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"You can use the app instead of guessing": Women's use of period-tracking mobile applications for menstrual management

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This study investigated how 191 women use period-tracking mobile applications. Findings revealed that approximately half of our respondents use some form of period-tracking mobile application. Women who use period-tracking mobile applications report using them to track and predict their menstrual cycle, keep track of menstrual symptoms, and use the information for easier and more accurate communication with their healthcare provider. In addition, women report using period-tracking mobile applications to track fertility as a means of pregnancy prevention. Women who did not use period-tracking mobile applications frequently reported that they did not feel a need to use them because their hormonal birth control predicted and regulated their period for them, and thus there was no need for a mobile application to do it. Lastly, several participants identified not using period-tracking mobile applications because they did not trust them. Reinforcing and extending previous literature, the present study highlights a tension concerning self-monitoring and self-care (Lupton, 2014), usefulness (Moglia et al., 2016), and opportunity for autonomy.

Keywords: Mobile Application, Period-Tracking, Menstruation, Women's Health, Menstrual Management

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Introduction

Digital health technologies, like period-tracking mobile applications, are increasingly important in healthcare and health education (Lupton, 2014), and increasingly common (Bretschneider, 2015). As of 2016, there were at least 108 menstrual cycle tracking mobile applications, at least 20 of which are free (Moglia, Nguyen, Chyjek, Chen, & Castaño, 2016). Woods (2013) notes that our "recent technology advancements have been used to 'medicalize women's bodies' and offer choice as it relates to reproduction matters" (p. 269). Mobile tracking applications typically include information for conception, and approximately half include information for contraception (Moglia et al., 2016). Women track their menstrual cycles to remember and predict their period, better inform communication with their physicians, and keep track of premenstrual physical states (Epstein et al., 2017). In adolescents, mobile applications are preferred to paper and pencil diaries to track heaviness of menstrual bleeding (Jacobson, Vesely, Haamid, Christian-Rancy, & O'Brien, 2018). Further, digital media, including mobile applications, may be useful for offering adolescents information about their sexual and reproductive health (Akinola et al., 2018). In addition, many adults use mobile applications to keep track of health statuses like weight, exercise, or other specific symptoms including period-tracking (Fox & Duggan, 2013).

Mobile period-tracking applications are important to continue to study because they may be useful to healthcare practitioners and women. The use of mobile applications to provide sexual health information to adolescents and younger populations can increase awareness of sexual risk behaviors and might aid in improving sexual health outcomes via access to accurate, comprehensive, and up-to-date sexual health information (Eleuteri, Rossie, Tripodi, Fabrizi, & Simonelli, 2018). In addition, young adults find sexual health information and promotion materials delivered via mobile applications to be acceptable, so mobile applications provide a possible site to engage more at-risk populations in sexual health issues and interventions (Eleuteri et al., 2018). Further, women's practices with period-tracking mobile applications can apply to practitioners of personal informatics, helping design more effective and inclusive applications (Epstein et al., 2017).

Mobile health technologies and platforms are changing and becoming increasingly common (Bretschneider, 2015). Additional research is needed to understand how and to what extent women continue to use, or not use, these technologies. First, we explore the literature on the use of period-tracking mobile applications to monitor and manage menstruation.

Literature Review

Menstruation Monitoring and Management

Women may need to monitor and manage their menstrual cycles for a variety of reasons. Reproductive hormones that fluctuate throughout the menstrual cycle can affect emotional, sensory, and cognitive processes, and cause a fluctuation in appetite, among others physiological processes (Farage, Osborn, & MacLean, 2008). The menstrual cycle, which is based on a cyclical pattern that averages approximately 28 days, consists of three sequential biological and hormonal phases: (1) the menstrual phase, (2) the follicular phase, and (3) the luteal phase (Farage et al., 2008; Saad & Stenstrom, 2012). Women trying to conceive, or trying not to, may be interested in the window of fertility that typically occurs late in the follicular phase (Saad & Stenstrom, 2012). Mobile period-tracking applications reflect the taboo nature of menstruation in the United States (Thompson, 2016). Lupton (2014) argues that participation in digital health technologies, especially those that track users' sexual and reproductive health activities and functions, can be a form of self-care or self-surveillance, and present sexuality and reproduction in ways that perpetuate normative assumptions about women.

Fertility tracking. Although women track their menstrual cycle for many reasons, high-level goals associated with menstrual tracking can be separated into those who are trying to conceive, and those who are trying not to conceive (Bretschneider, 2015). Fertility awareness-based methods for pregnancy prevention may reduce the risk of pregnancy when women are accurately taught to observe physical symptoms that follow hormonal fluctuations (Manhart, Duane, Lind, Sinai, & Golden-Tevald, 2013).

However, ovulation-tracking as a form of pregnancy prevention is difficult, complicated by irregular menstrual cycles, and physicians generally believe it requires training (Finocchario-Kessler, Wanyenze, Mindry, Beyeza-Kashesya, Goggin, Nabiryo, & Wagner, 2014). For some women, tracking one's cycle using the calendar rhythm method is useful to avoid pregnancy, while not completely accurate (Johnson, Marriott, & Zinaman, 2018); the motivation is to avoid sex during the time when a woman is most fertile. This method can be 80% to 87% effective at preventing pregnancy for women with regular menstrual cycles (English, 2012). Thus, fertility tracking may be one reason why women track their menstrual cycles.

Mobile applications to track fertility can improve the effectiveness of fertility-awareness methods of pregnancy prevention, but the system is not without flaws (Berglund-Scherwitzl, Gemzell Danielsson, Sellberg, & Scherwitzl, 2016). Importantly, many smartphone menstrual cycle tracking applications are inaccurate for use regarding fertility and medication (Moglia et al., 2016). Mobile applications still require the rigorous research associated with any other contraceptive method to fully claim they can contribute to pregnancy prevention (Shattuck, Haile, & Simmons, 2018). To attend to these findings and limitations of previous research, the present study addresses the frequency of mobile period-tracking application use. The addition of frequency of use is important because for women who are concerned with fertility tracking for pregnancy prevention, infrequent or inconsistent use may be a barrier to the adequacy of this method. In addition to fertility tracking, women may monitor their menstrual cycle to track, manage, or predict other menstrual symptoms (Epstein et al., 2017). Women may also track their menstrual cycles to attend to symptoms associated with menstruation.

Menstrual symptom management. Beyond reproduction, women may be interested in tracking their menstrual cycle to observe, predict, or prevent changes in mood associated with hormonal fluctuations that occur at different stages of the cycle, or physical symptoms associated with menstruation (Farage et al., 2008). Women may also want to track their menstrual cycle in order to be prepared with materials (e.g., pads, tampons) (Epstein et al., 2017). In addition, chronic illnesses, stress, or other physical demands may affect cycle regularity (Farage et al., 2008) and warrant tracking. Women, then, may use period-tracking mobile applications to track their

own symptoms or predict the occurrence of future symptoms (Epstein et al., 2017). Thus, women have a number of goals for tracking their menstrual cycle, which to some degree may require management.

Abstaining from Period-Tracking Mobile Applications

In addition to why women use period-tracking mobile applications to track the occurrence or symptoms associated with their menstrual cycle, some women might not use a mobile application for this purpose (e.g., prefer paper and pencil tracking), might not track their menstrual cycle at all, or may initially use a period-tracking mobile application but stop using it for a variety of reasons. When mobile applications fail to effectively predict future menstrual cycles, women can characterize them as ineffective (Epstein et al., 2017). Existing mobile applications sometimes fail to consider life stages and the needs of sexual and gender minorities (Epstein et al., 2017). Commonly, women identify problems with period-tracking mobile applications, including that their list of possible symptoms or moods can be confusing, that they lack clarity, they do not have reminder options for birth control, that the applications might be missing a pregnancy mode, and there are too few gradations to enter menstruation (Bretschneider, 2015). Women stop using period-tracking mobile applications because they are too complex, confusing, they are generally unsatisfied, they do not trust the calculated predictions of the application, the application too frequently crashes on their phone or stops working, the application does not use their preferred language, it is too expensive, or they chose a different period-tracking mobile application (Bretschneider, 2015). In addition, some women do not track their menstrual cycle at all or prefer paper and pencil methods to tracking their cycles (Epstein et al, 2017). Thus, in addition to how and to what extent women use period-tracking mobile applications, the present study also attends to why women might not use or might choose to stop using period-tracking mobile applications. In this way, we attend to a limitation of previous scholarship which addresses one component of what applications are being used or why a specific application is being used, and consider both which applications, how they are used, and the frequency of use.

Although recent scholarly attention to period-tracking mobile applications is emerging, the perspective of that line of scholarship draws primarily on the value of specific applications, rather than the broader health needs of women and their subsequent engagement with communication technology. In addition, while more attention is paid to how individuals might use mobile technologies for health, women's health issues like menstruation, pregnancy prevention, or those trying to become pregnant receive considerably less attention (Epstein et al., 2017). To address this gap in literature, the present study poses the following exploratory research questions:

RQ1: How frequently do women use period-tracking mobile applications?
RQ2: What period-tracking mobile applications do women use?
RQ3: How or for what reasons do women use period-tracking mobile applications?

Methods

Procedure

To address these research questions, the present study utilized an online survey. Research participation included responding to an online, anonymous questionnaire hosted on Qualtrics.com, an online survey platform. As a part of a larger study, women responded to open- and close-ended questions about reproductive health. This article specifically addresses questions regarding period-tracking mobile applications. Specifically, participants were asked the close-ended question (1) how frequently they used period-tracking mobile applications, and the open-ended questions of (2) what applications they used, and (3) how (if at all) they used period-tracking mobile applications.

Recruitment and Sample

Participants were recruited using volunteer and snowball sampling from the researchers' social media accounts on Reddit, Tumblr, Twitter, and Facebook. Participants included 191 individuals who identified as women or female between

the ages of 18-37 (*M*=23.52, *SD*=3.78). Most participants were Caucasian or white (*n*=120, 62.2%), Hispanic or Latin American (*n*=36, 18.7%), Asian (*n*=16, 8.3%), Black or African American (*n*=6, 3.1%), or Indian (*n*=3, 1.6%), with the remaining identifying as two or more races. In addition, most participants identified as heterosexual or straight (*n*=124, 64.2%), bisexual (*n*=35, 18.1%), lesbian (*n*=10, 5.2%), pansexual (*n*=8, 4.1%), queer (*n*=5, 2.6%), and asexual (*n*=4, 2.1%). Most participants were sexually active (*n*=130, 67.4%). Most participants were from the United States, however, 31 (16.2%) participants were international, with 11 participants were from Canada, seven from the United Kingdom, three from Australia, two from Greece, one from the Netherlands, one from Japan, one from Germany, one from Ireland, one from San Paulo Brazil, one from Finland, one who identified as being from Pyongyang North Korea, and one from Chennai, India.

Data Analysis

To address the first research question, participants responded to a close-ended question that asked them to report the frequency with which they used period-tracking mobile applications from the options: never, sometimes, about half of the time, most of the time, and always. Frequencies are reported in the results. To address the second research question, the first and second author read through the open-ended data that asked participants what, if any, period-tracking mobile applications they used and identified each mobile application that was listed. To address the third research question, we analyzed the open-ended data from the question that asked women how (if at all) they used period-tracking mobile applications, we employed a thematic analysis (Owens, 1994) to generate themes. In thematic analysis, to qualify as a theme a concept from the data must meet the condition of recurrence, repetition, or forcefulness (Owens, 1994). The first and second authors independently coded the data, discussing any discrepancies. Following independent coding, the two authors convened to generate a codebook based on their thematic analysis that assigned a numeric code to each theme. Using this codebook, the first two authors independently coded 10% of the data to

determine intercoder reliability. Results of the reliability analysis show good reliability, k=.86.

Results

Frequency of Period-Tracking Mobile Application Use

To address the first research question, we assessed the frequency of period-tracking mobile application use by describing the responses to a close-ended question that asked participants how frequently they used period-tracking mobile applications. Less than half of the participants in the present study do not use mobile applications to track information related to their menstrual cycle (n=83, 43.7%), and several did not identify (n=24, 12.7%), but the rest of the participants did identify using mobile applications to track information about their menstrual cycle. Specifically, participants used mobile applications to track information about their menstrual cycle sometimes (n=32, 16.8%), about half of the time (n=4, 2.1%), most of the time (n=13, 6.8%), or always (n=33, 17.4%).

What Period-Tracking Mobile Applications Women Use

To address the second research question, we identified from the open-ended questions the specific period-tracking mobile applications women reported using. Specifically, women reported using the specific mobile applications: Eve, Flo, Clue, Period Tracker, Glow, Spot On, CUBE, Life, PTracker, Period Tracker Lite, Calendar Apps, Dot, Tampax Tracker, My Days, and Pink Pad Pro.

Women's Use of Period-Tracking Mobile Applications

To address the third research question, we thematically analyzed open-ended questions to consider how women use, or why they do not use, period-tracking mobile applications. From our analysis, it appears that some women adopt mobile period-tracking applications for a variety of reasons beyond menstruation

management, including skin care. However, the two primary themes that emerged in the data include the use of period tracking mobile applications for (1) managing menstrual symptoms, and (2) fertility-tracking, and pregnancy prevention.

Menstruation symptom management. Although fewer participants identified menstruation management as the primary purpose for using a mobile period-tracking application, participants who did identify these purposes as their primary manner of usage identified regularity, including timing and how heavy it is, and general planning as characterizing their application use. For example, this participant wrote, "Yes. I used whatever tracker came up first with good reviews. I used it to track symptoms and heaviness of flow" (Participant 46). In addition, this participant wrote, "I use Flo. Helps me track when my period comes so I'm not caught off guard" (Participant 49). Further, this participant said, "Clue - track expected date of period, length of cycle, duration of period, symptoms, PMS symptoms, sexual activity, estimated ovulation dates and IUD details" (Participant 90). As these participants demonstrate, period-tracking mobile applications may be used by women to track their start and end date, length, and heaviness, among other details and symptoms. For another example:

> Clue for android. It tracks your flow, emotions, sex drive, collection methods, and is not pink and ridiculously flowery, and even guesses when you'll ovulate. You can add data in even if you are breastfeeding, pregnant, on or off your period (Participant 176).

Another participant expressed a similar sentiment, advocating the use of Clue because in addition to tracking menstrual symptoms, it does not present as overly feminine:

> I use Clue. It accurately tells me when my next cycle is and I just have to put in information on my first day and it automatically generates the amount of flow for the next three days. I can also put in symptoms like cramps, headaches, cravings, bloating, etc. I basically like the simple and clean design rather than the flowery, pink, visually-cluttered apps I've used before (Participant 185).

Other participants emphasized the use of period-tracking mobile applications specifically for predicting when to expect their next period. For example, "Life. I use it to plan vacations and time off" (Participant 69). Another participant said, "PTracker. I started using it 5 years ago or so. I like how I can know when to expect things like dips in mood or spotting, and have an explanation for it" (Participant 78). Lastly, one participant wrote:

> I resisted trying them until recently (didn't want to give my period any extra thought), but I've started using clue since my PCOS has made it a little unpredictable (like starting on my anniversary last year with no cramps or moodyness or warning) (Participant 152).

These examples demonstrate that women may use period-tracking mobile applications to predict their menstrual cycles as an aspect of menstruation management.

Pregnancy planning or prevention. In addition to utilizing period-tracking mobile applications to manage the timing and symptoms associated with their menstrual cycle, women used them to track their fertility to plan or prevent pregnancy. One participant said, "One time I installed an app to calculate the days I could get pregnant, because the condom slipped off after sex and I was afraid of getting pregnant" (Participant 37). Additionally, a different participant said, "Flo. I mostly use it to see when I'm ovulating (don't want to get pregnant right now)" (Participant 62), while another said, "I use Dot. I use it to track my period start dates and when I am going to be fertile/infertile to prevent pregnancy" (Participant 110). In addition, this participant wrote:

> I used Glow. This was when I was not on birth control, so I didn't have a pill-pack to keep track of my period for me. Also, I was in a long-distance, long term relationship. Since we rarely had vaginal sex (because of the distance) I would use Glow to understand my ovulation and fertility in combination with condoms to prevent pregnancy (Participant 61).

As well as this participant, who wrote:

> I use the P tracker Lite app and I started using it after my first pregnancy scare. I hated relying on memory so I downloaded it to note when I had sex, if I used protection, and when my upcoming period will be. It's also helpful for when you go to the doctor and she asks when your last menstrual cycle was. You can refer to the app instead of guessing (Participant 190).

These participants indicate that period-tracking mobile applications are of use to them because tracking their menstrual cycle, they believe, allows them to better manage pregnancy prevention.

Non-Use of Period-Tracking Mobile Applications

While women who used period-tracking mobile applications primarily did so to manage menstrual symptoms or to plan or prevent pregnancy, many women also did not use period-tracking mobile applications. In the present study, women who did not use these mobile applications reported that birth control replaced the necessity for period-tracking altogether, that they did not trust mobile applications for this purpose, or that their menstrual cycles were too irregular to benefit from use of period-tracking mobile applications.

Birth control replaced necessity for period-tracking. Alternatively, some participants identified that they did not need to use period-tracking mobile applications because they took hormonal birth control, which often acted as a form of menstrual suppression and alleviated the need to track timing or symptoms. For example one participate said:

> I have no reason to. I typically use birth control to control my symptoms and stop my periods. I did track my cycle by hand back in the day-- to try and figure out what might be causing me to have so much pain, bleeding, migraines, etc. (Participant 24).

Similarly, a participant wrote, “I have used Women's Log Pro. I used to use it to track my periods, but since changing to orthotrycylin, I haven't needed to track

the same way" (Participant 18). In addition, this participant said, "I used it in the past to know if it's regular and if it's not late and to tell my gyno when it was. Now I take contraceptive pills so I have period very regularly and I don't bother" (Participant 41). Further, another participant wrote:

> Life I think it's called. I'd just put on the calendar when my period started and when it ended and after a few months the app was able to predict fairly accurately when my next period would come. Now that I'm on hormonal birth control pills, it's very easy for me to predict when my period is going to come so I don't use the app as much (Participant 47).

For additional examples: "I used an app called 'Clue' to track the days and heaviness of my periods, along with other mood and physical symptoms. When I stopped getting my period due to a hormonal IUD, I stopped using the app" (Participant 50), as well as, "Mostly Clue. I used it during a time in which my periods were very irregular so I wanted to keep track of them. Shortly afterward I started taking the pill so I stopped using it" (Participant 56).

As these examples demonstrate, many participants find birth control fulfills the purpose that period-tracking mobile applications initially fulfilled (i.e., regulation, symptom management), and therefore they do not need to use the applications in addition to hormonal birth control.

Distrust of period-tracking applications. Lastly, some participants identified that they did not use period-tracking mobile applications because they did not care for that kind of device or did not trust it. For example, this participant said, "No, wouldn't count on an external device to tell me what's coming out of me" (Participant 93), as well as this participant who wrote, "I use an actual calendar on my wall" (Participant 172).

Irregularity. In addition, some participants identified that their menstrual cycles were too irregular to benefit from use of period-tracking mobile applications. Examples include this participant who said, "No. I have irregular periods and haven't found apps to be helpful" (Participant 167), as well as this participant who wrote, "I don't because mine are so irregular" (Participant 169). It is evident that

examples of use or non-use vary among participants and are often specific to individual management goals. However, several trends emerged in participant responses, highlighting that women use period-tracking mobile applications for specific reasons even in light of individualized needs.

Discussion

The present study sought to investigate how women use or why they do not use period-tracking mobile applications. Findings reveal that approximately half of our participants use some form of period-tracking mobile application. Women who adopt period-tracking mobile applications report using them to track and predict their menstrual cycle, keep track of menstrual symptoms, and use the information for easier and more accurate communication with their healthcare provider. In addition, women report using period-tracking mobile applications to track fertility as a means of pregnancy prevention. Attending to women who use and who do not use period-tracking mobile applications, the present study found that women frequently reported that they did not feel a need to use period-tracking mobile application because their hormonal birth control predicted and regulated their period for them, and thus there was no need for a mobile application to do it. Lastly, several participants identified not using period-tracking mobile applications because they did not trust them, or because their menstrual cycles were too irregular to benefit from the current design of these mobile applications. Reinforcing and extending previous literature, the present study highlights a tension concerning self-monitoring and self-care (Lupton, 2014), usefulness (Moglia et al., 2016), and adds the opportunity for autonomy. Primarily, these tensions arise in a discussion of period-tracking mobile applications as aiding in contraception and conception, symptom management, and non-use. In this section, we review the findings, discuss limitations, and make recommendations for directions future research may take based on the findings of the present study.

Contraception and Conception

Previous scholarship addressing period-tracking mobile applications identifies women's primary, high-order goals as revolving around contraception or conception, women who use the period-tracking mobile applications to try and become pregnant, or to try to avoid pregnancy (Bretschneider, 2015). A small number of participants did indicate that they used the applications to aid in conception, far more of our participants identified adopting period-tracking mobile applications either in place of or in addition to other forms of birth control to prevent pregnancy. This may be because the mean age in our sample is 23 years-old. However, use of mobile period-tracking applications to prevent pregnancy can be problematic. Approximately 45% of pregnancies are unintended (Finer & Zolna, 2016). Previous research has found that a number of mobile applications are inaccurate for use regarding fertility-tracking (Moglia et al., 2016), and more research is needed to support the use of fertility-tracking via mobile applications as a pregnancy prevention method (Shattuck et al., 2018). Additionally, research shows that African American or Latino young women were more influenced by friends, family and partners than the Internet for these decisions (Laz & Berenson, 2013). The findings of the present study contribute to this literature by demonstrating that a number of women do use period-tracking mobile applications as a primary or supplemental form of birth control. More research is needed into the effectiveness of period-tracking mobile applications as a birth control method or supplementary method given that our study finds a number of women do appear to utilize these applications for this purpose.

Menstrual Symptom Management

In addition, our findings suggest many women also use period-tracking mobile applications to predict and manage symptoms related to their menstrual cycle, supporting previous research (Epstein et al., 2017). This is important to scholarship and practice concerning digital health technologies. Specifically, period-tracking mobile applications may be especially useful for scholars and practitioners as a

vehicle through which to communicate reproductive and sexual health information. Young adults find mobile applications an appropriate means through which to obtain sexual health information (Eleuteri et al., 2018). As the present study finds women use period-tracking mobile applications to manage symptoms related to their reproductive health, they may provide a useful vehicle through which to deliver comprehensive healthcare information. Specifically, when women are tracking their menstrual symptoms, information about normality or abnormality of specific symptoms available via period-tracking mobile applications may be useful according to our findings.

Women Who Do Not Use Period-Tracking Mobile Applications

For women who do not use period-tracking mobile applications, the primary rationale provided was that they were taking a form of contraceptive that regulated their menstrual cycle for them. As a result, they did not feel that a period-tracking mobile application would be useful. Other women identified their menstrual cycle's irregularly made the mobile applications ineffective, or that they did not trust these applications. As these mobile applications may be productive vehicles for women to manage their menstrual symptoms, for healthcare practitioners to deliver comprehensive reproductive health information, and with training and practice may aid in unintended pregnancy prevention for those trying to prevent pregnancy or fertility-tracking for those trying to conceive, the reasons why women do not use period-tracking mobile applications are important. Attending to features of period-tracking mobile application that make them more gender neutral in appearance, respond to the needs of those with irregular cycles, and creating adaptations for those who take hormonal birth control may expand the utility of these mobile applications for digital healthcare.

Limitations and Future Directions

The emergence of period-tracking mobile applications is new. Heather Rivers,

a software developer, was the first to create a web-based tool for tracking and recording the menstrual cycle (Eveleth, 2014). Shortly after, the market for mobile applications grew exponentially (Moglia et al., 2016). The potential to create well-developed mobile applications for adolescents and young women, particularly as we consider the communicative and message construct, is worth highlighting. This present research is a first step toward understanding the communicative usefulness of mobile applications. Thus, the present study productively contributes to the growing literature on period-tracking mobile applications and the use of social media in women's health. However, there are a few limitations to the present study worth noting.

First, survey methodologies, while effective in gathering a larger number of participants from diverse locations, do attract more educated demographics, which may influence the results of the present study. The present study did not ask participants their education level, which may filter results. In addition, we were unable to ask participants follow-up questions where warranted. Future research may attend to this limitation by engaging in-depth interviewing with women about their period-tracking mobile application use. Finally, though the study had a diverse participant pool, we lack information on socio-economic backgrounds. Current research shows that low-income women seek reproductive health care from different sources because of lack of access, or lack of literacy. Future research may specifically attend to the reproductive health information-seeking and menstrual management needs of low-income women. While the geographically diverse pool is meaningful because it shows trends occurring across multiple regions, participants from different countries or regional backgrounds may have unique needs and concerns regarding period-tracking mobile application use. Future research may address this limitation by focusing on specific countries.

Moreover, future research should seek to understand if the use of period-tracking mobile applications can help increase agency and sexual health knowledge among young women. Given the propensity of young adults who are more adapt with new technologies, bridging the gap to increase their health literacy is worthwhile. Equally, health communication scholars must understand that the messages young women receive about their bodies prior to and during

menstruation can isolate and overwhelm them. Future research should encourage the integration of comprehensive sexual and reproductive health tools that encourage developers to create mobile applications that take a more holistic approach, whereby young women can both understand and manage their menstrual symptoms. In addition, as practitioners interact with young women in medical visits, awareness of the various information and management avenues used by young women should be relevant and current.

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