

[COVID Information Commons \(CIC\) Research Lightning Talk](#)

[Transcript of a Presentation by Leysia Palen and Deepika Rama Subramanian \(University of Colorado, Boulder\) October 10, 2023](#)



[Title: Fertile Ground: Women's Bodies as Sites for Motivating Disinformation](#)

[Leysia Palen CIC Database Profile](#)

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[Transcript Editor: Lauren Close](#)

Transcript

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Ok, so good afternoon. Like Lauren said, my name is Deepika - sorry? Ok, my name is Deepika Rama Subramanian. I'm a third year Ph.D. student at the Department of Information Science at the University of Colorado, Boulder.

We're going to talk about our research: Fertile Ground: Women's Bodies as Sites for Motivating Disinformation. This work was a collaborative effort between myself, Hande Batan, Tajanae Harris, Lindsay Diamond, and our adviser Leysia Palen. This work investigates the information disorder with respect to the COVID-19 vaccines in social media environments. In our case, that's going to be Twitter as it happens upon targeted populations. In our case, it's women and other people who menstruate.

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This work is a result of the NSF grant "The Rise and Propagation of Anti-Vax and Anti-Access Social Media Campaigns Targeted at Disadvantaged and Minority Populations during the COVID-19 Pandemic." Another piece of work that came out of that grant was "The Polyvocality of Online COVID-19 Vaccine Narratives that Invoke Medical Racism." Similar to our work that we're presenting today, this also examined information disorder on Twitter, but the targeted population were Black Americans. If you're interested, that paper was published at CHI 2022 (Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems).

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Ok, so before I get started, and I'm trying to do this in a narrative style, I need to talk about the dataset that we had. So we have an in-house streaming collection service that ran from December 18, 2020 onwards. We also had to collect backwards through the Twitter API, the academic API which no longer exists, but we went back to March 11, 2020. We collected on vaccine terms, vaccines, and some variations of the word "vaccine". We were starting to see an emergence of infertility topics that were incorrectly making a connection between the COVID-19 vaccine and fertility concerns.

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Naturally, our first stage of research begged us to empirically identify in number and phases the COVID-19 vaccine discourse in relation to fertility concerns from pre-vaccine to post-vaccine availability. To do this, we used a bottom up qualitative coding approach with a stratified sample from our data set. We stratified 5% per month during this time.

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We found four main constructs that were being talked about in those tweets that we analyzed. The first one is conspiratorial talk and this is our classic conspiracies around vaccines and fertility. There is a "depopulation agenda," "Bill Gates is out to get the global south" and "sterilize women in the global south," and so on and so forth. The second kind we saw was flawed reasoning. This was really an umbrella term for three other quotes that we were seeing, the first one being "bad science" where people used scientific jargon to give themselves a sense of credibility when they were making claims that were false. The second was cherry picking, where they would pick up one scientifically accurate empirical fact and then manipulate it to serve a nefarious purpose. In this case, in many cases, they were insinuating that the vaccine was causing cancer to people based on information in the vaccine insert. Then there were those that were making blanket statements like: "the vaccine causes infertility" with no real reasoning behind that. The third construct was pro-vaccine arguments and it was very heartening to see that move into the space, trying to quell some of that incorrect information on the platform. Finally, there were those that were uncertain about the vaccine's safety because of the speed at which the vaccine was developed. The Emergency Use Authorization was another cause for that genuine uncertainty. So these were the four constructs that we found, but we also found that they varied a lot through time.

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After seeing how they varied with time and triangulating it with real world events, we saw that there were three phases of vaccine discourse that was really going on. The first phase was when the vaccine was being spoken of theoretically. The second was when the vaccine was imminent. There were trials going on, they were starting to have some results from the trials as well. Then, the third phase, when the COVID vaccine was widely distributed.

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Per phase, we saw conspiratorial talk was extremely high, alongside flawed reasoning. A lot of these arguments about the vaccines were really based on previous vaccines and the conspiracy theories and poorly reasoned arguments about older vaccines, especially HPV. In phase two, as we start to get more information from the scientific world about the vaccine, flawed reasoning shoots up as people are trying to make false claims between the vaccine and fertility. In the final phase, we still see an extremely high flawed reasoning component, but at the same time we're starting to see pro-vaccine voices enter the scene trying to dispel some of the myths in that area.

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What was most interesting to us was that in phase three we were starting to see people talking about disruptions to their menstrual cycles. There were people self-reporting menstruation changes. Even further out than that, we saw people incorrectly associating changes to their menstrual cycles to infertility. For example, one person says "some people saying the vaccine is causing menstrual cycle changes in women / increased rates of infertility/irregularity... yea I'm good." No reasoning, but that has started to take root on the platform.

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So naturally, our next stage of research wanted to understand the range of positions, values, and arguments that were surrounding these self-reports and the menstrual disruption discussion. To do this, we used discourse analysis because we wanted to capture the construction of the arguments and how people were interacting with those arguments through the responses to tweets. We also had to refine our dataset to use tweets that had high convergent activity. By that, we mean people that were using it to reply and using it as quote tweets, because really, that's where the conversation was happening. So we constructed an engagement metric using those two metrics, which is replies and quotes. We then constructed a sample of 69 relevant tweets to perform discourse analysis on.

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What we found was that people were primarily talking out of four rhetorical frames. The first one was the vaccine frame. This was used to express people's opinions about the vaccine and usually involved a pro, anti, or basically a concerned stance towards the vaccine. The second was the menstruators frame and this was used to describe menstrual changes, to acknowledge, deny, or question other people's experiences, to ask questions about menstrual health as it relates to the COVID vaccine, and also limit the negligence around menstrual health in the vaccine trials particularly. The third frame was the scientific, medical, and the public health frame. This was used to ask questions to people in that authoritative position about the connection between the vaccine and menstrual disruptions. They were also expressing their opinions about the scientific, medical, and public health community. Others drew a sense of authority through their association with the scientific, medical, and public health communities. The last frame was the lived experience frame. This was used when people were reporting lived experiences of menstrual disruption or when people were validating or denying other people's lived experiences. What we

saw was the 69 tweets were using one or more of these frames in similar ways to make their arguments. Based on that, we found that there were 12 main perspectives but I will only be touching on a few today in the interest of time.

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The first perspective was using the platform to gather data about other people's menstruations lived experiences. And I want to draw attention to Kate Clancy who was the author of that tweet and also will be talked about somewhere further out in the presentation. Kate Clancy was asking for people's lived experiences in a formal manner through a survey.

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The second type, we saw medical voices that were validating menstruators experiences and providing expert advice or opinions about the phenomena. Here we have the user "Vickilovesfacs." Her name is Dr. Victoria Male. We will also talk about her a little bit further down in the presentation. Here, she uses her position as a reproductive immunologist to give her informed opinion about the connection between the vaccine and menstrual disruption.

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There were others who used their position as medical professionals to cast doubts on the vaccine. This was like the flip side of something that we saw in the previous perspective where people were incorrectly associating clotting disorders to menstruation and then onwards onto infertility.

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We have also those that were invoking scientific knowledge and expertise to dismiss lived experiences of menstruators so that they could protect compliance to the COVID-19 vaccine. Here, I want to again point out that the author is a very well-known Indian feminist and she uses the position of authority of a celebrated gynecologist from India saying that they verified that the COVID vaccine doesn't affect a person's period and please don't share that information online. Here, we're seeing people who are interested in protecting the vaccines and compliance to the vaccine, but at the same time are starting to question women's lived experiences.

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On the flip side, we have people with anti-vaccine stances that doubt the safety of the vaccine by demonstrating a new concern to women's health. Here's a quote by - here's a tweet by Candace Owens, who is pointing out that the scientific medical community didn't have an explanation for the fact that people were having menstrual disruptions and that they were worried. So we saw these perspectives. We analyzed their responses to see how people were engaging with various parts of the construction of arguments. Then, we wanted to know: so what?

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How is this propagating into the into the world? Our third stage of research wanted to understand how this information was being taken up and reused. To do that, we did retweet analysis. At the same time, we wanted to also understand how the world on Twitter was affecting popular press

and information that was outside the Twitterverse. To do that, we also did a popular press analysis and I will talk about that right now.

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For the retweet analysis, we picked up two tweets that explicitly requested people to share experiences of menstrual disruption with them. Then, we analyzed who retweeted responses to these tweets. Basically, who was retweeting people self-reporting menstrual changes. We found out of the 192 self-reports that we analyzed that 176 of them were retweeted by at least one anti-vaxxer. Many of them were retweeted by quite a few more. We also found that popular anti-vax activist Naomi Wolf had systematically retweeted 69 out of those 192. Another thing that we found were people were using that retweet aspect of Twitter to stitch together new narratives and re-contextualize the self-reports of menstrual disruption. For example, here, they're using Naomi Wolf's commentary to give a new context to the self-reports of menstrual disruption.

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How did this translate to popular press? We found that popular press was actually quite behind Twitter and a lot of the incidents on Twitter were showing up in the popular press much later. To do this, we did a popular press timeline analysis. We also analyzed each of the articles that we found between January 2021 to December 2022 to see if they actually had a stance on the vaccines affecting the menstrual cycles of women and other menstruators. We found that this peak here in June of 2021 was a result of Kate Clancy's tweet that was asking for people's lived experiences of menstrual disruption. September of 2021 was Dr. Victoria Male's paper in the British Medical Journal asking for people to study the link between the vaccine and menstrual disruption. Finally, the peak in July of 2022 is Kate Clancy's paper based on the survey responses that she received on Twitter - it was published at that time. The other thing that I also want to draw attention to here is how few of these popular press articles were actually acknowledging that there was a connection between the vaccine and menstrual disruption. Even until August 2022, not everyone had accepted that there was a connection between the vaccines and menstrual disruption even though there was a controlled academic study in January 2022 that was established a link between the vaccine and menstrual disruption.

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So what does this mean for us? We found that collective action online drew attention to an important medical issue that women and other menstruators were facing. We found that scientific and medical communities were silent on an issue for quite a bit of time, causing confusion and denial about the connection. And this had mobilized anti-vaccine campaign like we saw mobilized in phase one, before the vaccine was even created. This campaign was ready to incorporate online reporting into their infertility claims and into their agenda. Then, from an informatics perspective, we find that the best defense against disinformation is not allowing silence on matters that affect marginalized populations and that good information can do a lot better when it's placed as defense than when it is trying to correct bad information.

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That's all for today from me, thank you.