

Introduction:

Several studies on menstruation conducted among adolescent girls in India highlight that these girls face several menstrual taboos and restrictions in their daily lives, often impacting their health-related outcomes. Studies from different parts of India also specify that various socioeconomic (SE) factors, such as household wealth or quality of neighborhoods, can influence girls' menstrual health outcomes. Nevertheless, significant knowledge gaps remain concerning the menstrual health outcomes of Indian girls, particularly as there seems to be a dearth of mixed-methods studies on menstrual health that are gender and SE inclusive. Indeed, the intricate ways in which menstruation is understood by boys as well as girls, potential SE patterns in adolescents' social construction of menstruation, and various pathways through which menstruation-related knowledge, beliefs and other health-related outcomes are affected remain unaddressed. In this thesis, we address three such important pathways that address the latter knowledge gaps.

The first pathway that we explore concerns knowledge gaps regarding menstruation-related interpersonal (IP) communication between adolescent girls and boys. The nuances and social patterns in IP communication on menstruation remain understudied as public health research frequently views health communication as an information dissemination strategy, thus neglecting the intricacies involved in interpersonal communication regarding a culturally taboo topic. As several studies show a close linkage between communication and health outcomes, it is imperative to understand if adolescents' menstruation-related communication experience (or a lack of it) is unequally patterned and whether and how it impacts the knowledge, beliefs and menstrual health outcomes among girls and boys similarly/differently.

The second pathway that is explored in this thesis explores how gender, through its micro-interactional and macro-structural levels, makes menstruation a gendered experience for boys as well as girls. Although previous scholarship has investigated how gender creates unequal sexual and reproductive health outcomes, to our knowledge, no studies in the Indian context have explored how the social experience of being a boy/a girl puts one at an advantage or a disadvantage to possess knowledge and favorable beliefs regarding menstruation. Additionally, we also explore how a gendered experience of menstruation among girls in different social institutions such as family, school and community is influenced by girls' SE background and, concomitantly, how the gendered experience of menstruation influences girls' menstrual health.

The third pathway that we explore in this study attempts to look at the SE patterning in boys' understanding and experiences regarding menstruation. We, thus, examine the complexity in the need of involving and engaging boys by looking at the sub-population of boys as a heterogeneous entity with existing social patterning in their menstruation-related understanding, beliefs and attitudes.

We draw from the theoretical lenses of social constructionist approach and the social determinants of health framework to address these three knowledge gaps using a social epidemiological perspective.

Methods:

Using an exploratory sequential mixed methods study design, we conducted semi-structured interviews of 21 boys and girls each (n=42), key-responder interviews of responsible adults (parents/guardian, teachers and healthcare providers) (n=12), followed by a cross-sectional survey of adolescents from urban, rural and tribal settings of Nashik district, India (n= 1421). We

thematically analysed the qualitative data, the analysis of phase 1 of the qualitative data informed the development of our survey instrument and carried out multivariable regression analysis of the quantitative data to model risk ratios for binary and categorical menstrual health-related outcomes among girls and boys.

Results:

Overall, we observed that boys from all socioeconomic settings were largely excluded from menstruation-related discussion within families and in schools. Both girls and boys either faced barriers in discussing menstruation or faced silence when attempting to talk to their family members or schoolteachers, which seemed to curb their curiosity and their ability to learn about the topic in a healthy manner. While girls and boys across different settings had heard about various menstrual norms, only few adolescents from wealthy urban households were able to question the taboos. For the girls across socioeconomically disadvantaged settings, menstruation was observed to be a gendered experience as it seemed to get affected by numerous micro and macro processes through which gender-based discrimination creates unhealthy social environment to experience this natural physiological process. We also observed an overall hesitancy among parents regarding how, when and what should be discussed about menstruation with boys, which was reflected in terms of large number of boys' lack of accurate information regarding the topic. Girls too faced parental hesitance in discussing the topic. As they faced menstrual stigma and restrictions; several girls seemed to dislike this natural bodily process.

Overall, our quantitative data brought forth the socioeconomic patterns in- (i) menstruation-related knowledge, beliefs and attitudes (among boys); (ii) menstrual communication outcomes (among both girls and boys), and (iii) in the social experience of

menstruation in different social institutions (among girls). Additionally, our survey data also revealed that menstruation-related knowledge, beliefs and other health-related outcomes among adolescents are also influenced by their interpersonal communication experiences and by their social experiences of gender.

Our fully adjusted models for the communication pathway revealed the inequality in menstruation-related communication as more boys than girls faced avoidance to their questions [IRR at 95%CI: 2.75 (2.04, 3.71)]. More girls who had been communicated many (versus no/few) taboos reported stress about menstrual staining (IRR at 95% CI: 1.31 (1.10, 1.57)], emphasizing the health consequences of such communication inequalities (Gundi & Subramanyam, 2019).

Our fully adjusted models for exploring the role of gender suggest that being a boy as compared to being a girl reduced the chances of receiving information in schools [IRR at 95% CI: 0.34 (0.24, 0.49)] but increased the chances of reporting that boys should know about menstruation [IRR at 95% CI: 1.25 (1.00, 1.58)]. Our data suggested that girls' gendered experience of menstruation was non-analogous in different social institutions and that their experiences were socially patterned. Further, a gendered experience of menstruation versus a lack of it was negatively associated with possessing positive beliefs about the menstruation process [IRR: 0.39 (0.16, 0.93)] and with having good menstrual health status [IRR: 0.22 (0.05, 0.90)].

Our third pathway unpacked how boys' knowledge, beliefs and attitudes towards menstruation were influenced by their SE background. For instance, being admitted in private unaided schools; being the son of a highly educated mother, and having comfort with teacher to

discuss menstruation positively influenced boys' knowledge, attitudes and beliefs (incidence rate ratios at 95% CI: 2.67 [1.02, 6.95], $p < 0.05$; 3.16 [1.35, 7.38], $p < 0.05$ and 1.92 [1.24, 2.99], $p < 0.01$, respectively). Our post-survey qualitative phase also gave us deeper insights regarding the need to apply the lens of intersectionality to further understand the complex ways in which one's socioeconomic background, neighborhoods or school environment could affect menstrual experiences and understanding.

Discussion:

This social epidemiological inquiry of menstrual health using a gender and SE inclusive approach within the lens of social constructionist approach and social determinants of health perspective unpacks several layers and patterns in the menstrual health understanding and experience among adolescents which potentially affect their health-related outcomes. First, we showcase that the public health efforts of improving menstrual health communication need to go beyond health information dissemination strategy to address adolescents' specific needs pertaining to IP communication regarding sensitive health issues. The inequality in their communication experience that seems to have its roots in the existing social inequalities also needs attention as communication strategies overlooking these inequalities might not prove to be inclusive, thus, further exacerbating these inequalities. Second, the observed gender gap in the menstrual health-related outcomes needs to be addressed by adopting innovative strategies such as gender sensitization games or mono-acts that question the very nature of discriminating gender norms. We argue that in order to ensure that both girls and boys learn about menstruation equally (and completely), it is not sufficient to just feed them information, but it is essential to help them recognize and eliminate gender-discriminatory norms. Girls' gendered experience of menstruation in different social institutions and its harmful impacts on their health push for the

need of targeting menstruation-related barriers across different social institutions. Third, our study underscores the need of including boys in menstrual discussion, who play a significant role not just in women's health but also in different aspects of girls' and women's lives in different capacities throughout the life-course. We also highlight the need to include boys in menstrual discussion to improve their understanding and beliefs about menstruation. We showcase that it is essential to address boys' needs and concerns specific to their social and structural locations and by understanding boys' sub-population as a heterogeneous group.

Therefore, addressing various social determinants and, their complex intersecting pathways that influence girls' and boys' menstruation-related experiences is essential if we are to successfully implement menstrual health strategies that go beyond menstrual hygiene management programs to being inclusive of adolescents of all genders and belonging to different socioeconomic backgrounds.

CHAPTER THREE

MENSTRUAL HEALTH COMMUNICATION AMONG INDIAN ADOLESCENTS²

Chapter Abstract

Research in public health frequently views health communication as an information dissemination strategy, thus neglecting the intricacies involved in communicating a sensitive topic such as menstruation. The social patterning in menstrual communication, a taboo in India, and its consequent health-effects on adolescents are under-studied.

We studied the social determinants of menstrual communication influencing menstrual- health through semi-structured interviews of 21 boys and girls each, 12 key-respondent interviews, followed by a cross-sectional survey of 1421 adolescents from Nashik district, India. We thematically analysed the qualitative data and fit multivariable logistic regression to model risk ratios of the binary and categorical menstrual health-related outcomes among girls and boys. We found social disparities in adolescents' experiences of communication taboo regarding menstruation. While boys' curiosity about the topic was curbed by themselves and by others, girls too faced resistance to their experience-sharing and treatment-seeking for menstrual illnesses. The inequality in menstruation-related communication was evident as more boys than girls faced avoidance to their questions [IRR at 95%CI: 2.75 (2.04, 3.71)], and fewer tribal than girls from rural setting were communicated many taboos (OR at 95% CI: 0.18 (0.09, 0.36)]. Girls who had been communicated many (versus no/only few) taboos reported greater stress

² The contents of this chapter have been published in PLoS ONE- a peer-reviewed journal: Gundi, M., & Subramanyam, M. A. (2019). Menstrual health communication among Indian adolescents: A mixed-methods study. *PLOS ONE*, 14(10), e0223923.

about menstrual staining (IRR at 95% CI: 1.31 (1.10, 1.57)] which emphasizes that communication inequalities may have health consequences among girls.

This chapter highlights the need to address gender and setting-specific communication experiences of adolescents in India, a largely patriarchal society. The inequality in communication needs attention as it creates unequal patterns in Indian adolescents' menstrual health and experiences, which may manifest as inequities in reproductive health-related outcomes even in their adult-lives.

Chapter Keywords

Menstruation; Menstrual health communication; Indian adolescents; Communication inequality; Interpersonal Communication; Mixed-methods; Boys.

Chapter Background

“Adolescents make up 20% of India’s population and face several sexual and reproductive health (SRH) challenges in this transformative age (Population Council & UNICEF, 2013). About 27% adolescent girls (“girls”) are married; one in six bear children; 10% adolescent boys (“boys”) experience premarital sex; yet many adolescents lack awareness regarding healthy behaviors and have unmet treatment-needs (Population Council & UNICEF, 2013; Shekhar et al., 2007). In addition to a rural-urban disparity in SRH, tight gender norms compound the effects of SRH outcomes, as only 40% of married girls have health-related autonomy, while 72% young men reported that women need their husband’s permission for most things in life (Population Council & UNICEF, 2013). Several *social* determinants such as age, gender; exposure to sex education; exposure to media; school-type; parental supervision, and

CHAPTER FOUR

GENDER AS A SOCIAL DETERMINANT OF MENSTRUAL HEALTH

Chapter Abstract:

In chapter 1, we have presented various examples which show that gender bias in the patriarchal Indian society becomes evident in the form of worse sexual and reproductive health outcomes for girls than boys. While girls face menstrual taboos that affect their health, boys' understanding of, and participation in, the menstruation discourse remains limited. However, it is unclear how gender, a social determinant, creates intersecting patterns with other social factors such as setting, school type, parental socioeconomic background to influence adolescents' menstruation-related experiences.

In this chapter, we specifically focus on this knowledge gap to investigate how gender through its micro-interactional and macro-structural ways makes menstruation a gendered experience for adolescents; how various social determinants influence girls' gendered menstruation experience across social domains; and whether the lived gendered experience of menstruation harms girls' health.

Using a sequential mixed-methods design semi-structured interviews of 21 boys and girls each; 12 adult key-respondent interviews; and a cross-sectional survey of 1421 adolescents from urban, rural and tribal settings of Nashik district, India, were conducted. Applying social constructivist theory and gender analysis framework, we thematically analysed the qualitative data. Multivariable regression analysis of survey data yielded risk ratios.

Adolescents' experience of menstruation was gendered. Fewer boys (versus girls) reported receiving information in schools [Incidence Rate Ratio (IRR) at 95% CI: 0.34 (0.24, 0.49)]. Girls' gendered menstrual experiences varied across social domains and social determinants

[e.g. tribal school (versus rural) were negatively associated with hiding menstruation from men in the family [IRR: 0.34 (0.16, 0.71)], but were positively associated with getting teased by boys [IRR: 12.06 (2.33, 62.19)]. Girls' menstrual health was poorer among those with a lived experience of gendered menstruation [IRR: 0.22 (0.05, 0.90)]. Key respondents shared the need to engage boys in the menstruation discourse though apprehensive regarding its consequences.

Gender bias intersects with social factors to negatively influence Indian adolescents' experiences and social construction regarding menstruation. Further, the discrimination is embodied by girls as poor health, thus perpetuating health inequalities across socioeconomic settings.

Chapter Keywords:

Adolescents; gendered menstruation; social determinants of health; gender analysis framework; mixed-methods study; menstrual health; India

Chapter Background:

Chapter 1 has established that Indian girls and boys face several sexual and reproductive vulnerabilities that can harm their health during the transformative yet turbulent period of adolescence when their gender identities are still being shaped. While Indian girls showed a greater prevalence of genital infections and lower awareness regarding HIV/AIDS as compared to boys/young men (International Institute for Population Sciences (IIPS) and Macro international, 2007); a smaller proportion of boys than girls knew that a woman can get pregnant at first sex (International Institute for Population Sciences (IIPS) and Population Council, 2010). Additionally, our finding corroborates the NFHS-4 finding that girls' constrained mobility and decision-making affects their healthcare seeking ability

CHAPTER FIVE

CURIOUS EYES AND AWKWARD SMILES: MENSTRUATION AND

ADOLESCENT BOYS IN INDIA

Chapter Abstract

As established in the previous chapters in this thesis, most Indian studies on menstruation include only girls/women as participants, making it a 'women's' topic. This exclusion of adolescent boys fails to understand menstruation as a social epidemiological entity with existing gender inequalities. For effectively engaging boys to play a meaningful role in improving women's health, it behoves us to study their knowledge, beliefs regarding topics such as menstruation, and the socioeconomic characteristics influencing their menstruation-related experiences. Addressing this is an essential step for reducing gender disparities in adolescent health. Thus, we explore boys' knowledge, beliefs and attitudes regarding menstruation and the impact of social determinants on their menstruation-related experiences.

We use the data from the sequential mixed-methods study comprising 21 semi-structured interviews, 5 Focus Group Discussions and 12 key respondent interviews; followed by a cross-sectional survey of 744 boys from Nashik district, India. We employed thematic analysis of qualitative data and multivariable regression to model risk ratios of outcomes.

An amalgam of curiosity and awkwardness regarding menstruation was observed. Many lacked accurate knowledge and possessed misinformation. Social and individual-level determinants influenced boys' menstruation-related experiences. Fully adjusted models revealed that being admitted in private unaided schools; having mothers with at least a

college-education; and comfort with teacher positively influenced boys' knowledge, attitudes, and beliefs (incidence rate ratios at 95% CI: 2.67 [1.02, 6.95], $p < 0.05$; 3.16 [1.35, 7.38], $p < 0.05$ and 1.92 [1.24, 2.99], $p < 0.01$, respectively).

This chapter highlights the need for improving Indian boys' understanding and beliefs about menstruation by addressing the social determinants that influence their menstruation-related experiences.

Chapter Keywords:

Menstruation; Indian adolescent boys; Misinformation; Involvement of boys in SRH; Mixed-methods design