

USING SPECULATIVE DESIGN TO REIMAGINE DIGITAL PERIOD TRACKING FOR THE GLOBAL MAJORITY

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Digital period tracking refers to the process of monitoring and managing menstruation through digital tools equipped with predictive analytics and tracking functionalities. It is undertaken both on dedicated period-tracking applications (such as Flo, Clue, and Period Tracker) and on a broader range of digital health solutions, including general health apps, wearable devices, and other technologies that incorporate period-tracking features.

While digital period tracking has been extensively studied within self-tracking scholarship, most of this research focuses on the Global North, leaving the experiences of menstruators in the Global South largely underexplored. Given the specific socio cultural, economic, infrastructural, and regulatory conditions shaping experiences of digital period tracking in these regions, it is important to study them. The extant gap in scholarship not only limits our understanding of how marginalized menstruators navigate and engage with digital period tracking, but also constrains the development of inclusive, contextually relevant digital health solutions that address their specific needs. By shifting focus to the Global Majority, the research on which this paper is based questions the dominant paradigms of self-tracking research and foregrounds the need for menstrual technologies that are equitable, culturally relevant, and responsive to diverse lived realities.

This paper focuses on digital period tracking in India, where a range of intersecting characteristics make it a compelling case study:

- 1. Deep-seated menstrual taboos** in India are entrenched in religious, familial, and societal structures that frame menstruation as impure, restricting menstruators' mobility, participation in religious activities, and access to certain spaces within their homes (Verma, 2020; Subramanian, 2022; Udupa, 2015). These restrictions perpetuate silence around menstrual health, limiting access to reliable information and healthcare. Digital period tracking emerges within this context but remains embedded in broader structures of menstrual surveillance. Engagement with period tracking technologies is shaped by the same societal norms that enforce secrecy and regulate bodily autonomy, raising concerns about privacy, data security, and the implications of tracking menstruation in a

highly surveilled environment.

2. Research suggests that **identity markers such as gender, sexuality, caste, class, and regionality** significantly shape individuals' engagement with India's technological landscape (Paul, 2015; Vimalkumar et al., 2021; Rajam et al., 2021). Caste plays a crucial role in determining digital access, with upper-caste users having greater access to technological resources, while marginalized groups face infrastructural, educational, and economic barriers rooted in historical marginalization (Rajam et al., 2021). Gender and class further exacerbate these disparities, as lower-income menstruators and women from caste-oppressed backgrounds often depend on shared devices, limiting their autonomy and exposing them to gendered surveillance of technology use (Sambasivan et al., 2018). Additionally, most period-tracking apps are designed with cisgender, heterosexual users in mind, rendering queer and non-binary individuals invisible within these digital health frameworks. These intersecting inequalities highlight the need for a critical examination of how menstrual tracking technologies are designed, accessed, and experienced within India's stratified socio-digital landscape.

3. Recent statistics indicate substantial international investment in India's digital health and 'femtech' sectors (it ranks fourth in the global 'femtech' market (Mishra et al., 2023)), with the Contraception & Fertility Apps market projected to reach US\$3.61 billion by 2024 and a compound annual growth rate (CAGR) of 12.29% from 2024 to 2028 (Statista, 2024). While specific statistics on period tracking applications are unavailable, market research consistently signals a growing influx of capital into India's digital reproductive health sector.

4. This growth must be contextualized within India's **inadequate data protection regulations**, including the absence of a comprehensive framework for international data flow. This regulatory gap allows companies to operate with minimal accountability, influencing how datafication, surveillance, and privacy are conceptualized and experienced by menstruating individuals.

Despite this, scholarship on digital period tracking in South Asia is limited, and existing literature neglects critical questions about the intersectional and socio-culturally situated experiences of menstruation. Menstruating bodies are not monolithic and experiences of both menstruation and digital menstrual tracking are deeply contextualized. This paper therefore asks:

How can the design of digital period tracking solutions be informed by the diverse experiences and perspectives of menstruating people, ensuring inclusivity and equity?

This paper reports on participatory speculative workshops conducted with marginalized menstruators in India—predominantly queer, caste-marginalized, and rural individuals—as part of a larger study on digital period tracking. The workshops are informed by prior

in-depth interviews with 30 participants, which examine how digital menstrual tracking constructs marginalized bodies within India's stratified technological landscape. By exploring how social hierarchies and identity markers shape digital menstrual health experiences, my research aims to reimagine period-tracking solutions that center inclusivity and equity.

Participatory Speculation and the Reimagining of Digital Menstrual Health

Participatory speculative design (PSD) enables marginalized users to articulate their concerns, aspirations, and critiques of existing period-tracking technologies. Rather than designing for users, PSD shifts the focus to designing *with* them, ensuring their perspectives shape future menstrual health technologies (Wakkary et al., 2022; Chopra et al., 2023). Grounded in speculative design methodologies (Dunne & Raby, 2013), this approach challenges dominant technological imaginaries, foregrounding the lived realities of menstruators often excluded from mainstream digital health solutions. Two co-speculative workshops invited participants to collaboratively envision more inclusive and contextually relevant period-tracking technologies. Conducted with caste and class-marginalised and queer menstruators, these workshops revealed that exclusion operates not only through technological design but also through the epistemic and ethical assumptions embedded in global narratives of participation and innovation. Participants' reimagined designs disrupted the default logics of period-tracking apps - heteronormative relationship structures, biomedical literacies, English-only communication, and universalised notions of care. Their speculative visions redefined tracking as a practice of community, relationality, and collective wellbeing, rather than one of surveillance and optimisation. These interventions demonstrate that inclusivity in the Global South cannot be achieved through design features or ethical checklists alone; it must be enacted through situated, relational practices grounded in care, reciprocity, and translation.

Participatory speculation thus emerges as both a methodological and political act, a means of resisting extractive, one-size-fits-all design paradigms while envisioning plural, contextually rooted futures. Attending to language, infrastructure, and relational ethics, this research argues that the future of digital menstrual health in the Global South depends not on importing design models, but on learning from the embodied knowledges, affective worlds, and speculative imaginaries of those historically excluded from technological design.

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