

May 2024

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Panchami Jose  
*Tata Institute of Fundamental Research, Mumbai*

Sugra Chunawala  
*Tata Institute of Fundamental Research, Mumbai*

Deepa Chari  
*Tata Institute of Fundamental Research, Mumbai*

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### Recommended Citation

Jose, Panchami; Chunawala, Sugra; and Chari, Deepa (2024) "Moralistic Science: Socio-Cultural Norms about Sexuality in Indian Biology Education," *Journal of International Women's Studies*: Vol. 26: Iss. 3, Article 6.

Available at: <https://vc.bridgew.edu/jiws/vol26/iss3/6>

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## Moralistic Science: Socio-Cultural Norms about Sexuality in Indian Biology Education

By Panchami Jose,<sup>1</sup> Sugra Chunawala,<sup>2</sup> and Deepa Chari<sup>3</sup>

### Abstract

This paper takes the position that the discourses of science and morality are not distinct within biology education; rather, they inform each other to produce, discipline, and regulate human sexuality. Our analysis of the medical and moral discussion on sexuality in a secondary school science textbook (the 12th standard National Council for Educational Research and Training textbook), along with insights from interviews with teachers, reveals that the texts portray a romanticized notion of sex that is limited to a monogamous heterosexual relationship. In the first part of the paper, we analyze how the biology textbook discusses “safer sex” in the limited context of sexually transmitted diseases and how scientific knowledge produces specific sexual subjectivities and categories. In our view, the portrayal of “normal sex” in the textbook is value-laden and not inconsequential. We also examine the discursive devices employed by the textbook to assert what is considered “culturally appropriate.” The second part of the paper focuses on interviews with three biology teachers from Keralam, India. Discourse analysis is used as a methodology to explore how teachers occasionally use scientific and moral arguments interchangeably. We discuss some examples where teachers use cultural and moral ideals to justify the scientific claims in the textbook. For instance, when the textbook focuses on how “promiscuity” produces disease, teachers emphasize how promiscuity can lead to sexual anarchy, fatherless children, unsatisfied spouses, and broken relations. We argue that the teachers, along with the textbook, intertwine scientific facts with moral sensibilities, articulating a view of science, technology, and medicine that aligns with socio-cultural norms.

*Keywords:* Safer sex, Heteronormativity, Monogamy, Scientific argumentation, Science education, Teacher ideology, Science textbooks, India

### Introduction

In this article, we explore different scientific and moral arguments within Biology Education in India, particularly when teaching about sexuality. We examine the extent to which moral perspectives impact the scientific discourse in biology classrooms and how this interplay could shape students’ worldviews. We contend that in the discourses of science teaching, moral and scientific arguments are intertwined. While marking out boundaries is difficult, we use the terms “scientific argument” and “moral argument” to distinguish between discourses used by the

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<sup>1</sup> Panchami Jose is interested in looking at discourses of gender and sexuality in school and public settings. She is pursuing her research at the Homi Bhabha Centre for Science Education, Tifr, Mumbai.

<sup>2</sup> Dr. Sugra Chunawala is a former Professor and Dean of faculty at Homi Bhabha Centre for Science Education, TIFR. Her research interests include gender issues in education, design and technology education, and science education and diversity. Apart from research, Sugra has been involved in teaching and designing enrichment and development programmes for teachers and students.

<sup>3</sup> Dr. Deepa Chari has long-standing experience in science education, responsive teaching epistemologies, and gender and race-ethnic diversity research in STEM disciplines. At HBCSE, Dr. Chari is a coordinator of a national impact program, “Vigyan Pratibha,” aimed at nurturing students and building teacher capacity in science and mathematics.

textbook or teachers. Scientific arguments are based on accepted techniques of scientific inquiry<sup>4</sup> that, at a specific moment in time, constitute a part of the body of scientific knowledge. We use the term moral arguments to refer to arguments influenced by social, cultural, political, and personal values. In this article, with a few exceptions, we refrain from differentiating between social, cultural, political, and personal values, but we concede that doing so could provide greater insights. Our intention is not to examine how each value interacts differently with science, but to provide a general understanding of the role values play within discourses of science education.

Scholars in the field of science have demonstrated how social and cultural values operate within scientific contexts, leading to biases in the research design, data interpretation, and dissemination of scientific knowledge (Martin, 1992; Allchin, 1999). Allchin (1999) mentions three ways in which values intersect with science: 1) Epistemic values guide how scientific research is conducted; 2) Values intersect with science through the influence of cultural values brought in by practitioners; and 3) Values can emerge from science, in terms of what it produces and the way it operates and spreads in society and culture. As Allchin argues, in many instances and across diverse settings, scientific conclusions have been significantly biased, reflecting the motivations of the practitioners. The race, nationality, religion, class, and other personal and social attributes of scientists can contribute to establishing foundational conditions or proximate values that shape the development and validation of knowledge within the scientific community. These racist and misogynistic scientific explanations and findings have been regarded as valid or credible within the scientific community and were accepted as part of the scientific discourse of the time. Many studies have also emphasized the value-laden nature of science textbooks and their heteronormative biases (Bazzul & Sykes, 2011; Raveendran & Chunawala, 2015; Snyder & Broadway, 2004; Nehm & Young, 2008).

### **The Blurred Lines of Cultural and Scientific Discourses**

Many of the concepts and approaches within modern scientific and biomedical discourse regarding sexuality can be traced back to the early understandings of the HIV/AIDS pandemic in the Global North, which informed global health policies (Spurlin, 2023). The scientific discourse around Acquired Immune Deficiency Syndrome (AIDS) also serves as an illustrative case that cultural and scientific/biomedical discourses are not sharply separated but form a continuous spectrum, where various meanings and narratives converge, intertwine, and challenge one another. Numerous scholars have extensively critiqued and highlighted the presence of racist, sexist, homophobic, and classist biases within scientific discourses on AIDS and have elaborated on how power and authority inform the creation of knowledge. Medical epistemologies and technologies from Europe and the United States have been taken to formerly colonized and less-industrialized countries as a means of regulating bodies and diseases (Briggs, 2005). As Treichler (1987) argues, our understanding of AIDS—in terms of its global impact, threats to civil rights, associations between sex and death, the “gay plague,” or AIDS as a consequence of the postmodern era—are not rooted in an objective, scientifically determined reality but are rather shaped by preconceived social (racial) constructions of biomedical science.

AIDS gained a distinct cultural meaning due to its place in Western concepts of sexually transmitted diseases (STDs). Western scientific discourse often associated diseases, especially sexually transmitted ones, with the bodies of Africans and African Americans (Austin, 1989). These diseases were characterized as a Black or African problem and were seen as a consequence

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<sup>4</sup> Scientific inquiry involves the processes through which scientific knowledge is developed, encompassing conventions related to its creation, acceptance, and practical application (Lederman et al., 2014).

of sexual immorality, even by scientists. Despite scientific advancements, not all infected individuals have been treated equally. In the early 19th century, public health merged with eugenics, justifying racial purity efforts to attack sexual degeneracy and deviance. In the U.S., public health turned political, targeting migrants and people of color as “infectious” threats to the nation, and this continued during the AIDS crisis (Esparza, 2019). Waldby (2003) notes the militaristic language in AIDS discourse, describing efforts against the virus as a “war on AIDS,” with the virus portrayed as an enemy. This metaphor extends beyond medical aspects to broader societal conflicts, with people living with AIDS (PLWAs) as the primary casualties. For PLWAs and those engaged in various medical strategies related to the epidemic, biomedical practices often involved the deployment of violence, framed as preventive, therapeutic, or diagnostic measures.

The emergence of AIDS as a significant threat to health prompted a shift in focus towards analyzing and intervening in the sexual behavior of the population (Nelson, 1994). This shift, which revolved around discussing safer sex practices as part of the HIV prevention discourse, was influenced by both cultural and epidemiological insights. Consequently, the prominence of safer sex discourses as a means of regulating community sexual behavior grew, extending beyond public health concerns to encompass political dimensions as well (Nelson, 1994). These discourses go beyond mere physical considerations and also involve the conceptualization of sexual identities (Rudolph, 2013). Mankayi (2009) highlights the interconnectedness of safer sex discourse with the portrayal of the “other” as responsible for HIV/AIDS transmission, linking it not only to gender and sexual orientation but also to factors like class, race, and ethnicity. Lindegger and Quayle (2009) emphasize that safer sex responsibilities are often disproportionately placed on women. Cisgender women are mainly depicted as seeking monogamous heterosexual relationships, normalizing this status (Moran & Lee, 2011). Advocacy for abstinence and fidelity frequently focuses on women, highlighting their role in preserving sexual health and preventing STDs like HIV. Meanwhile, condom use and safer sex messages are more commonly directed at men in heterosexual contexts (Segopolo, 2014). However, Flood (2003) argues that heterosexual men are largely invisible within sexual health discourse, as indicated by the smaller number of campaigns directly targeting them. Rudolph (2013) highlights that lesbians have a complicated presence in safer sex discussions, in that they are often overlooked or seen as low-risk for HIV transmission. As mentioned before, gay men were viewed as the main virus carriers and were the focus of prevention campaigns (Mankayi, 2009).

### **Fear Tactics and Invisible Identities in School Sexuality Education**

Schools play a pivotal role in imparting knowledge about sexual health, serving as a critical space for government-led regulation and individuals’ self-regulation of their bodies (Harrison & Hillier, 1999). Traditional sexual health education programs have typically relied on instilling fear and highlighting disease risks as their primary tools to encourage safer sexual practices (Goodson et al., 2003; Lesko, 2010). Simoni and Pantalone (2004) point out that many of the programs differ in their understanding of safer sex and lack clear and precise terminologies. Within the school setting, discussions have primarily revolved around addressing concerns like sexually transmitted infections (STI), promiscuity, sexual deviance, and unintended pregnancy, often neglecting the positive aspects of desire and pleasure in human sexuality and further limiting it to only a marital context. A more balanced approach to sexual education—one that refrains from instilling fear and guilt regarding sexual feelings and acknowledges both the enjoyment and risks associated with sex—is better suited to meet the needs of learners (Lesko, 2010).

Hobaica and Kwon (2017) point to the heteronormative bias found in many sexuality education curricula, which fail to address sexual minority identities and the various forms of sexual expression associated with them. This omission can make sexual minority individuals feel invisible, ill-prepared for their own sexual experiences, and burdened by internal feelings of shame. Conversations about sex are closely intertwined with teachers' personal identities and beliefs, influencing both the content and manner in which they teach (Francis & DePalma, 2015). Despite seeing themselves as change agents when discussing sex, teachers often grapple with anxieties rooted in fears of provoking interest around sexual activity, concerns about parental backlash, or fears about the subject being seen as inappropriate for young learners. Moreover, the school environment can limit their ability to freely teach what they believe is necessary. This paper aims to delve into the conceptualization of safer sex within the context of Indian textbooks and the perspectives of teachers. Our research explores the interplay of values, beliefs, and practices that influence the discourse surrounding safer sex and how various scientific and cultural perspectives converge within the dialogue on safer sex in the context of Biology Education.

### **Methodology**

In this study, we have employed a combination of textbook analysis and teacher interviews. Our analysis is centered on the National Council for Educational Research and Training (NCERT) textbook, *Biology: Textbook for Class XII*, which was selected for its widespread use in Indian schools nationwide. Here, we explore the interplay between scientific and cultural values around sex practices as they converge to construct a shared narrative, and we employ discourse analysis as the methodology to explore the worldviews, power relations, and social constructions embedded within the discourse.

Discourse refers to actions that shape the ways in which meaning is constructed, conveyed, and understood within specific contexts. Discourse analysis allows for an examination of discourses as sites of struggles, where different groups endeavor to shape social reality in ways that align with their intentions and to establish superiority over others. It acknowledges that social reality is not fixed or objective, but a production of concepts, objects, and subjective positions (Hardy et al., 2000). Discourses play a crucial role in shaping and constructing our understanding of the world and are influenced by the social context and structure in which they exist, yet the social context also gives rise to new discourses. This co-constitution between discourse and social context underscores the dynamic and evolving nature of discursive practices (Fairclough et al., 1997). Discourse can be instrumental in reinforcing and perpetuating existing power dynamics and social hierarchies. It serves as a means to maintain and reproduce unequal power relations between people in different social categories of race, gender, caste, and class. By choosing discourse analysis as a methodology, we explore the role of discourse in constructing, maintaining, or challenging unequal power relations within society. We adopt the strategies outlined by Waitt (2005), which provide guidelines for critically examining discourses. These strategies include challenging pre-existing categories, recognizing key themes, analyzing the establishment of validity and worth, identifying inconsistencies, exploring silenced discourses, and investigating the subject positions of individuals.

This paper is framed within a social constructionist perspective on sexuality (Allen, 2005), which emphasizes the influence of cultural context on our sexual identities and experiences. Our sense of self, including our sexual identity, emerges through interaction with the prevailing cultural concepts and ideas available to us. Essentially, how we perceive our sexual identity is heavily influenced by societal narratives about sexuality. Consequently, our understanding of sexuality is

not a universally fixed concept. Rather, it is contingent upon the specific time, place, and discourse in which we are located. What is considered “normal” or “acceptable” in the realm of sexuality can vary significantly from one culture or time to another. Extending this conceptualization to include our understanding of “safer sex,” we recognize that definitions of safer sex are also contextual and culturally bound. Just as sexual identity is socially constructed, so too are the notions of what constitutes safer sex practices. These definitions are influenced by science, societal norms, cultural beliefs, and historical contexts, shaping perceptions and behaviors regarding sexual health and safety.

### **Participants and the Setting**

Semi-structured interviews were conducted with three Zoology teachers, comprising two women and one man, who teach in a higher secondary school.<sup>5</sup> We refer to them using pseudonyms<sup>6</sup>: Ashna Miss, Marina Miss, and Rashad Sir. These three teachers hail from the same peri-urban<sup>7</sup> locality and share the same religion and upper-middle class position. They have been classmates since their school days and continued their education together up to their graduation. Marina Miss and Rashad Sir teach in government schools, while Ashna Miss teaches in a government-aided school managed by a Muslim organization in the Northern District of Keralam. Both Ashna Miss and Rashad Sir are actively involved in the Leftist Teachers’ Association and other leftist movements. The authors came to know these teachers through a mutual acquaintance who is also a teacher.

All three teachers hold bachelor’s degrees in Education and master’s degrees in Zoology. All of them are in their early forties. The interview with Ashna Miss took place at a school where she had come for district-level paper evaluation. The interviews with Marina Miss and Rashad Sir occurred the following day at a local library. Each interview lasted over an hour and was conducted in Malayalam by the first author. Additionally, Marina Miss and Rashad Sir had a brief joint discussion with the first author. The semi-structured interviews offered flexibility and the opportunity to further explore each of the teachers’ perspectives. The interviews were part of a larger study aimed at exploring teachers’ understanding of biology discourses about the body and sexuality. The interviews focused on the teachers’ experience of teaching chapters on human reproduction and reproductive health, their perception of various textbook discourses, such as population control, safer sex, sexually transmitted diseases, adolescent sexual and reproductive health and rights, sexual well-being, safe sex practices, medical termination of pregnancy, and fertility care. The interviews were audio recorded and translated into English during transcription. We listened to the interviews multiple times, each interview was analyzed individually, and observations on the narratives of each participant were made. Particular words and concepts were coded, and the codes across all interviews were grouped. For this paper, the focus of coding was exclusively on the segments where the teachers discussed their perceptions regarding safer sex and the textbook discourse around it. The discourse on safer sex consisted of codes like “teachers’ notion of safer sex,” “teachers’ perception of textbook discourse,” “teachers’ disagreements with

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<sup>5</sup> In India, the 11th and 12th standards together are often referred to as higher secondary or senior secondary education.

<sup>6</sup> In India/Keralam, the customary practice is to refer to teachers by adding honorifics after their names, such as Madam, Miss, Teacher, Sir, etc. Hence, we maintain the same addressing style that we used to address the teachers.

<sup>7</sup> We use the term peri-urban loosely here. In Keralam, the distinction between rural and urban areas is blurred, with numerous small to medium settlements spread across village landscapes, making it challenging to define where a town ends and villages begin (Government of Kerala, 2012).

textbook discourse,” “how teachers discuss safer sex,” “cultural-moral values,” “justification,” “personal experiences” and so on. Some of these codes became individual subthemes in the analysis, while others were combined to form a subtheme.

Using discourse analysis, we seek to gain a comprehensive understanding of the complex nature of discussions surrounding safer sex. The methodology helps to recognize the power dynamics inherent in each discourse and how these shape specific worldviews. Our primary objective is to discern how these seemingly divergent discourses of science and culture converge and interact within the classroom environment. We chose this specific context in India/Keralam for the study because we are native to or familiar with this context. We refrain from overstating the generalizability of our analysis and try to remain close to the data.

### **Analysis of the Discourse in the Textbook**

We began by exploring how *Biology: Textbook for Class XII* talks about safer sex. We focused primarily on the chapter titled “Reproductive Health,” which encompasses discussions of reproductive health, population control policies, contraceptives, medical termination of pregnancy, and infertility. Raveendran and Chunawala (2015) have previously analyzed this chapter and noted a consistent use of the term “normal” within the discourse on reproductive health. This repetition of “normal” implies a standardized, scientific benchmark for reproductive health, potentially sidelining individual experiences. The chapter’s values on sex, gender, and sexuality are rooted in heteronormativity, ignoring diverse sexualities. As Raveendran and Chunawala (2015) argue, focusing on “normal” excludes non-binary individuals and may pathologize those with diverse gender identities or sexual orientations. In our study, we build upon this analysis by specifically investigating how the textbook constructs the notion of safer sex. We do this by using the conceptualization of safer sex that has been expanded upon from Allen’s (2005) work mentioned earlier in this paper.

We observe that while the textbook provides a definition for sexual health,<sup>8</sup> it notably lacks a dedicated section on safer sex practices. Instead, the discourse on safer sex practices is confined to the context of discussions about STIs, while all other discourse around the topic is silenced. Consequently, there is no attempt to address consent, which is essential in ensuring the safety of sexual practices. The following excerpt from the textbook is the only instance that directly refers to safer practices:

There is no reason to panic because prevention is possible. One could be free of these infections by following the simple principles given below:

- (i) Avoid sex with unknown partners/multiple partners.
- (ii) Always try to use condoms during coitus. (NCERT, 2022, p. 47)

The choice of terminology, particularly “unknown partners,” is noteworthy within our analytical lens. A more precise and scientifically aligned term would be “partner/s with unknown STI status.” In India, premarital sexual activity is culturally discouraged, and it is assumed that individuals should not engage in sex before marriage (Majumdar, 2018). This can make discussing sexual

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<sup>8</sup> We adopt WHO’s definition of sexual health, which posits it as a state of physical, emotional, mental, and social well-being related to sexuality; it is not merely the absence of disease, dysfunction, or infirmity. Sexual health requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences, free of coercion, discrimination, and violence. For sexual health to be attained and maintained, the sexual rights of all persons must be respected, protected, and fulfilled (WHO, 2006).

history socially uncomfortable, especially considering gender dynamics where women are expected to maintain virginity while men have more opportunities for exploration. The term “unknown partners” in the textbook appears to avoid these issues and in turn may also imply that sexual activity with a known partner is safer, even without condoms.

The knowledge about STI status is not intended to stigmatize or exclude people but rather to inform practices accordingly. This involves understanding whether individuals have engaged in sexually risky scenarios such as unprotected sex with partners whose STI status is unknown, and if so, whether they have undergone STI testing. It does not require discussing the frequency of sexual encounters or the number of partners involved; instead, it involves individuals having an informed understanding of their own STI status and being able to discuss it with their partners. Knowing STI status helps individuals choose practices without stigmatizing or excluding anyone. While it does not guarantee that a person will not contract an STI, it allows informed decision-making (Simoni & Pantalone, 2004). The textbook’s use of the term “unknown partners” proposes a cultural argument under the guise of a scientific one, chosen pragmatically to avoid confronting societal norms and power relations.

Additionally, the textbook advises against multiple partners but recommends condom use. This raises the question: if condoms are used, does it make sexual activity with multiple partners safe? Reading both the points mentioned in the textbook does not give students an answer to this question. We argue that the textbook avoids delving into these complexities to align with prevailing societal morality and silences specific information about safer sex practices.

As we see, the discussion revolves around condoms as the only barrier method for safer sex, while maintaining silence about other important barrier methods, like dental dams, gloves, and various alternatives. This narrow focus reflects a limited perspective within the discourse on safer sex, primarily centered on heterosexual, vaginal-penile penetration, which disregards diverse sexual practices and orientations. It fails to acknowledge and therefore tacitly invalidates the broad range of sexual activities individuals engage in, perpetuating an incomplete understanding of safer sex. Ideally, textbooks should provide a comprehensive understanding of barrier methods, which should encompass not only a list but also a discussion about the larger purpose of these methods. It should enable individuals to assess their own sexual practices and preferences, helping them choose the most appropriate barrier method to ensure their sexual health and safety.

Even in the discourse surrounding the consequences of STDs, the prevailing focus tends to be on reproductive health risks. We selected the excerpt below as it effectively illustrates commonly overlooked assumptions about women’s health and bodies:

Infected females may often be asymptomatic and hence, may remain undetected for long. Absence or less significant symptoms in the early stages of infection and the social stigma attached to the STIs, deter the infected persons from going for timely detection and proper treatment. This could lead to complications later, which include pelvic inflammatory diseases (PID), abortions, stillbirths, ectopic pregnancies, infertility or even cancer of the reproductive tract. STIs are a major threat to a healthy society. (NCERT, 2022, p. 47)

A noticeable pattern emerges in this excerpt, where the discussion is predominantly centered on women being affected by STDs. Despite the existence of numerous other severe consequences associated with STDs, such as cirrhosis, urethritis, hemorrhoids, insomnia, anorexia, and mental distress, these non-reproductive health issues are conspicuously absent from the narrative (Samji, 2023). Only effects related to the ability of a woman’s body to reproduce are recognized as



challenges of maintaining a healthy society. This foregrounding of concerns of normative society over individuals' well-being is what was seen in the discussion around AIDs. By focusing primarily on the reproductive consequences of STDs, the discussion overlooks the broader spectrum of women's health issues. This narrow focus on reproductive health reinforces societal norms that prioritize women's roles as mothers and caregivers above all else, marginalizing their agency and autonomy in matters beyond reproduction.

The critical factor for safer sex is explicit discussions about desired practices and mutual agreement between partners. This silenced discourse in the textbook reflects the larger politics within which the textbook has conceptualized the notion of safer sex. The conspicuous absence of this discussion can lead to misunderstandings, miscommunication, and ultimately, increase the risk of STIs or unintended pregnancies. Failure to prioritize consent and respect for boundaries can have significant repercussions for sexual well-being. It may lead to feelings of violation, distrust, or trauma if one partner disregards the other's boundaries or pressures them into unwanted sexual activities. Thus, it is imperative that discourse around sexual health and practices emphasize the importance of open communication, mutual respect, and informed decision-making in sexual relationships.

The textbook's failure to address the necessity of contraceptive agency is troubling, especially since many women encounter challenges when attempting to use condoms with their partners. These challenges often stem from limited autonomy over their own bodies and the prioritization of men's sexual pleasure within heterosexual relationships. The absence of discourse on contraceptive agency may reflect a deliberate avoidance of discussing power dynamics within relationships, which play a significant role in perpetuating unsafe sexual practices.

The textbook discourse can be viewed as socially and politically situated and is intertwined with broader societal norms and power structures related to who gets to define and regulate acceptable sexual practices and non-heterosexual orientations. This biomedical representation of safer sex is not objective or politically neutral; rather, it actively influences and defines the different elements and aspects of how safer sex is understood and discussed within society. This influence extends to the framing of the issue, the definition of what is considered healthy or acceptable in terms of sexual behavior, and the setting of boundaries for discussions and policies related to safe sex. Hence, this discourse serves as a useful tool for governance, allowing for intervention in both individual bodies and the broader body politics (regulation and governance of society as a whole).

### **Analysis of Teachers' Discourse**

In this section, we explore teachers' perceptions of the concept of safer sex. As teachers approach the topic of safer sex from various perspectives, we analyze their discussions under different themes and subthemes. Excerpts from the interviews shed light on taken-for-granted assumptions, silenced discourse, inconsistencies, subjective perspectives, and strategies employed to justify arguments.

#### *Teachers' Perceptions of Objectivity and Cultural Values in Science Classroom Discourse*

As Allchin (1999) highlights, teachers often seek comfort in the idea that science remains neutral and purely objective, detached from any values and morality. We found that in the interviews, teachers initially avoided discussing their values, perceiving these to exist beyond the realm of science. They asserted their identity as a science teacher and student of science, underscoring their commitment to maintaining objectivity and neutrality in teaching. However,

teachers eventually acknowledged the presence of values within the classroom-scientific discourse, which they felt were necessary to be incorporated. The excerpt below illustrates this inconsistency or shift in teachers' perspectives:

*Ashna Miss:* As a science educator myself, I would continue to explain this (safe sex practices) from a scientific standpoint, even though there may be moral implications. I am not suggesting that moral values should be disregarded, but in this context, it's crucial to provide a scientific explanation to these science students. This is a key point. The textbook addresses both aspects—avoiding certain behaviors to prevent STDs and teaching about contraceptive methods. We do not label it as strictly “moral.” In our culture, we promote monogamy, and the textbook conveys this through a deeper “inner” meaning. It communicates certain values—moral values. In the classroom, we go beyond the syllabus. When we discuss contraceptive methods, why they are used, we also discuss the other side as well. For instance, the reasons why one should stick to a single partner.

*Interviewer:* Are you suggesting that the textbook takes culture into account?

*Ashna Miss:* Yes, I believe it does. Our culture is universally accepted. In our culture, having a single partner is the norm. It does not endorse multiple partners. Our relationships are lifelong, and this is admired by others as well. So, we can affirm that cultural values are indeed incorporated here, alongside scientific ones. (personal communication)

We can observe that Ashna Miss employs various strategies to validate her statements such as asserting that “our” (Indian) culture is universally respected. By asserting that Indian culture permits only monogamy, she presents this cultural norm as an unquestionable truth, thereby legitimizing her argument. This strategy reinforces the idea that cultural values hold inherent validity and should be upheld in discussions about safer sex practices.

#### *Alignment and Tension: Personal Values in Classroom Discourse*

Teachers generally trust and uphold scientific perspectives when they align with their personal values and practices. In such cases, there is a seamless integration of personal convictions and scientific text. However, when there is a misalignment or departure from their personal values or practices, teachers may view scientific consensus with suspicion and may question its validity. However, professional obligation and curriculum guidelines urge teachers to adhere to scientific perspectives despite their personal values. The excerpt below illustrates how Marina Miss deals with this situation:

*Marina Miss:* I am a strong believer [in religion], so I find it hard to fully accept the theory of evolution. I often pose questions about science to my students. I ask them whether the evolutionary hierarchy is accurate. I encourage them to use their reasoning to decide whether they want to accept the theory. Similarly, contraceptives are a relatively recent invention. In earlier generations, people practiced birth control differently. They would wait until their first child was around two years old before having another. However, things have changed now, and women can become pregnant even when their first child is only 3-4 months old. I personally believe that it's in God's hands, and these matters are beyond our control. I am unsure whether this perspective is right or wrong.

*Interviewer:* Are you talking about the limitations of technology, such as the effectiveness of condoms?

*Marina Miss:* Yes, at times, technology can fail. Even in previous generations, people used natural contraceptive methods like coitus interruptus, periodic abstinence, and lactational amenorrhea. Women who breastfed their children for the proper duration typically conceived again after two years. So, it's mostly due to changes in our lifestyle. (personal communication)

Marina Miss attributes the chance failure of contraceptive measures to divine control and, in her discourse, seems to limit the role of human choice and rational decision-making in family planning processes. This perspective may also inadvertently perpetuate a sense that all contraceptive measures are equally (in)effective, leading to helplessness among individuals when it comes to their reproductive choices. Furthermore, her discourse places the blame on women for the perceived failure in family planning, attributing it to their lifestyle and not breastfeeding babies long enough.

#### *Cultural Values concerning Love, Lust, and Monogamy*

It was also seen from the interviews that sexuality was placed within two (cultural) discourses that were considered incompatible—the discourse of love and the discourse of lust. These two discourses were primarily constructed within the framework of heterosexual morality. In the discourse of love, there is an idealization of heterosexual monogamy, where sexual activity within a committed romantic relationship is considered safe, moral, and acceptable. This discourse tends to associate sex within the confines of such a relationship with love, emotional connection, and moral virtue. On the other hand, the discourse of lust often portrays sexual activity outside the boundaries of committed monogamous relationships as immoral, risky, and potentially associated with diseases. This discourse tends to focus on the physical aspects of sexual desire and often stigmatizes sexual experiences that do not fit within the framework of romantic love. The following excerpts were selected because they illustrate how the concept of monogamy is socially constructed and how it maintains a hold, much like heteronormativity, by infiltrating various discourses, both in subtle and explicit ways.

All three teachers supported monogamous relationships for different reasons that reflected their experiences and location. Ashna Miss, coming from a culture where polygamy was accepted, goes further into the challenges that women encounter within such relationships, primarily stemming from their limited agency. Her perspective is deeply shaped by her position within the community. She teaches at the community school, and since she questions religious norms, she often finds it challenging to navigate within the institution. Moreover, the school where she teaches provides a home for destitute students and children who come from broken families within the community. This environment amplifies the complexity of her feelings.

Both Marina Miss and Ashna Miss emphasize the concepts of loyalty and faith when discussing heterosexual relationships, using these notions to illustrate the significance of monogamy. For Marina Miss, staying with one partner is not just a choice but a sign of trust in the relationship:

*Marina Miss:* After marriage, you receive a license for sex; it should not occur before marriage. We ought to maintain a single partner throughout our lives and engage in sexual intercourse exclusively with that person. I emphasize these moral values when discussing STDs in class. Engaging in sexual activity with multiple partners leads to various issues, so it's important to avoid having multiple partners in our lives. Since this is also my policy in life, I try to bring this in class.

Rashad Sir takes a notably distinct perspective on this matter compared to the other two teachers. As seen above, the perspectives on sexual relations are influenced by gender. It was also observed that when addressing these aspects, these teachers tended to direct their discussions more toward students of the same gender, as seen in the following excerpt:

*Rashad Sir:* When discussing STDs with students, we talk about sexual pleasure. I share with them [students] a concept I encountered in my readings, which says that the experience of pleasure remains the same even if it is the most beautiful woman in the world. This was found in some studies. So I tell them that for this pleasure, one need not have to go to multiple partners. So try to stick with a single partner.

Teachers' methods reflect cultural arguments and vary in teaching about pleasure within safer sex education. Ashna Miss and Marina Miss advise against the temptation of multiple partners, stressing self-restraint for safety. Rashad Sir, while endorsing monogamy, points out that sexual pleasure is consistent across relationship types, but his remarks are addressed to heterosexual men and their desires.

We also found the gendered sexual double standard that has been a longstanding characteristic of monogamous institutions. Usually, men are granted greater freedom to engage in multiple romantic and sexual relationships while women are expected to hold to strict monogamous standards and face severe consequences for deviating from them. Teachers' discourse also depicts subtle pressure on men to pursue romantic multiplicity while reinforcing the ideal of "one true love." Women, on the other hand, are subjected to more stringent expectations within these narratives. Rashad Sir mentioned how he explained the textbook recommendation to avoid multiple partners and use condoms:

*Rashad Sir:* The textbook advises, first and foremost, to avoid having multiple partners and suggests using condoms as a preventive measure. For instance, when considering individuals with low literacy levels, like lorry (truck) drivers, they have historically had higher rates of HIV infection. Therefore, using condoms is a recommended option for those who refrain from reducing their number of sexual partners. The discussion on condom usage primarily pertains to such individuals. It's like people who stay away from home have an option to use condoms. Ideally, we should focus on not having multiple partners.

The term multiple partners was used by all three teachers to refer to sex workers. Marina Miss provides further clarity by saying, "I use the term multiple partners for when one goes to different places like red light streets to do sex in different ways" (personal communication). Here she stresses "different ways of doing sex." This discourse carries the implication of pathologizing non-normative sexual practices.

### *Concerns about Paternal Uncertainty*

A prominent concern that emerged from the discussions with the teachers was the issue of paternal uncertainty. The persistent fear surrounding paternity uncertainty despite scientific advancements underscores the dominance of cultural anxieties over scientific solutions. Stemming from concerns about family stability, inheritance rights, and social status, this fear is deeply ingrained in cultural norms and societal expectations. Ashna Miss articulates her concerns regarding the potential erosion of cultural values when individuals engage in multiple partnerships. Her worry centers on the idea that when people freely explore multiple partners without constraints, it could lead to what she calls “sexual anarchy”:

*Ashna Miss:* This is the main reason against multiple partners – the paternity uncertainty. In cases where one uses condoms and has multiple partners, that is their individual choice. But I do not feel that this should be told to the students at this age. Otherwise, it can lead to sexual anarchy. Our culture will change, our lifestyle, all will change.

Ashna Miss acknowledges individuals’ autonomy in sexual choice but refrains from discussing condom use and multiple partnerships with students due to fears of disrupting traditional values, potentially leading to “sexual anarchy.” This reluctance reinforces traditional power structures and suppresses alternative views on sexuality.

### **Discussion and Conclusion**

The textbook and teachers emphasized heterosexual, monogamous relationships as the only means to ensure sexual safety. This could lead to a limiting discourse at a time when individuals have access to a range of safer practices, including choosing barrier methods, undergoing regular testing for STIs, and selecting vaccines for certain infections. Recognizing and respecting the diversity of sexual behaviors and relationships is crucial in promoting an inclusive approach to sexual health and safety. Therefore, the textbook and teachers should work towards empowering individuals to assess their unique sexual practices and preferences, enabling them to make informed choices about the most suitable barrier methods for their specific needs. Furthermore, a conversation about condom use and other methods that does not take into account the formidable challenges confronting women, often due to circumstances beyond their control, may not be helpful. For many women, condom use might not be a realistic option, as their gender identity is frequently tied to their fertility and their ability to satisfy men (Chayadevi & Bambah, 2017). Therefore, it is essential for the textbook and teachers to not overlook the complex factors guiding people’s choices and to address the fundamental causes leading individuals into situations of unsafe sex.

The teachers interviewed, in their approach to the topic, have not considered the impact of cultural and moral constraints upon scientific principles. As Allchin (1999) suggests, gaining a deeper comprehension of science, nature, and objectivity can be enhanced by examining historical case studies. Examining historical cases within the context of scientific discourse surrounding AIDS offers an opportunity to recognize the interconnectedness of morality and science. Engaging teachers in a discussion about the historical progression of scientific conversations related to AIDS can offer them an opportunity to reflect on how particular scientific discourse has contributed to the shaping of the concept of “normalcy” and the reinforcement of specific societal values. These discussions can help teachers reflect on the classroom discourses and offer many ways to discuss topics around sexual safety that are more inclusive.

Although the interpretation of safer sex is highly subjective, there are specific facets that need to be addressed. The textbook we examined primarily confines its understanding of safer sex to the prevention of STIs. It prioritizes physical health and disease prevention, which are undoubtedly important. One crucial aspect that appears to be underrepresented is the discussion of the mental and psychological well-being of individuals engaged in sexual practices. Safer sex encompasses more than physical health; it also involves emotional well-being in intimate relationships. It involves identifying when emotional safety is at risk and actively prioritizing emotional health through setting boundaries, openly communicating feelings, and maintaining personal agency. Engaging in sexual activity, even when precautions are taken, can have profound emotional implications for individuals. Hence, expanding the paradigm of safer sex is essential within the context of Biology Education. It is crucial to have discussions that could enable students to recognize emotional and physical cues, such as tension, discomfort, or unease, and to take appropriate measures, including asserting boundaries, expressing emotions, or disengaging when necessary.

This paper has tried to illustrate that science and morality are not isolated domains but are intricately linked, mutually influencing and shaping each other within discussions of sexuality in classrooms. Together, they construct, govern, and standardize sexual behaviors. The language we use, the narratives we create, and the social perceptions we hold around sexual practices are influenced by the interplay between cultural and biomedical discourses. Thus, discussions around sex within the classroom are not simply a matter of science versus culture; instead, there is a continuum of discourse that incorporates elements of both cultural and biomedical perspectives, and together, these discourses shape the way we talk about and understand safer sex.

### Acknowledgments

We would like to express our gratitude to the reviewers for their valuable feedback. Special thanks to Arul Ganesh S. S. for his review and feedback.

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