death, poor nutrition, etc., women that do not have proper access to WASH services face additional consequences. These include damaging effects on their education, income, employment, health status, and feelings of empowerment ("Gender-Disaggregated Data on Water and Sanitation," 2010).

Recent emphasis has been placed on women and girls' overall *access* to WASH services, but there is often a disconnect between gender and sanitation related *empowerment*. In an attempt to connect these topics, there has been a recent surge in gender-related sanitation research. Evidence illustrates that increased women's empowerment can be beneficial for a community and households sanitation behavior. While any improvement in sanitation behavior is noteworthy, it is important to recognize that women and girls deserve to be empowered regardless of the positive associations in research. However, a gap remains in evidence on sanitation and empowerment. This thesis serves to address this gap by leveraging qualitative data to identify broad themes, potentially facilitating positive change for women and girls in India.

In order to address the gap in research on gender and sanitation-related empowerment, the MUSE research team at Emory University carried out a study that created and tested a survey tool to measure women's empowerment in relation to sanitation in urban areas. Within the survey, empowerment is broken down into three general domains: agency, resources, and institutional structures. Within these three domains, each has further specific subdomains.

While all facets of empowerment are important, this thesis focuses on the Resources domain and more specifically on three sub domains of Resources: bodily integrity, privacy, and

safety and security. Not enough is known about how issues of bodily integrity, privacy, and safety and security impact a woman's sanitation experience, and how these experiences (positive or negative) impact their feelings of empowerment. In many areas, women face broad challenges when accessing sanitation, including threats of sexual harassment, name calling, embarrassment, shame, lack of sanitation related infrastructure, physical harm, etc. (Banka et al., 2021a). There has been recent emerging literature surrounding women's experiences with resources and sanitation, but there has been little focus on bodily integrity (women's control over their bodies and ability to access and use their preferred sanitation location). In addition, current research has grouped privacy and safety and security together, but there is a need to discuss how bodily integrity encompasses safety & security and privacy under its umbrella.

The aim of this thesis is to generate evidence on sanitation-related empowerment, with a focus on examining the three sub domains of bodily integrity, privacy, and safety and security explicitly together, using qualitative data collected from women in Tiruchirappalli, India. A further aim is to illustrate how these three sub domains are interwoven and need to be addressed as a whole to spur long lasting and significant change.

METHODOLOGY

The overall goal of the MUSE study is to develop and validate a quantitative survey tool to measure women's empowerment in the context of urban sanitation programs. During Phase 1 of this study, qualitative research, and cognitive interviews, was conducted to ensure that the survey questions were understood and measured the outcomes as intended. This thesis involves analysis of cognitive interview data collected in urban Tiruchirappalli (Trichy), India.

PHASE 1 DATA METHODOLOGY

Study Contributors

Emory University MUSE staff worked closely with Athena Infonomics, a data driven consulting firm that was separately funded by the Bill and Melinda Gates Foundation (BMGF). Athena has a strong presence in India, maintains relationships with local organizations, and works on other projects related to urban sanitation. Athena Infonomics sub-contracted with Civic Fulcrum, who was the main party responsible for hiring data collectors. Translation and transcription were completed in-house by Civic Fulcrum employees. MUSE staff were responsible for training and debriefing the interviewers but did not directly facilitate interviews in the field or gather data.

Study Setting

Phase 1 of the MUSE study took place over a span of 8 days in August 2019 in one mixed-income neighborhood in urban Tiruchirappalli, India (8/19-8/27). Tiruchirappalli, also known as Trichy, is a city located along the Kaveri River within the Tiruchirappalli District in the

Indian State of Tamil Nadu (Office of the Registrar General & Census Commissioner, India, 2021). According to disaggregated household data from Tamil Nadu, about 51% of households are located in urban areas, typically consist of 3.8 members, and 16% of households are headed by women. (NFHS-4, 2017). In fact, 13% of the population in the state of Tamil Nadu resides in households headed by females (NFHS-4, 2017). There is roughly a higher ratio of females to males in Tamil Nadu, with an overall sex ratio of 1,033 females per 1,000 males (NFHS-4, 2017).

In terms of WASH access, 91% of households used an improved source of drinking water (NFHS-4, 2017). An improved source can be defined as any mechanism of water delivery that has the potential to deliver safe drinking water free of contamination, available when needed, and accessible on the premises (JMP, 2020). Even though the majority of households in Tamil Nadu use an improved drinking source, only 31% have their water piped directly into their dwelling (NFHS-4, 2017). Urban households are more likely (72.3%) to have their water piped directly into their dwelling (NFHS-4, 2017), while 24.2% spend less than 30 minutes round trip to obtain drinking water, and 2.8% spend 30 minutes or longer (NFHS-4, 2017). In terms of demographics, 85.6% of heads of household in urban areas practice Hinduism, while 7.5% practice Islam (NFHS-4, 2017). 99.2% of urban households in this state have functioning electricity, while 0.8% do not (NFHS-4, 2017).

Additionally, 75% of married women are involved in decision-making activities surrounding their own health care (NFHS-4, 2017). Research shows that 79% of married women who work and are paid in cash decide how their salary will be spent and engage in 70% of the decision making in the household. However, 46% of women ages 15-49 have experienced some sort of physical or sexual violence (NFHS-4, 2017). There is also a slight gender disparity

regarding education, with only 32% of women ages 15-49 having completed 12+ years of schooling (*India National Family Health Survey (NFHS-4) 2015-16 [FR339]*, 2017).

Data Collection

Cognitive Interviews

First, participants were asked the quantitative survey questions, which were followed by the cognitive interview questions that asked the participant to describe her thinking and what the question meant to her. In the cognitive interviews, participants were asked after each survey question to answer honestly based on their own experience with sanitation. In addition, the women were asked to explain back to the interviewer how they would ask the same question if the roles were reversed. This was a strategy was designed to ensure face validity and make sure the content in the interview guide was interpreted as intended. This was also a strategy used to identify any potential language translation or context issues. In addition, the research team understood the importance of ensuring that the survey tool was culturally relevant and appropriate for the specific community that the data collection took place in. They were mindful from the beginning that the participants may interpret questions differently or have alternative insights. Participant input on the survey material was vital to the overall success of the survey package.

There were three total cognitive interview guides used: an agency guide, a resources guide, and an institutional structure guide. In the agency interview, participants were asked questions regarding their leadership, decision-making, collective action, and mobility. The resources interview guide asked participants questions related to critical consciousness, bodily integrity (an umbrella concept that includes the themes of privacy, heath, and safety and

security), and assets (social capital, time, knowledge and skills, financial and reproductive assets). Lastly, the institutional structures interview guide asked participants questions related to norms and relations in their neighborhood or community.

Demographic Information

Descriptive statistics were calculated and are presented in Table 3.1 in the results section. These statistics include general demographic data such as neighborhood, age, religion, and caste and were gathered by the interviewer at the beginning of the cognitive interviews conducted in Tiruchirappalli.

Population

Cognitive interview data was collected from 37 women in one mixed-income neighborhood in Tiruchirappalli, India. Cognitive interviews were conducted with women in Trichy who were eligible to participate if they spoke Tamil and were over the age of 18 to ensure that the questions asked were understood as originally intended and to ensure face validity. The interviewers were all female and fluent in both English and the local language (Tamil). Phase 1 data collection was split into three team assignments based on the three domains of empowerment: agency, resources, and institutional structures. Each team consisted of a lead interviewer, lead notetaker, and an alternate/backup. In total, there were nine local research assistants that collected data in the field.

This study defined its target population *a priori* and purposively engaged 41 women over the age of 18 across 3 life stage categories (unmarried women 18-25, married women from 25-40 years old, and women over the age of 40). According to established WASH research, women of different ages and marital statuses have been shown to have different sanitation

experiences, so it was important to disaggregate the women into different life strata for analysis purposes (Caruso et al., 2017; Sahoo et al., 2015; Hulland et al., 2015). Each interview took between 60-120 minutes to complete and could be ended at any time. Participants were only interviewed one time and not required to attend or participate in any follow up discussions or surveys. In Phase 1, study staff were purposively sampling by age group and marital status. Participants were required to be a consenting woman of the community who was over the age of 18. However, women who were deemed mentally incompetent were excluded from the study since the team could not be sure the woman understood the informed consent process.

Recruitment

Study staff recruited women in the identified neighborhoods by knocking on doors to identify if a resident of the household was a member of the particular demographic and willing to participate. Snowball sampling was used to recruit women if there was difficulty identifying women in a particular life stratum. Recruitment was done solely through verbal communication and word of mouth; flyers were not utilized in the recruitment process.

Data Management and Analysis

The MUSE team engaged the data collection team in debriefing sessions after each day of data collection and recorded these meetings for later review if needed.

In the field, study staff simultaneously translated and transcribed the interviews. After data was transcribed and deidentified, the individual transcripts for agency, resources, and institutional structures were uploaded into MAXQDA, a software program designed for

computer-assisted qualitative and mixed methods data analysis. There were 11 deidentified transcripts for the agency domain, 13 for the institutional structures domain, and 13 for the resources domain. However, two transcripts in the resource's domain were not able to be fully transcribed due to inaudible recordings, so they were not included in analysis. The transcripts were categorized into three corresponding document groups (agency, resources, institutional structures) to maintain organization during analysis.

Each of the three domains of empowerment had an individual cognitive interview guide with corresponding questions. This thesis sought only to identify the themes that emerged specifically related to bodily integrity, privacy, and safety and security, part of the Resources domain, so the thesis student only wrote memos on and coded the 13 resources transcripts. However, the student skimmed through the agency and institutional structures transcripts and used search terms to pull out any related or useful information. It was not necessary to do a full code of the other domains since the interview questions for agency and institutional structures were not primarily focused on bodily integrity, privacy, and safety and security.

To begin the analysis process, the student wrote analytic memos on each of the resources transcripts to begin the code development process. After multiple readings of the transcripts, the memos were reviewed, and the student began to develop an original codebook. The majority of the code development process was inductive in nature, due to the exploratory nature of the research. However, there were three deductive codes for the sub domains (privacy, bodily integrity, safety and security). The codebook consisted of 27 codes developed by the thesis student, and a specific definition and example was provided for each. The code

definition included instances in which the code should not be confused with another code in order to ensure cohesive and thorough coding of the transcripts during analysis.

Intercoder Agreement

Phase 1 of MUSE data collection was conducted in two countries. While this thesis focuses on Trichy, India, another thesis student engaged in analysis of qualitative data collected as part of Phase 1 in Kampala, Uganda. Both students used the same research question since the original MUSE study investigators sought to understand the similarities and differences in experiences of bodily integrity, privacy, and safety and security in the two countries. The students developed the codebook together so that findings from both countries could be compared. In order to ensure that the codes were understood fully by each student before analysis, a modified intercoder agreement (ICA) assessment was done. The two students each coded one transcript from each country that was rich in data regarding bodily integrity, safety, and privacy. After coding, the students discussed the coding process by going through the individual coded transcripts to ensure there was a mutual understanding of the code definitions and each was used appropriately. Once this process was complete and all of the code definitions were agreed upon, analysis of the 12 remaining Resources transcripts for India began.

After the transcripts were coded, the thesis student utilized the analytic tools in MAXQDA to begin the steps in the analytic cycle. First, the student used data searching strategies to look at particular codes one issue and theme at a time (Hennink et al., 2020). The student used MAXQDA search strategies to select both individual codes and pairs of codes to further analyze and retrieve particular segments. Initial code relationships were discovered by

analyzing retrieved segments and writing down notes about emerging themes. These initial findings directed additional search strategies and sparked inductive reflection and further exploration (Hennink et al., 2020). The student also searched by variable, to identify themes related to sanitation type (public toilet, private toilet, or open defecation) and life stage (18-25, 25-30, 40+). While not all of the initial findings were fruitful, this stage of analysis was critical. After the initial data searching stage, the student began the description stage of analysis. Significant themes from the search stage were categorized and the student wrote thick descriptions of each theme to understand the variation, nuances, depth, and context of each issue (Hennink et al., 2020). While the main goal of this thesis was to identify emerging themes related to bodily integrity, privacy, and safety & security and not to develop a theory, the student still utilized the last stages of the analytic cycle. Conceptualization was useful in considering the "bigger picture" of the data as a whole, which allowed the student to see the interconnectedness of the codes and themes (Hennink et al., 2020). This strategy enabled the thesis student to identify key linkages and overarching explanations, relating back to the complex nature and context of gender and sanitation. Finally, the student used MAXQDAs Visual Tools to create a visual graphic to further demonstrate the relationship between the codes.

Descriptive statistics were calculated and are presented in Table 3.1 in the results section. These statistics include general demographic data such as neighborhood, age, religion, and caste.

Ethics

The MUSE team at Emory received approval from both the Emory University Institutional Review Board (USA; IRB 00110271) and from the Azim Premji University Institutional Review Board (India; Ref. No. 2019/SOD/Faculty/5.1) to carry out the study activities.

Consent

Participants were informed prior to the start of the interview that there would be no cost to participate, but they would also not be compensated for their time. The interviews were voluntary, and interviewees were told they could end the interview at any time if they were uncomfortable without facing any negative repercussions. Interviewers made their best attempt to find a quiet private location, but in the case that participants were in ear shot of others, the interview was paused and began again when privacy was resumed. Participants were informed of their rights before the start of the interview and were asked to verbally consent. As part of the informed consent, participants were told their interview would be recorded, transcribed verbatim by trained research assistants, deidentified, and then the recording would be deleted directly after. Lastly, participants were informed of both the risks and benefits to participating in this study. While there were no direct benefits to the individuals of the study, plans were made to disseminate the findings of the study to the direct communities involved in order to inform future program activities. Additionally, there was little to no risk for participants who participated in this study.

RESULTS

General Demographic Information

In total, 13 women in one mixed-income neighborhood in Tiruchirappalli, India, were interviewed. While 2 transcripts out of the 13 had multiple inaudible sections, all 13 transcripts were coded during analysis to identify key themes. Out of these 13 women, 10 (~77%) had a private latrine in their home, 1 (~8%) had a private latrine outside their home, and 2 (~15%) relied on the public latrine in their community. Additional demographic data can be found in Table 3.1.

Table 1: Demographic Information for Resources Participants (n = 13)		
Age *(mean; range)*	38	(19 – 70)
NEIGHBORHOOD		
THULUKKATHAMMAN KOVIL STREET	5	38.5%
NAYAKKAR STREET/PUDHU STREET	8	61.5%
TYPE OF HOME		
Single family home	12	92.3%
Apartment	0	0.0%
Compound with shared living spaces	1	7.7%
NUMBER OF CHILDREN *(mean; range)*	1.7	(0-3)
OCCUPATION		
Unemployed	10	77.0%
Self- employed	1	7.7%
Employed	0	0.0%
Student	2	15.4%
EDUCATION		
Completed primary or less	3	23.0%
Completed more than primary	10	76.9%
LIFE STAGE		
Unmarried young woman (18-25)	5	38.5%
Married woman (25-40)	3	23.0%
Over 40	5	38.5%
MARITAL STATUS[1]		
Single/never married	4	33.3%
Married	6	50.0%
Unmarried, living with partner	0	0.0%
Separated/divorced	0	0.0%

Widowed	2	16.7%
RELIGION		
Christian (Catholic)	1	7.7%
Christian (Non- catholic)	3	23.0%
Hindu	9	69.2%
CASTE		
Scheduled Caste (SC)	3	23.0%
Other Backward Caste (OBC)	0	0.0%
Brahmin	7	53.8%
General Caste (excluding OBC and Brahmin	2	15.4%
Schedule Tribe (ST)	0	0.0%
Do Not Know	1	7.7%
MINUTES TO WALK TO SANITATION FACILITY *(mean; range)*	5.8	(1-60)
IS SANITATION FACILITY SHARED WITH OTHERS OUTSIDE HOUSEHOLD[1]		
Yes	3	25.0%
No	9	75.0%
DO YOU PAY TO USE SANITATION FACILITY[1]		
Yes	0	0.0%
No	11	100.0%
LOCATION OF SANITATION FACILITIY		
In own dwelling	4	30.7%
In own yard/ plot	8	61.5%
Elsewhere	1	7.7%
HOUSEHOLD ASSETS		
Water pump (yes)	0	0.0%
Electricity (yes)	13	100.0%

[1]Missing information, participant did not answer

Table 3.1: Demographic table

Based on the data, opinions and experiences differ for many of the women based on their immediate sanitation situation. For example, women that lived in a home with a private latrine still often had to use a public latrine when traveling or running errands, and some engaged in open defecation when visiting rural villages. Thus, situational experiences were considered in analysis and results reporting.

The most prominent and frequently mentioned themes from the transcripts are outlined and discussed in further detail in the following sections. Topics and themes will often be discussed more than once in each section due to the interrelated relationship of

empowerment and sanitation. However, the specific context of the topic may differ depending on the section it is being discussed in, so it is important to still capture all of the diverse and unique experiences of the interviewed women.

Bodily Integrity

Bodily integrity refers to "the ability of a woman to maintain control over her own body, and the ability to access and use her preferred sanitation location". Within the interview guide, the section on bodily integrity included questions asking about women's experiences with suppressing the urge to urinate or defecate, withholding food or water, and more. The women reported varying levels of experience and agreement on the discussed topics.

When asked if they ever had to control or suppress their urge to urinate or defecate, women's responses varied based on the scenario. Women rarely reported having to suppress their urge while in their private home with a latrine: most women reported having free reign of the latrine in their home and rarely had to wait for use unless another person happened to be using the toilet first. When completing chores such as cooking, cleaning, or childcare, most women said that they would be able to pause their chores and use the toilet. If they did not want to leave their child or the cooking alone, women frequently mentioned that they would be able to ask their neighbor to quickly watch while they use the latrine. Most women also mentioned that if their husbands were home, they would usually take over while they had to use the toilet. However, this was not always the case and a woman explained that the men in their community generally did less work around the house and it would require asking the men to take over while she used the latrine. If the men did not agree, this would be an

inconvenience for the women and would require the women to suppress their urge to urinate or defecate.

Suppression was discussed in terms of life stage and childcare. Women that are in the earlier life stages of this study often had small children or infants to care for, which made it difficult to freely use the toilet if additional help or their husbands were not there. One woman repeatedly said that "if we have to go, we go, we cannot control, we will just go", and another woman stated that "if I have to go urinate or defecate, I'll turn it off [stove] and go and come back and the look after the work. No one can control that urge, right? If I have to look after children, if he's a baby, then I will leave him with someone only if there is that someone in the house. Otherwise, how will we go" so it is unclear what women would do if their husband or other male family member did not take over childcare or chore duties. This leads to further evidence for the argument that women's sanitation related empowerment (especially bodily integrity in this case) differs by life stage, and women that are mothers of infants or young children may have to suppress more when other women do not.

When women were outside their home, suppression occurred more often. Cleanliness of public latrines was an important factor when women considered whether they would use the latrine or suppress their urge. Women rarely mentioned cleanliness as a factor in their own homes, but many mentioned that the public latrines were "disgusting", and they would make them feel sick from the smell and the appearance. The "corporation" was also mentioned frequently by the women, in reference to the Tiruchirappalli City Municipal Corporation. This local government body is responsible for removing trash, cleaning the community latrines, drains, and sewers. Overwhelmingly the women emphasized that the corporation rarely did

their job and cleaned the facilities, which was a huge source of annoyance and frustration. The women emphasized that the government was not providing basic WASH services for them. Consequently, when the "corporations" did not come to clean, dirty water would become stagnant and could be a breeding ground for diseases. There was a fear that children in the community would come in contact with this water and become sick, so they tried to avoid the public latrines as often as they could.

> "P: They must clean and maintain. Garbage problem, drainage problem. … Even the drainage, they must daily come and unclog it. That also they are not removing, if they remove it, they leave it there itself, causing it difficult for the vehicle to move and children to play in that street. If they remove in the morning, they should take it away before evening. But they're not taking it. Again, they will leave it there itself which will again fall inside only. Children will go near it and put their foot in it while playing. And this also breeds mosquitoes. This also is causing fever and cold and all other illness."

Rarely, women mentioned having to withhold food or water to prevent urination or defecation. In one instance, a woman mentioned withholding water so that she did not have to use the public latrine when she was taking classes at the college. In another instance, a woman mentioned that if she was planning on traveling a far distance in a vehicle or bus, she would withhold water, so she did not have to hold her urine if a bathroom was not known to be available. However, women often seemed confused if they were asked if they withheld food specifically, since they would "feel dizzy". It was not reported that women withheld food, but on occasion would feel the need to withhold water.

Some women also mentioned that they were not fully satisfied with their personal home latrine and wished that they had two toilets: one for the women and one for the men. These women mentioned feeling shy or embarrassed when menstruating, because the men

would know what they were doing in the bathroom, since tending to menstrual needs often takes longer than urination. In one related instance, a woman reported they sometimes had to quickly use the bathroom when menstruating or suppressed or prolonged time between their bathroom visits.

Another key theme was the fear of potential health outcomes that women expressed in relation to their sanitation experience. Many of the expressed health outcomes hindered the women's experience with sanitation, thus impacting control over their bodies and how they accessed sanitation. This fear is related to bodily integrity because often, the fear appeared to make women feel powerless, and prevented them from using their preferred sanitation method. A few women feared getting a disease, specifically from the unclean conditions of the public latrines. Smell and no or inconsistent available running water and soap were factors that some women mentioned as to why they feared contracting a disease. While fear of disease was common, none of the women interviewed reported actually contracting a disease from the public latrines. Women did not report having a fear of disease in their own home latrine, and only briefly mentioned fear of disease when defecating in the open.

Finally, women talked about suppression in relation to their own safety and security. While women often suppress their urge to urinate or defecate due to physical barriers in their sanitation environment, a few of the interviewed women mentioned threatening husbands were a reason for suppression. This will be discussed in more detail in the next section, but women often needed to ask their husbands for permission if they had to use the public toilet/ OD or have someone accompany them because of known community dangers. If they did not consult their husbands, they faced the risk of being beaten. Due to this threat, women

mentioned having to suppress their urge to urinate or defecate if their husbands were not home or they were not able to accompany them.

Safety and Security

In the context of the MUSE project, safety and security is defined as "women's freedom from acts or threats of violence (physical or sexual), coercion, harassment, or force when accessing and using sanitation locations or engaging in sanitation-related decision-making processes in the public sphere". In addition, this thesis also includes results related to injury from animals, insects, or the physical conditions of the sanitation location, since these fall under traditional definitions of safety. In the original MUSE study, these results would fall under the health sub-domain, but based on emergent themes and connections, a decision was made to include the evidence here related to safety and security.

A key theme mentioned was the threat of harassment: physical, verbal, and sexual. The topic of sexual harassment was most consistently mentioned among the women. Men or boys were consistently discussed as the primary offenders, and to varying degrees of severity. Women did not experience any form of sexual harassment when using their own private latrine but mentioned instances of harassment when practicing open defecation or using the community toilet. Some of the women mentioned having experienced verbal or physical harassment, but only had general assumptions or anecdotes about the experiences of other women or girls in their community regarding sexual harassment.

Most commonly, the interviewed women assumed that other women in their community could be the victim of sexual slurs, comments, or crude jokes from men when urinating or defecating in the open. While the interviewed women did not claim to have

experienced sexual harassment firsthand, they were still fearful of the potential for sexual harassment and said it could be a possible threat in their area.

Additionally, a few of the women mentioned that they would never engage in open defecation in their own communities due to the presence of “rowdies” up in the “area on the hill with the rocks”. (The term “rowdies” refers to groups of men or boys who are potential outlaws or gang members that are “up to no good” and who verbally or sexually harass women.) “It’s very dangerous area, full of rowdies. Those of all who have girl child will always be strict. Even my father will also be strict till my marriage. This area is made up of rowdies.” Women perceived those engaged in open defecation as having the highest risk of experiencing harassment, especially sexual, due to them being exposed, often alone, and vulnerable. Women emphasized that men do not ever feel unsafe because in their culture, men can go anywhere (urinate or defecate) without “fear”.

When asked about physical harassment or violence, only a few women voiced that they had experienced at least one instance. Some women mentioned that they had heard stories of kidnapping, and one mentioned that they had only experienced minor grabbing or pushing when using the community latrine. This topic did not come up as often as perceived instances of verbal or sexual harassment did.

Husbands were also mentioned as a source of sanitation related violence, both feared and actual violence. Many of the women said they were required to either ask permission to use the latrine or be accompanied by their husbands to the public latrine due to the threat of sexual harassment in the area. If women did not ask permission, they mentioned that being beaten was a possibility. Due to this threat, women mentioned having to suppress their urge to

urinate or defecate if their husbands were not home. The women did not make it clear if they had actually experienced a beating, just that they were cautious to ask permission to avoid one from occurring.

Some women also said there was a risk of being beaten or shamed by their husbands or male head of household if they did not complete sanitation chores (cleaning, fetching water for the pour-flush latrine, etc.). For example, one woman said, "If they don't do, they will break their heads … for not pouring water, they beat and break heads. Because of this only a lot of problems occur, for not keeping our house clean. If they don't clean, they don't beat? Head, they break. Twice it happened also."

When interviewed, women were asked if animals contributed to them feeling unsafe when accessing their preferred sanitation method. Women did not mention animals as a barrier that prevented access to sanitation, but frequently emphasized that snakes, centipedes, cockroaches, etc., were a nuisance or a fear that they often had to put up with and try to ignore when urinating or defecating. Animals were rarely mentioned as a fear or factor that actually prevented them from using the sanitation facility. Women did not report ever being bitten, and the presence of animals was more of an issue at night when there was a lack of light. However, women often related the presence of bugs or snakes as an indicator of uncleanliness and if there was presence of animals in a public latrine rather than their private toilet, they would control their urge to urinate or defecate until they got home. Women frequently mentioned that animals or insects in a public latrine made it dirtier than if they were in their home.

> "That's what I said, if a snake might come, I might fear and not go. That was the major reason why we built a toilet at home. Secondly, flies would come, worms, what would you say? To defecate in the public toilet, it will be dirty only, right? That I keep in mind and not go? I think if I go, because of any mosquitoes would I

become sick or unwell. That's why if I go to the bathroom at a public toilet, I will immediately come home and take a shower".

Women discussed various barriers to their safety and security in the sanitation environment. While each barrier did not affect each woman with the same intensity or even at all, consistently mentioned barriers that would make women feel unsafe were a far walk (specifically at night), poor weather conditions that made the ground muddy and latrine floor pool with dirty water, and poor sanitation infrastructure (e.g., no door, broken lock, no light fixtures, open roof, large spaces between the walls, no running water). "But if its public toilet, I will get fear. During the construction of my house, I went to public toilet. But if light is lacking, I will not go".

In relation to these infrastructure problems, women were asked about their current sanitation-related finances, and some reported not having any room in their budget to alleviate instances of poor sanitation infrastructure. A smaller subset of the interviewed women mentioned having enough money or household income, but due to the cultural and societal norms in India, they did not have the sole decision-making power to spend money, and their husbands or male head of household needed to make the purchase or give permission.

Privacy

Privacy refers to "women's ability to maintain desired levels of privacy when accessing and utilizing sanitation locations". When interviewed, women consistently mentioned satisfaction and privacy in relation to each other. Often, women who had low reported levels of privacy were unsatisfied with their current sanitation option. Most women reported

experiencing less privacy when using the community public latrine instead of when they used their toilets at home.

Women were asked about different factors that influenced their perceptions of privacy in relation to sanitation. Women mentioned that broken doors and locks, and lack of light fixtures might affect other women in their neighborhood, and typically did not place as much emphasis on these factors in relation to their own private sanitation option. Sometimes these women mentioned that a lack of sanitation infrastructure would often impact them personally when traveling or running errands. Many women expressed disdain at having to use the bus station bathroom or other community latrine options for many reasons, with privacy being a prominent theme. Women said they would still use the option if they needed to.

Embarrassment and stress were mentioned often when women expressed not having optimum privacy, and occurred in all sanitation settings (home latrine, community latrine, open defecation). However, teasing and peeping was not just a confined occurrence specific only to open defecation. Women reported sometimes feeling uncomfortable using the toilet in their own homes or the community latrine due to open roof designs, where passing men or boys could easily see in and would feel the need to suppress until the men had passed by. “I: Okay! Generally, there is a small vent or opening on the toilet wall. Have you ever feared that someone could peep in through that vent or opening, while you use the toilet? P: Yes!” Women that reported negative experiences of privacy explained that they had more fear, usually connecting men or boys as the source. “Yes, they have. The boys will be standing near the restroom. So, it becomes an embarrassing moment for those girls going to restroom”.

Privacy can also be discussed in the context of practicing open defecation. Women frequently expressed that privacy was an issue when visiting family in rural villages and that they would often have to engage in open defecation in the forest. Finding a private location for this behavior was often tedious and stressful. Men and boys would frequently tease or peep at them when women had to use the forest for their sanitation needs, and it caused annoyance and frustration. A few women reported suppressing their urine or feces until they felt comfortable to continue or resumed privacy. Privacy was often mentioned in conjunction with safety and security. Some women expressed that when they were searching for a private location in the forest for open defecation, they would often feel “weird” or unsafe because men were constantly watching and would possibly follow them. While teasing was emphasized as more of an annoyance, women gave anecdotes of other women in their community that had been verbally harassed when accessing the community latrines or went to the forest for open defecation. They insinuated that it made these women feel unsafe and occurred because they were more exposed and lacked privacy. In addition to verbal harassment, some women said that a lack of privacy could lead to a higher chance of experiencing degrading sexual comments, and even more extreme threats of sexual violence, rape, or kidnapping.

Relationship between the 3 Subdomains

Often, the identified themes that emerged within the sub domains of bodily integrity, safety and security, and privacy overlap and are frequently interconnected due to the

multifaceted and complex nature of gender and sanitation. Analysis revealed that women's opinions and experiences tended to differ based on access to their preferred sanitation method (private latrine, public shared latrine, or open defecation). Results

demonstrating the interconnectedness of the 3 subdomains of bodily integrity, safety and security, and privacy have been articulated above, but the below visual (Figure 3.1) intends to highlight the relationships as well.

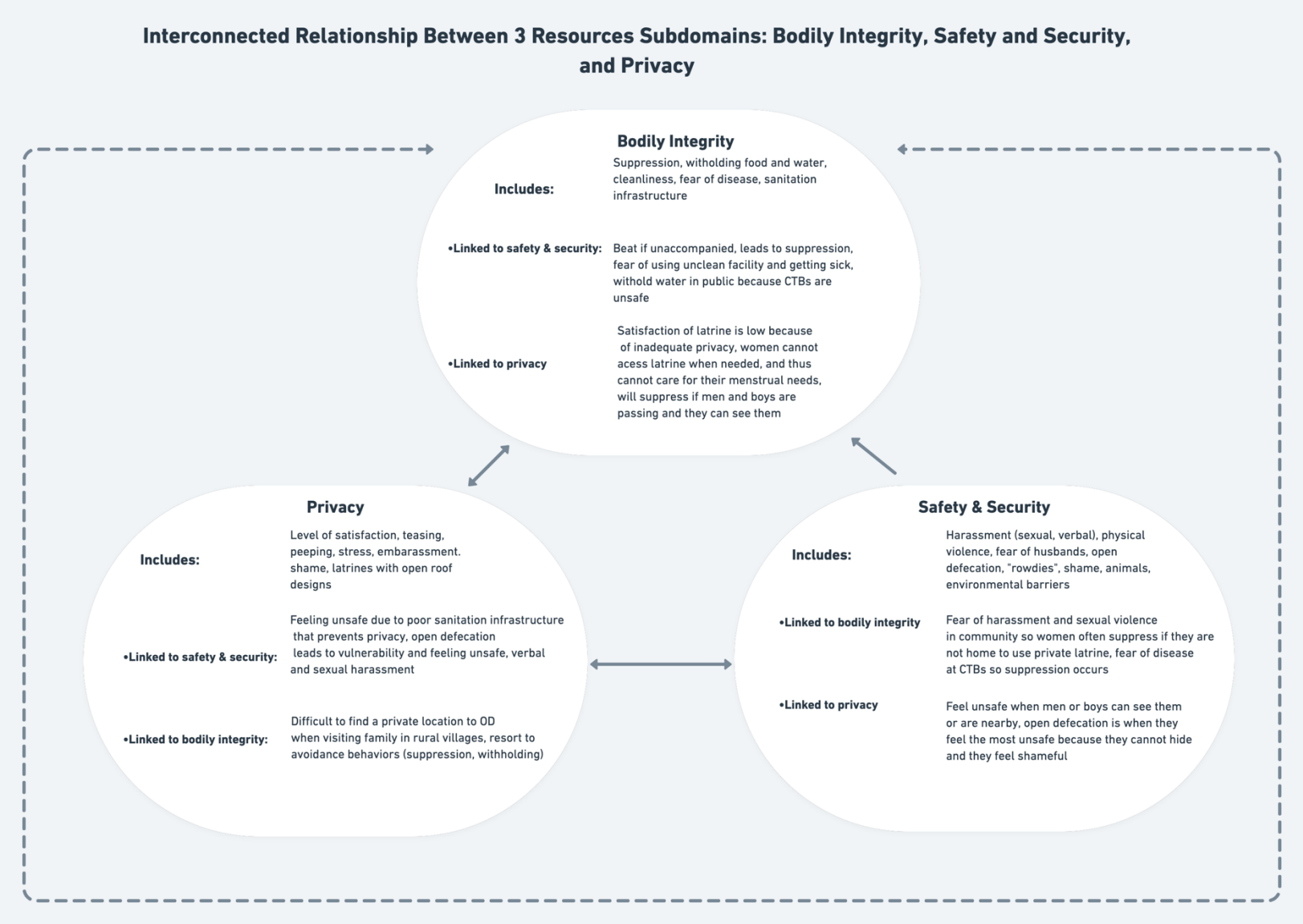

Figure 3.1: ***Interconnected Relationship Between 3 Resources Subdomains: Bodily Integrity, Safety & Security, and Privacy***

DISCUSSION

The qualitative analysis of interviews from Trichy, India revealed that women's experiences related to bodily integrity, safety and security, and privacy were often interconnected, due to the dynamic and multifaceted nature of gender and sanitation in India. Bodily integrity is impacted by avoidance behaviors, including suppression, and withholding of food or water. While these behaviors rarely occurred when the women had access to a private latrine, they occurred more frequently when women were traveling, running errands, etc. and had to use the public latrine or practice OD. Safety, privacy, cleanliness, and quality of sanitation infrastructure played a role in women's avoidance behaviors. Rarely, experiences of explicit sexual or physical violence were reported. It was common that other women in the community who did not have a private latrine had a higher risk of experiencing violence when using sanitation. Thus, private latrine ownership was perceived as being related to less risk of violence. Open roof or slatted wall designs in latrines were key elements of poor sanitation infrastructure that made women feel unsafe. Privacy and satisfaction with sanitation facility were also closely related, with lack of privacy leading to women feeling less dignified, contributing to feelings of shame and embarrassment.

When comparing the results of this work to the current literature, various similarities and differences can be discussed. The availability of a preferred sanitation type heavily impacts women's experiences of bodily integrity, privacy, and safety and security. This factor is

interwoven into each of the following sections since sanitation type is typically a determining element in gender and sanitation experiences.

Sanitation Related Experiences of Harassment

Within this study population in Trichy, women's reports of their experiences of harassment are different compared to what has been reported in studies conducted elsewhere in India. In other studies, women in India report frequent experiences of men flashing or exposing themselves to women when they are defecating in the open (Sahoo et al., 2015), and often experience verbal harassment, visual harassment, physical harassment, stalking, violence, physical attacks, and sexual assault when engaging in sanitation related behavior (Banka et al., 2021). Slum dwelling men in Mumbai often say vulgar things to women when bathing, and splash water on them; thus, women feel the need to travel to far and more secluded places to urinate or defecate (Bapat & Agarwal, 2003). In Trichy, women rarely reported instances of harassment when using sanitation, and more commonly women reported experiences of teasing and peeping from boys. This is likely due to the fact that many women in Trichy used a private latrine in their homes, thus avoiding major sources of harassment.

A study conducted in urban slums of Pune and Jaipur, India, affirms that harassment type differs based on sanitation type: private latrine, community toilet, or open defecation (Banka et al., 2021.). Thus, sanitation type often emerges as a status symbol; seclusion is often correlated to high status and caste since wealthier women have a private latrine in their home and do not need to leave during the day (O'Reilly, 2010). Women of lower caste typically have to leave their homes to use the CTB or practice OD, so construction of a private latrine in their

home would be appealing as well (O'Reilly, 2010). Thus, the results gathered from this thesis affirm that women in Trichy's sanitation experience differed substantially based on what sanitation type was available to them (ex: private latrine at home, CTB when running errands, fields for OD when visiting family).

Existing literature also suggests that caste in India can play a role in women's sanitation experience. Women of lower caste in India are at a higher risk of experiencing some form of harassment while engaging in sanitation behaviors (Banka et al., 2021a), which is similar to the MUSE findings; the women interviewed were of mid-upper caste, but they reported stories of poor lower caste women facing a higher risk for all forms of harassment. According to the literature, women of scheduled caste (lower caste) experience poor sanitation experiences and rarely have access to a private latrine (Singh & Mishra, 2010). Scheduled Castes and Tribes are more vulnerable to unsafe public sanitation, and these women typically use community public latrines or practice open defecation more often than private latrine owners (Banka et al., 2021a). Caste, among many other factors (marital status, intra- slum relationships, gender, etc.) matter deeply for women and have a defining effect on experiences of violence and harassment.

While many of the results of this research are supported by the current literature, there are also apparent differences, specifically related to women's experiences of sanitation related harassment. A study in Odisha, India, suggests that harassment also takes place outside of just using sanitation facilities, and often occurs when women are engaging in other sanitation chores such as fetching water to use in the pour flush latrine (Sahoo et al., 2015). However, this was not reflected in the MUSE results. In Trichy, none of the women reported instances of

harassment while doing chores. Other studies similarly reported that a fear of harassment is often underlying and dictates how women go about their daily activities (Banka et al., 2021a). While not all women in India have experienced harassment, one study in Uttar Pradesh, India, observed a present fear of sexual harassment among many girls, and found that young girls will not go out to use the toilet or OD by themselves (Khanna & Das, 2016). This did not necessarily align with the findings from the MUSE study; there was a present fear and acknowledgement of potential harassment in the community, but it did not seem to dictate the women's daily lives.

Studies also suggest a link between sanitation experience, life stage, and social support. For example, it has been found that newly married women are often the most affected by unsafe sanitation because isolation at home, lack of freedom (from spouse) and lack of social support network (friends and family) (Banka et al., 2021a; Sahoo et al., 2015; Hulland et al., 2015; Caruso et al., 2018). Newly married women are not allowed to use sanitation facilities on their own because of the known community threat of sexual harassment; in Mumbai, men are known to "creep" and wait until women are alone and then molest or grab them (Bapat & Agarwal, 2003). While the potential threat is often known, women still report feeling helpless to tell anyone about their harassment or fear of harassment, because "no one cares" (Nallari, 2015). Status in society and community is often revered as more important than addressing serious issues that women and girls face. The newly married women in Trichy reported similar findings related to feeling isolated and lacking a social support network. However, they did not connect this to feeling unsafe; their concern was that they felt like they lacked a purpose and were lonely when they were isolated at home alone all day.

Avoidance Behaviors & Related Determinants

Within this study population in Trichy, women's reports of their experiences of avoidance behaviors are similar compared to what has been reported in studies conducted elsewhere in India (Caruso et al., 2018; Hulland et al., 2015; Sahoo et al., 2015). In the literature, suppression of urine and feces and withholding of food and water to avoid having to "go" is common among women in India. Women feel forced to suppress their urge for various reasons: unsafe toilets, threat of violence, long walks at night, smell, uncleanliness, gathering of males around latrine sites, and shame related to open defecation (Panchang et al., 2021). Often, women feel that their community toilet is unsafe, so women must go in groups. If no group is available, women will suppress until they are able to be accompanied by someone (Singh & Mishra, 2010). Women often must wait until certain hours of the day and suppress their urge until it is safe to go. The literature provides conflicting preferences; some women prefer to go under the cover of nightfall for privacy, and suppress all day until then (Singh & Mishra, 2010). However, some women do not feel safe at night so only go early in the morning at first light for safety reasons, and have to suppress their urge to go all throughout the night (Singh & Mishra, 2010). The women in Trichy rarely brought up this concern in relation to their private latrine, however when these women were visiting family without a private latrine, they reported feeling unsafe at night, and often suppressed at night and waited to urinate or defecate during the day.

Studies report that women also suppress because of additional safety concerns; to avoid unsafe sexual violence, physical conditions (such as muddy walkways from monsoons), or teasing from men and boys (Khanna & Das, 2016). While women engage in these behaviors to

avoid harmful risks to themselves, they often increase their risk of negative health outcomes due to suppression. Prolonged suppression can lead to irreversible health issues such as UTIs, bladder infections, stomach aches, or constipation (Singh & Mishra, 2010). Women who suppress often report feeling weak, starved, and flustered, increasing the risk of negative health outcomes for pregnant women in particular (Khanna & Das, 2016). This reflects similar findings from the women in Trichy; a few women reported having chronic bladder infections or related urinary issues due to suppressing their urge to urinate until they got home and had access to their private latrine.

Women experiencing "sanitation insecurity", often live in urban slums, lack a toilet in the home, and are of lower caste (typically scheduled caste), and engage in avoidance behaviors the most frequently (B. A. Caruso et al., 2017). A study in 2020 analyzed the results of an in-home toilet provision intervention. Results revealed that suppression typically halted once a toilet was constructed and provided in the home, leading to the belief that OD or use of public latrines (also known as community toilet blocks) are key determinants leading to avoidance (Panchang et al., 2021). The results of the MUSE study reveal a similar interpretation. The interviewed women rarely reported avoidance behaviors when they had access to their in-home private latrine. However, many of the women did report that they would often suppress their urge to urinate or defecate if they were out in public and the community latrine was their only option. This created stress for the women, since many emphasized *"when we have to go, we go, what can we do",* so they would occasionally report restricting their liquid intake when out and about, but rarely their food intake. However, when women were visiting their family in rural villages, OD was often the only option and suppression or withholding occurred more

frequently. A few women stated that this made them want to visit their family less since it was a hassle to find a private spot to OD.

Dirty public latrines are often reported as a key factor in why women suppress their urine or feces or withhold food or water. Some public toilets are dirtier than others, and a woman living in Hyderabad, India, stated that she would sometimes use toilets by the bus stop but not the community toilet blocks because they were unhygienic and dirty (Reddy et al., 2019). Women (particularly in Odisha, India) report having to pay for access to the public latrine, which was not reported by women in Trichy (Sahoo et al., 2015). Women that could not afford this fee were forced either to suppress their urge or face various threats and barriers when they openly defecated if they could not afford the fee (Sahoo et al., 2015). While this was not an immediate issue among the sampled women in Trichy, it was apparent that other women might have faced this difficult decision, so future research among this sub-population of women in Trichy is necessary.

Open Defecation & Sexual Violence Against Women

Within this study population in Trichy, women's reports of their experiences of sexual violence related to open defecation are different compared to what has been reported in studies conducted elsewhere in India. In India, approximately 39% of households have no sanitation facility, which means that they people practice open defecation (OD) (*India National Family Health Survey (NFHS-4) 2015-16 [FR339]*, 2017). There is a multitude of research that links OD among women to violence against them by men. While there is a clear and established link between OD and violence against women (VAW), up until recently it was unclear which

groups of men were the main perpetrators of VAW. A study in India from 2016 revealed that women rarely experience intimate partner sexual violence (IPSV) from their spouse, but have a higher rate of experiencing non partner sexual violence (NPSV) when accessing their available sanitation facility (Jadhav et al., 2016). Those who practice OD have 2.14 times the risk of experiencing NPSV ($p < 0.01$) compared to their female counterparts that use private or public sanitation facilities (Jadhav et al., 2016).

The results from this thesis affirm the results of this 2016 study and other related OD literature. Women in the MUSE sample never reported experiencing IPSV or NPSV themselves when accessing sanitation; most of these women used a private toilet in their home and only practiced OD or used the public toilet when visiting family in rural villages. However, they emphasized that the threat of VAW was still present in their communities, and these participants often gave anecdotes of poor women in their community that had to practice OD and were victims of NPSV. Those lacking private sanitation have a 2.5 times greater odds of experiencing NPSV than those who do (Kayser et al., 2021).

Sanitation- Related Stressors Impacting Women's Psychosocial Wellbeing

Psychosocial stressors were discussed in relation to how these factors impact women's sanitation-related stress. Within this study population in Trichy, women's reports of psychosocial stressors both parallel what is seen in the literature, but also indicate stark differences compared to what has been reported in studies conducted elsewhere in India.

A study from Maharashtra, India highlights that women face additional sources of stress due to extra environmental, social, and gender barriers in accessing sanitation that men do not

experience (Banka et al., 2021). This study conducted a key literature review and found that in Kampala, Uganda, women often face social barriers like unequal sanitation chore distribution and additional barriers to use, leading to differences in male and female latrine usage (Banka et al., 2021). This finding aligns with the MUSE results because women often complained about being the only ones that clean their private latrines. In regard to chore distribution, women in urban slums in India often are extremely busy and have little time to spare to accompany their young daughters to the bathroom (Nallari, 2015). This adds to their levels of stress since harassment and violence towards their daughters can lead to losing family honor and community alienation (Nallari, 2015). The women in Trichy also reported that young girls in their community had to be escorted to the CTB and they were worried for them because they faced the highest risk of harassment or violence from men in their community. The women did not express this in relation their own children, likely because they either had young boys or their children were older and not currently living with them.

My findings also align with several other studies that identify a lack of privacy in relation to sanitation facilities as a source of stress, embarrassment, and shame. A quantitative survey amongst adolescent females in an urban slum in Central India revealed stressors including embarrassment and frustration at lack of privacy when boys gathered around the public toilets (Raj et al., 2019), similar to findings from the MUSE study. However, 25% of these women reported abuse at the public toilets, different from what the MUSE interviewed women reported. This could be due to a range of factors such as age, sanitation type, or region in India. Nonetheless, it strengthens the argument for increased private toilet infrastructure since independent toilets are often better maintained and safer (Raj et al., 2019). Men and boys in

the Lal Khan slum of Jaipur often congregate around the main entrance of the OD site and make vulgar and inappropriate comments towards the women (Kulkarni et al., 2017). While no physical or sexual abuse occurs, this still causes the women immense stress just from passing by the men (Kulkarni et al., 2017). Sanitation-related stress surrounding lack of sanitation is far more than an inconvenience to young women and girls in India; the stress shapes their identity and how they view their place in society (Nallari, 2015).

Lack of privacy and access to their sanitation facility led to increased stress and frustration in other ways not specifically related to men. Women in Trichy reported that their current sanitation type was a barrier inhibiting their ability to manage their periods, leading to increased stress and frustration when taking care of their menstrual needs. Women frequently mentioned their desire for additional gender specific toilets so that they could successfully manage their periods without stress. Much of the current sanitation options in LMIC do not actually meet the gendered needs of women; rarely is there a private place for women to change, discard, dry, or clean their menstrual materials in a dignified way (Khanna & Das, 2016). Some women are also unable to care for themselves or wash regularly because of the absence of gender inclusive facilities, enabling shame and taboo (Khanna & Das, 2016).

Another source of stress or shame reported in the literature related to conflicts with municipal workers who often shamed women for openly defecating (Sahoo et al., 2015). The interviewed women in Trichy rarely reported having to practice OD in their city, but it was clear they had conflict and increased tension with the municipal corporation workers for failing to provide them adequate public sanitation services. In addition, there is often conflict with railway workers in India. Women report that men often try to put up shields or makeshift sheds

to increase privacy for women, but do so near the railway so the workers demolish then (Singh & Mishra, 2010). While none of the women in Trichy mentioned railroads or railway workers, this is still important to consider for the future.

Strengths

Cognitive interviews

Women were not confined to a specific survey style response category due to the incorporation of the cognitive interviews. Rich data and personal anecdotes were able to be obtained from the women that could have been missed if they had been given traditional survey style responses, such as "*strongly agree, agree, disagree*". The research team used the CIs to gain optimal and the most impactful answer responses from the women, that would elicit the most useful results for program changes. In addition, the team selected a mixed-income neighborhood and sampled women from 2 streets in the neighborhood: a lower income section of the neighborhood and a more middle-income section. This strategy was a strength in order to gain perspectives from women of various and diverse socioeconomic statuses.

Limitations

Lack of probing

In the interviews, there was often a lack of probing, especially for short one-worded answers, such as *"yes, sometimes, or never"*. The interviewer and notetaker often moved on to the next question without asking for further clarification, potentially missing out on useful information. The women could have potentially not understood the question and just answered

with a simple yes or no to keep moving, especially since many complained about the length and that they had chores to get done. Additional probes could have helped to further link key themes and concepts together, which was not always possible since the women did not always explicitly state that one topic impacted another.

Timeframe

Most of the interview questions were confined to a 30-day timeframe, for example, the interviewer asked *"say, you were going out of town, you would have been in travel, in the past 30 days, and you were going to go out of town. Outside, you cannot go to toilet or it would be difficult and for that, have you been without drinking water?*" Valuable experiences might have not been mentioned by women if it didn't fall within the timeframe, and therefore missed in the transcripts. The CIs attempted to account for this limitation with the theory that if it was impactful to the woman, they would mention it regardless of the timeframe. However, there is no way to know for sure if this happened.

Transcripts

Two of the thirteen transcripts were labeled "cannot be transcribed", and only included verbatim transcription about the informed consent process. The interviewer questions were clearly recorded and written, but responses from the 2 women were muffled and inaudible. This could have resulted in valuable loss of rich data from the 2 women. Additionally, the thesis student only coded the 13 resources transcripts and skimmed and used search strategies for the agency and institutional structures domains. It would have been optimum if the student had been able to do a full code of the other 2 domains to analyze any other connecting themes.

Recommendations for Future Research

Despite this evidence, further research needs to be done. First, a more diverse sample of women in Trichy could be interviewed, particularly focusing on women in Trichy who practice OD to understand the threats of sexual violence they have experienced. Second, additional research needs to be done to uncover factors related to IPV/ IPSV and NPSV against women that use private or community public latrines. Often, women living in rural areas practice OD at a higher rate due to lack of household sanitation, thus experiencing more instances of NPSV. However, 1 out of every 100 women aged 15-24 in urban settings had experienced NPSV in the past year (which could also be underreported due to self-report) (Kayser et al., 2021). A woman in India stated that violence against women is not only an issue that poor women face; women who own private latrines and live in urban, educated, middle class households also face unsafe situations because "as soon as you leave the security of your house, there's no place for you to go" (Reddy et al., 2019).

A qualitative literature review found that a lack of privacy and safety can negatively influence a woman's wellbeing, and recommended that future interventions should be directed at psychosocial stressors and perceptions of privacy and safety (Sclar et al., 2018). In rural Rajasthan, women are known to restrict their urination, defecation, and bathing to times when privacy can be maintained due to modesty reasons (O'Reilly, 2010). Future interventions should consider the merging of gender norms and modesty to best serve women in India (O'Reilly, 2010). There is also a lack of quantitative studies that explore the link between violence and public toilets/open defecation (Banka et al., 2021a). Particular sections of the MUSE Empowerment Scale serve to close this gap.

While the simplest answer to addressing the negative sanitation-related experiences of bodily integrity, safety and security, and privacy of issues is to construct private in-home latrines for every household in India, that is not necessarily feasible, nor will it fix the problem. Many homes do not have enough space, slums are not on protected lands and have been completely destroyed in the past, and often, there is no sewage line and the toilet is connected to unhygienic and improperly covered drains (Singh & Mishra, 2010). Thus, further research needs to be done to accommodate the needs of women and girls who OD or use CTBs instead of just improving sanitation infrastructure. The majority of existing sanitation programming often still occurs without full awareness of the role of gender and identity (Kulkarni et al., 2017). Full community participation is critical so that program implementation is driven by local perspectives, thus reducing gender and sanitation inequality (Singh & Mishra, 2010).

5. PUBLIC HEALTH IMPLICATIONS

The intersection between gender and sanitation has recently emerged as a prominent focal point in the WASH field. However, there are still many factors to consider when developing programs that address women's empowerment in relation to their sanitation experience. Despite significant progress in achieving gender equality, India is still often known for its patriarchal society, leading to stark gender disparities that negatively impact women and girls in many facets of their life (van Ejik et al., 2016). This unequal gender divide has contributed to frequent limitations in empowerment related programming.

After examining the limitations in current research in conjunction with the results of this thesis, it is clear that the patriarchal culture in India has substantial effects on women's experiences of sanitation related empowerment. A more gender inclusive relationship between men and women needs to be at the forefront of future program development, and consistently cultivated throughout implementation (Leahy et al., 2017). Research suggests the importance of the difference between meeting women's "practical" gender needs, versus their "strategic" gender needs (Leahy et al., 2017). Practical needs are what women identify adjacent to their socially accepted position in society. Practical needs can include provision of resources, safety from bodily harm, and improvements in sanitation infrastructure (soap, running water, etc.). Practical needs do not challenge gender norms and power dynamics within culture or society, and instead focus on surface level components such as access to safe sanitation services. Relating to this thesis, practical needs include locks on the toilet to enable privacy or building latrines closer to the home to reduce the length of time it takes to walk to the latrine at night in

an attempt to decrease violence against women (VAW). While practical needs can improve the quality of a woman's sanitation experience, interventions need to be coupled with a longer lasting development component in order to ensure impactful and long lasting change (Leahy et al., 2017). This is particularly true and should be considered when developing programs that deal with bodily integrity, safety and security, and privacy.

In contrast, addressing a woman's strategic needs encompasses the needs women identify due to their subordinate position to men in society. This involves directing the focus to structural and cultural barriers that have led to women's lower ranking positions in society, with an aim to transform these existing roles. Most notably, addressing women's strategic gender needs could lead to increase in control over their own bodies, increased household decision making power, or higher instances of political participation in sanitation-related community affairs. While addressing women's strategic needs will inevitably bring about the most influential change, it is more realistic to provide future program recommendations that combine the two types of needs. The model of empowerment conceptualizes giving women resources they need (practical gender needs) as a starting point so that they are able to put their choices and aims into action (Kabeer, 1999).

Program recommendations

1. CWIS in Trichy should consider increasing communication and collaboration with the Tiruchirappalli City Municipal Corporation (local government) to further meet the practical needs of women. Many of the women reported frustration with the lack of support from the local government. Public restrooms were often described as unclean, had multiple broken latrines, and lacked running water and working pipes, all of which is

the corporation's responsibility to fix. Frustrations often led to women suppressing their urge to urinate or defecate until they got home, negatively impacting their perceived bodily integrity. Strengthening the relationship between CWIS and the Corporation would give women appropriate sanitation resources and act as a starting point for future improvement (Kabeer, 1999).

2. Many of the women reported feeling hesitant to use the public latrine on their own due to fear of potential harassment from men, in particular the "rowdies" or gangs. Women reported having to ask permission from their husbands to use the latrine to prevent instances of harassment. This often affected their own autonomy, and women reported that they would feel the need to suppress their urge if there was no one to accompany them. Women were asked if they were able to voice these concerns at public sanitation forums, and women often said they did not attend, or they were not always listened to. This reflects instances of unequal decision-making regarding sanitation, and future CWIS programs should hold gender inclusive public meetings concerning issues of community sanitation. Similar recommendations from a study in Northeast Thailand recommended that these meetings be held at night or the evening, since woman typically cannot attend during the day because of household or childcare duties (Andajani-Sutjahjo et al., 2015). Additional research has shown that giving women more autonomy and a voice to manage their own lives also works to address the power imbalances in communities (Leahy et al., 2017), and female participation in programs that affect their sanitation access will allow for increased women's empowerment (Willetts et al., 2010).

3. The unequal power dynamic between men and women in India needs to be addressed. However, when considering a realistic timeline and feasibility of tackling deeply rooted power imbalances, many smaller changes should be made first. WASH programming needs to be gender-sensitive and gender-transformative, meet both the practical and strategic needs of women, and be implemented by the local government in India with the support of WASH/ gender NGOs in order to be effective and sustainable. Future interventions need to address the power and political participation of women, or influence will be limited (Leahy et al., 2017). Gender needs to always be a variable in WASH research (Willetts et al., 2010), in order to see disparities, particularly in men versus women's experiences of privacy, safety, and bodily integrity. Finally, men should be more directly involved in household sanitation, since research illustrates that if men are not directly impacted by inadequate sanitation services, they will not likely change (Willetts et al., 2010). Future programs should involve men in sanitation chores, etc.
4. Lastly, gender sensitive sanitation interventions should heavily involve influential or authoritative community leaders (Leahy et al., 2017). Involvement from stakeholders can drive gender equality and female participation, thus impacting women's experiences of privacy, safety, and bodily integrity, while also improving women's confidence and feelings of empowerment.

6. REFERENCES

Andajani-Sutjahjo, S., Chirawatkul, S., & Saito, E. (2015). *Gender and Water in Northeast Thailand: Inequalities and Women's Realities*. *16*(2), 14.

Banka, M., Joshi, P., & Kale, S. (n.d.-b). *Addressing Women's Sanitation-related Safety Concerns in Slums of Maharashtra, India*. 9.

Banka, M., Joshi, P., & Kale, S. (2021a). *Addressing Women's Sanitation-related Safety Concerns in Slums of Maharashtra, India*. 9.

Bapat, M., & Agarwal, I. (2003). *Our needs, our priorities; women and men from the slums in Mumbai and Pune talk about their needs for water and sanitation*. 16.

Beteta, H. C. (2006). What is missing in measures of Women's Empowerment? *Journal of Human Development*, *7*(2), 221–241. https://doi.org/10.1080/14649880600768553

Caruso, B. A., Clasen, T. F., Hadley, C., Yount, K. M., Haardörfer, R., Rout, M., Dasmohapatra, M., & Cooper, H. L. (2017). Understanding and defining sanitation insecurity: Women's gendered experiences of urination, defecation and menstruation in rural Odisha, India. *BMJ Global Health*, *2*(4), e000414. https://doi.org/10.1136/bmjgh-2017-000414

Caruso, B. A., Cooper, H. L. F., Haardörfer, R., Yount, K. M., Routray, P., Torondel, B., & Clasen, T. (2018). The association between women's sanitation experiences and mental health: A cross-sectional study in Rural, Odisha India. *SSM - Population Health*, *5*, 257–266. https://doi.org/10.1016/j.ssmph.2018.06.005

Caruso, B., Sinharoy, S. S., Conrad, A., & Patrick, M. (2020). *Briefing Note: Measuring Urban Sanitation and Empowerment (MUSE)*. 3.

Chirgwin, H. (2018, December 15). *Where are the evidence gaps in the water, sanitation and hygiene sector? | 3ie*. https://www.3ieimpact.org/blogs/where-are-evidence-gaps-water-sanitation-and-hygiene-sector

Das, P., Baker, K. K., Dutta, A., Swain, T., Sahoo, S., Das, B. S., Panda, B., Nayak, A., Bara, M., Bilung, B., Mishra, P. R., Panigrahi, P., Cairncross, S., & Torondel, B. (2015). Menstrual Hygiene Practices, WASH Access and the Risk of Urogenital Infection in Women from Odisha, India. *PLOS ONE*, *10*(6), e0130777. https://doi.org/10.1371/journal.pone.0130777

Gender-disaggregated Data on Water and Sanitation: Expert Group Meeting Report. (2010, May 7). *UN-Water*. https://www.unwater.org/publications/gender-disaggregated-data-water-sanitation-expert-group-meeting-report/

Global WASH Fast Facts | Global Water, Sanitation and Hygiene | Healthy Water | CDC. (2018, November 9). https://www.cdc.gov/healthywater/global/wash_statistics.html

Hennink, M., Hutter, I., & Bailey, A. (2020). *Qualitative Research Methods*. SAGE Publications.

Hulland, K. R. S., Chase, R. P., Caruso, B. A., Swain, R., Biswal, B., Sahoo, K. C., Panigrahi, P., & Dreibelbis, R. (2015). Sanitation, Stress, and Life Stage: A Systematic Data Collection Study among Women in Odisha, India. *PLOS ONE*, *10*(11), e0141883. https://doi.org/10.1371/journal.pone.0141883

India National Family Health Survey (NFHS-4) 2015-16 [FR339]. (n.d.).

Jadhav, A., Weitzman, A., & Smith-Greenaway, E. (2016). Household sanitation facilities and women's risk of non-partner sexual violence in India. *BMC Public Health*, *16*(1), 1139. https://doi.org/10.1186/s12889-016-3797-z

Jain, A. (n.d.). *Sanitation in Rural India: Exploring the Associations between Dwelling Space and Household Latrine Ownership*.

Jeyakumar, A., Godbharle, S. R., & Giri, B. R. (2020). Water, sanitation and hygiene (WaSH) practices and diarrhoea prevalence among children under five years in a tribal setting in Palghar, Maharashtra, India. *Journal of Child Health Care*, 1367493520916028. https://doi.org/10.1177/1367493520916028

Kabeer, N. (1999). Resources, Agency, Achievements: Reflections on the Measurement of Women's Empowerment. *Development and Change*, *30*(3), 435–464. https://doi.org/10.1111/1467-7660.00125

Kayser, G. L., Chokhandre, P., Rao, N., Singh, A., McDougal, L., & Raj, A. (2021). Household sanitation access and risk for non-marital sexual violence among a nationally representative sample of women in India, 2015-16. *SSM - Population Health*, *13*, 100738. https://doi.org/10.1016/j.ssmph.2021.100738

Khanna, T., & Das, M. (2016). Why gender matters in the solution towards safe sanitation? Reflections from rural India. *Global Public Health*, *11*(10), 1185–1201. https://doi.org/10.1080/17441692.2015.1062905

Kulkarni, S., O'Reilly, K., & Bhat, S. (2017). No relief: Lived experiences of inadequate sanitation access of poor urban women in India. *Gender & Development*, *25*(2), 167–183. https://doi.org/10.1080/13552074.2017.1331531

Leahy, C., Winterford, K., Nghiem, T., Kelleher, J., Leong, L., & Willetts, J. (2017). Transforming gender relations through water, sanitation, and hygiene programming and monitoring in Vietnam. *Gender & Development*, *25*(2), 283–301. https://doi.org/10.1080/13552074.2017.1331530

Esteves Mills, Joanna & Cumming, Oliver. (2017). The impact of water, sanitation and hygiene on key health and social outcomes: review of evidence. 10.13140/RG.2.2.36572.49280.

Nallari, A. (2015). *"All we want are toilets inside our homes!"*: The critical role of sanitation in the lives of urban poor adolescent girls in Bengaluru, India. *Environment and Urbanization*, *27*(1), 73–88. https://doi.org/10.1177/0956247814563514

O'Reilly, K. (2010). Combining sanitation and women's participation in water supply: An example from Rajasthan. *Development in Practice*, *20*(1), 45–56. https://doi.org/10.1080/09614520903436976

Panchang, S. V., Joshi, P., & Kale, S. (2021). Women 'holding it' in urban India: Toilet avoidance as an under-recognized health outcome of sanitation insecurity. *Global Public Health*, *0*(0), 1–14. https://doi.org/10.1080/17441692.2021.1882527

Partnership for Water Sanitation and Hygiene (WASH) | India | U.S. Agency for International Development. (2019, July 17). https://www.usaid.gov/india/water-and-sanitation

Pearson, J., & Mcphedran, K. (2008). A literature review of the non-health impacts of sanitation. *Waterlines*, *27*(1), 48–61. https://doi.org/10.3362/1756-3488.2008.005

Raj, U., Galhotra, A., & Roja, V. (2019). A study of utilization of sanitary facilities by adolescent girls in an urban slum of Central India. *Journal of Family Medicine and Primary Care*, *8*(4), 1396–1400. https://doi.org/10.4103/jfmpc.jfmpc_195_19

Reddy, Y. M., Raghavan, S., & Vedala, S. C. (2019). A Narrative Exposition on Public Toilet Usage by Women: A Study from Warangal. *Indian Journal of Gender Studies*, *26*(1–2), 108–137. https://doi.org/10.1177/0971521518808100

Sahoo, K. C., Hulland, K. R. S., Caruso, B. A., Swain, R., Freeman, M. C., Panigrahi, P., & Dreibelbis, R. (2015). Sanitation-related psychosocial stress: A grounded theory study of women across the life-course in Odisha, India. *Social Science & Medicine*, *139*, 80–89. https://doi.org/10.1016/j.socscimed.2015.06.031

Saleem, M., Burdett, T., & Heaslip, V. (2019). Health and social impacts of open defecation on women: A systematic review. *BMC Public Health*, *19*(1), 158. https://doi.org/10.1186/s12889-019-6423-z

Sclar, G. D., Penakalapati, G., Caruso, B. A., Rehfuess, E. A., Garn, J. V., Alexander, K. T., Freeman, M. C., Boisson, S., Medlicott, K., & Clasen, T. (2018). Exploring the relationship between sanitation and

mental and social well-being: A systematic review and qualitative synthesis. *Social Science & Medicine*, *217*, 121–134. https://doi.org/10.1016/j.socscimed.2018.09.016

Singh, K. K., & Mishra, P. (2010). *Understanding Women's Access to Sanitation: A Study of the Slums in Delhi*. 10.

Sweetman, C., & Medland, L. (2017). Introduction: Gender and water, sanitation and hygiene. *Gender & Development*, *25*(2), 153–166. https://doi.org/10.1080/13552074.2017.1349867

United Nations Children's Fund (UNICEF), & The World Health Organization (WHO). (2019). *Progress on household drinking water, sanitation and hygiene I 2000-2017*. Https://Washdata.Org/Sites/Default/Files/Documents/Reports/2019-07/Jmp-2019-Wash-Households.Pdf. https://washdata.org/sites/default/files/documents/reports/2019-07/jmp-2019-wash-households.pdf

van Eerdewijk, A., Wong, F., Vaast, C., Newton, J., Tyszler, M., & Pennington, A. (2017). *A Conceptual Model of Women and Girls' Empowerment*. https://www.gatesgenderequalitytoolbox.org/wp-content/uploads/Conceptual-Model-of-Empowerment-Final.pdf

WHO | Progress on sanitation and drinking water. (n.d.). WHO; World Health Organization. Retrieved December 18, 2020, from http://www.who.int/water_sanitation_health/publications/jmp-2015-update/en/

Willetts, J., Halcrow, G., Carrard, N., Rowland, C., & Crawford, J. (2010). *Addressing two critical MDGs together: Gender in water, sanitation and hygiene initiatives*. *25*(1), 15.