Title: Improving Menstrual Hygiene Management among Bengali Women using Artificial Intelligence

Research Team:

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2. Prof. Nina Mazar, Questrom School of Business
3. Prof. Marshall van Alstyne, Questrom School of Business

Research Goal: Improve menstrual hygiene literacy in indigenous communities through a multilingual artificial intelligence (AI) chatbot.

Background: Every day, more than 300 million women are going through their menstrual cycle. Many women and girls in low-and-middle-income countries (LMICs) do not have the right information due to constrained education and the stigma around this subject. For example, only 9% of girls in Bangladesh have a menstrual hygiene management (MHM) education and 36% of adolescent girls know about menstruation before their first period[1]. Even following years-long interventions, 30% of Bangladeshi girls still take an absence from their schools during their period, missing 2.5 days a month, on average.[2] The popular WASH literacy-focused physical intervention succeeded in improving MHM education for women and girls in Bangladesh. Despite the initial success, it has been extremely challenging to scale such physical interventions to large populations without significant investment of time and resources, and limited educational participation from young girls and women. We have won research grants at MIT, from Amazon, and used it to develop a working prototype for our system that we hope to launch for 300 participants in our proposed field experiment in Bangladesh.

Proposed Solution: We present a Bengali WhatsApp chatbot[3] to deliver a digital literacy intervention for improving menstrual hygiene management awareness among local populations in Bangladesh that speak low-resource languages. We use large language models grounded in verified and accurate information to support community-based participatory research. Alongside a local partner, we propose a WhatsApp chatbot that generates responses grounded in accurate, verified knowledge from international health agencies. The proposed WhatsApp chatbot leverages existing communication channels, ensuring widespread accessibility. We overcome these barriers by combining language models, local partnerships, and user-friendly platforms for effective and culturally sensitive menstrual health education.

Methodology: This research project will investigate the changes in behavior and improvement in knowledge of menstrual hygiene induced by conversations that users have with this WhatsApp chatbot. We will deploy and monitor this program in rural and urban slums in Bangladesh in partnership with two local communities: the first is led by the 8th Ceremonial Queen of the Indigenous Marma Community, Rani (Queen) Ukhengching Marma, who is also a linguistics graduate student at MIT; the second is the nonprofit is the Spreeha Foundation, who

[1] Alam et. al, 2017
[2] Jahan et. al, 2024
[3] https://sakhi.simppl.org

will help us deploy this system in 6 public health centers in Dhaka, Bangladesh. The project will involve 300 participants. We will work with Prof. Nina Mazar, and present to her collaborators at the World Bank's Behavioral Insights unit in order to explore a wider deployment of this chatbot as a digital literacy intervention to advance public health outcomes in underserved communities across these countries.

Outcomes: Our research will demonstrate the use of generative artificial intelligence (GenAI) to increase knowledge of menstrual hygiene and advance social outcomes among vulnerable indigenous communities.

Relevance: Boston University's commitment to building global engagement and expanding the societal impact of the technologies we build internationally. This project advances our global research into digital literacy interventions and shows the academic community a viable example of deploying AI for improving the health outcomes of underserved communities.

In 1 paragraph, please describe how your research will advance knowledge or understanding of this year's Learn More Series theme, Indigenous Identities and Experiences.

By and large, generative AI systems have been focused on English language use-cases, and there is a marked lack of performant systems for underresourced languages. This perpetuates the lack of access to the benefits of AI for communities that are most vulnerable to its risks. In affirming a commitment to Indigenous Identities and Experiences, we advance BU's efforts in building a globally applicable, scalable digital literacy intervention that allows us to demonstrate a commitment to students belonging to these communities from across the world, in an ecosystem where they can contribute to it at BU. Academic research often faces significant barriers preventing it from having real-world impact but in finding partners on the ground that will support our field research, we are able to devise the mechanisms through which research can be put into practice for the communities that need it most.

Budget: Our budget supports research computing services for the project (USD 2000);
travel to support field research activities (USD 1000);
and undergraduate research assistants to support project staff (USD 2000).