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COMMUNICATING HEALTH INFORMATION THROUGH ARTIFICIAL INTELLIGENCE: A SURVEY OF COOU FEMALE UNDERGRADUATES' USAGE OF FLO PERIOD & OVULATION TRACKER

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ABSTRACT

Some years ago, period and fertility tracking consisted in taking records of one's menstruation days online or offline. Nowadays, with the help of new technology, women can track a variety of

symptoms, get advice on conceiving, explore pregnancy insights, and even manage irregular periods. A major breakthrough in this domain has recently been done by Flo Period Tracker – the first-period tracking app to publicly announce using artificial intelligence for improving cycle predictions. This study, therefore, evaluated the knowledge and usage of Flo Period and Ovulation Tracker among female students of Chukwuemeka Odumegwu Ojukwu University to track their periods and ovulations to understand their sexual health and plan their sexual activities to prevent unwanted pregnancies. Anchored on Technology Acceptance Model (TAM), the study adopted the survey method with a sample size of 384 drawn from a population of 10,267. The study found that the majority of the students have use the AI-assisted period and ovulation tracker Flo to track and monitor their periods and ovulations from time to time. However, it was found that the intention of usage differs as some use the app to monitor and plan their sexual activities others use the app to monitor their sexual health in the case of irregular menstruation and anovulation to seek medical treatment. The study recommended that Flo should be more interactive by adding voice to the app and be linked to various hospitals users can contact for fast medical attention.

Keywords: Health Information, Artificial Intelligence, Knowledge and Usage, Flo Period and Ovulation Tracker.

INTRODUCTION

FemTech (female-focused technology developed to support women's health) applications range from fertility-based apps for pregnancy planning and contraception to menstrual cycle apps for tracking periods and symptoms (Broad, Biswakarma and Harper, 2022). With more than 200 million downloads, they are a well-liked and rapidly growing industry (Bull, Rowland, Scherwitzl, et al, 2019). According to Moglia, Nguyen, Chyjek, et al. (2016), the fourth most popular health app among adults that employs artificial intelligence (AI) to process and create information is one that allows the monitoring of menstrual cycles, sometimes known as period tracker applications. After the debut of the first-ever period tracker, Glow, in 2013, the business has allegedly continued to grow, with the FemTech market estimated to be worth \$50 billion by 2025 according to Frost and Sullivan (2021).

FemTech apps that focus on fertility are targeted at women who want to know when they should or shouldn't be having sex in order to get pregnant or prevent becoming pregnant, claim Ali, Gürtin, and Harper (2021). They can achieve this by having users input biological markers through artificial intelligence-based methods known as fertility-awareness-based methods (FABM), which forecast ovulation. These indicators include urinary LH levels, cervical mucus consistency, and oral basal body temperature, all of which rise at or just before ovulation. Nevertheless, most fertility apps utilize a calendar-based algorithm to predict ovulation, which has been proved by numerous authors to be poor at doing so (Bull, et al., 2019; Johnson, Marriott and Zinaman, 2018).

According to Perry, Lunde, and Chen (2016), the usage of self-tracking and other personal digital health informatics is becoming more crucial to how people manage their health. Even the practice of medicine is allegedly altering as a result of applications. According to Lupton (2016), the creation of mobile health applications (mHealth apps), such as those that track menstruation

and conception, has increased significantly. Moreover, Bull et al. (2019) point out that there is a huge selection of period tracker apps, with 7% of the 90,088 health applications in the Apple store recently focusing on women's health and pregnancy.

The creation of apps is the most recent in a long series of methods for self-tracking menstruation and conception. Self-tracking is said to encourage individual choice and self-awareness because to its accessibility, cost, and privacy. As a result, user-app interaction can happen whenever and whenever (Lupton, 2016; Levy, 2018; Earle, Marston, Hadley and Banks, 2020).

Figueiredo, Hussain, Ankrah, and Chen (2020) claim that there has been an upsurge in the usage of artificial intelligence in the field of fertility self-tracking, notably in consumer-facing mobile apps. These fertility apps enable users to gather a variety of health data that may be connected to their reproductive cycles, such as period dates and other physical and emotional information, and they also offer feedback, such as period, ovulation, and fertility window forecasts. More than 300 fertility apps are presently accessible, indicating that the market for fertility tracking is growing (Figueiredo, Hussain, Ankrah and Chen, 2020).

According to Figueiredo, Caldeira, Mikey, Mazmanian, and Chen (2018), many people are utilizing these tools and putting their faith in their forecasts to either achieve or forego pregnancy goals that have the potential to be extremely emotionally taxing and life-changing. In addition, a lot of people simply have basic to mediocre knowledge of fertility. Because of these factors, the application of AI to tracking fertility should be carefully considered (Ayoola, Zandee, and Adams, 2016; Figueiredo, et al., 2020).

The use of "artificial intelligence," "clever algorithms," or "machine learning" is currently often claimed by fertility applications. Both phrases are frequently used interchangeably, and it seems that they are meant to imply a high degree of predictive precision. Artificial intelligence is the imitation of human intelligence processes by machines, particularly computer systems, according to Burns, Laskowski, and Tucci (2022). Expert systems, natural language processing, speech recognition, and machine vision are some examples of specific AI applications. According to Burns, Laskowski, and Tucci (2022), AI systems typically function by absorbing vast quantities of labeled training data, searching the data for correlations and patterns, and then using these patterns to forecast future states. By studying millions of instances, an image recognition tool can learn to recognize and describe objects in photographs, just as a chatbot that is given examples of text chats can learn to make lifelike exchanges with people.

Guanah (2021) believes that, in addition to reducing labor costs, AI results in better, quicker service delivery and more effective work performance. No sector of society is immune to the effects of Artificial Intelligence (AI), according to Guanah, Obi, and Ginikachukwu (2020). "All these indicate that AI has the potential to cause significant disruptions to many hitherto known and established ways of doing things all over the world, including Nigeria," they write (p. 46).

AI, according to Ducharme (2019), is a branch of computer science where machines are taught to carry out difficult tasks and modify their performance in response to past outcomes. Healthcare providers are now able to more efficiently market to patients and potential customers because to AI and other technology breakthroughs. Medical providers are enhancing their communication efforts in a number of ways, including through text messaging from other health experts and online portals where patients can message doctors.

Flo is one such FemTech app that makes use of AI to improve its ovulation and fertility predictions based on user-reported information on topics like menstrual cycles, physical symptoms, sexual activity, and more. InsideBigData (2017) reports that within months of adding neural networks to its prediction algorithm, Flo became the most downloaded app globally in its category. This success is associated with the fact that 30% of women worldwide struggle with irregular periods. Almost 1.4 million new data points are manually logged by women every day, including cycle history, ovulation and pregnancy test results, age, height, weight, and lifestyle details like sleep, activity, and nutrition.

The genius of Flo's neural network is that while it is aware of general statistics and best practices for the women who use the app, it nonetheless regards each woman as a unique individual with distinct physical and behavioural traits. When getting pregnant is the goal, specific accurate forecasts about menstrual cycle length and reproductive windows are likely to aid in conception more quickly. Women are kept informed and in control of their health by Flo's personalized health insights at every stage of life, including the beginning of menstruation, before, during, and after pregnancy, as well as menopause. This lowers the need for pointless medical intervention and lowers healthcare costs. The neural network makes better predictions the more information a user provides for it to consider. This allows women to discover their bodies and learn about meaningful connections between a variety of symptoms and activities, rewarding them for all the sensitive data that they entrust to the app. This study is, therefore, designed to evaluate the knowledge and usage of this Artificial Intelligence Assisted menstrual cycle and ovulation tracker application *Flo* by female undergraduates of Chukwuemeka Odumegwu Ojukwu University, Igbariam Campus to understand their sexual health and make critical sexual activity decisions by communicating and receiving feedback from the application.

Statement of the Problem

An increase in smartphone ownership and the market for software applications, or "apps," has grown exponentially, ushering in a new era of digital self-tracking behaviors powered by artificial intelligence. Artificial intelligence programs are being used by millions of individuals worldwide to monitor their diet, exercise, sleep, blood sugar levels, and even their levels of pleasure. Artificial intelligence-based mobile fertility tracking apps (FTA) have also become popular in this trend's subset of mobile health (mHealth) apps. The FTA is primarily used by women to track their menstrual cycle, but because it also tells women when they ovulate, it is frequently promoted to women who want to get pregnant or avoid becoming pregnant in order to provide health information without having to go to the hospital. Based on the viability of spermatozoa and oocytes within the female reproductive system, the fertile window, during which conception is possible, is defined as the day of ovulation and the five days before. These Femtech apps, which employ artificial intelligence to convey health information to women who want to avoid pregnancy, enable them to understand their sexual health, including when to avoid sexual activity during the fertile window. Couples who want to conceive can engage in sexual activity during the window to increase their chances of conception. The calendar approach, which commonly places ovulation 14 days before the beginning of the subsequent menstruation, is regrettably the most popular way of fertility tracking. Variation in cycle characteristics, including the day of ovulation, exists even in women with regular cycles. Moreover, the

difference in the rate of scientific paper publication versus the swift rate of app publication or update means that previous studies are already outdated. Therefore, there seems to be a gap in the literature that evaluates the usage of this Femtech that uses artificial intelligence to communicate health information like Flo Ovulation and Period Tracker among female undergraduate students of Chukwuemeka Odumegwu Ojukwu University since the researcher did not find any study that has been conducted in this area and scope. It is also not known what information they provide to, and collect from, users, and whether these apps are useful for users to track their reproductive activities.

Objectives of the Study

The objectives of the study were:

1. To find out if the respondents use Flo Period and Ovulation Tracker to get information about their sexual and reproductive health.
2. To find out the kind of information the respondents source from Flo Period and Ovulation Tracker about their sexual and reproductive health.
3. To ascertain the perceived usefulness of Flo Period and Ovulation Tracker in providing information about the respondents' sexual and reproductive health.

Research Questions

1. Do the respondents use Flo Period and Ovulation Tracker to get information about their sexual and reproductive health?
2. What kind of information do respondents source from Flo Period and Ovulation Tracker about their sexual and reproductive health?
3. What is the perceived usefulness of Flo Period and Ovulation Tracker in providing information about the respondents' sexual and reproductive health?

Theoretical Framework

The Technology Acceptance Model (TAM) was adopted for the study. The theory was proposed by Davis in 1986. The Technology Acceptance Model is a theory modelled from the Theory of Reasoned Action (TRA) and is argued to be one of the accepted models when it comes to technology acceptance and use (Park, 2009). The TAM states that peoples' decision to use a piece of technology is influenced by their intentions to use the technology, which eventually influences the actual use (Gammon et al., 2008; Wynn et al., 2012). The TAM offers a view of understanding the adoption and use of information technology (Legris, Ingham, and Collette, 2003; Park, 2009). The model has been adopted in many studies that deal with user acceptance of technology (Lee, Kozar, and Larsen, 2003; Legris, Ingham, and Collette, 2003; Park, 2009; King and Hu, 2006).

In adding to the above-established points, Or et al. (2011) used the TAM in measuring the acceptance of consumer health informatics technologies such as m-Health, e-Health and Telemedicine. Moon and Kim (2001) used it to explain the users' acceptance of the world-wide-web context; Lin et al. (2007) to clarify the e-stock users' behavioural intentions; and Chen and Chen (2009), understand automotive telematics users' usage intention. Despite the numerous praise and ratings marshalled by the TAM, some researchers view it as a robust but parsimonious theory (Shih-Chih, Shing-Han, and Chien-Yi, 2011). As such, a lot of studies have recommended revising and extending the Technology Acceptance Model. For example, Venkatesh and Davis

(2000) proposed TAM2 as a new version of TAM; Venkatesh et al. (2003) proposed the Unified Theory of Acceptance and Use of Technology, and Lin et al. (2007) proposed the TRAM (integration of Technology Readiness and Technology Acceptance Model).

Furthermore, Davis (1985) opined that users' interest in using a particular system will depend on several factors that according to him include; Perceived Ease of Use, Perceived Usefulness and Attitude toward using a particular system. He indicated that the attitude of users', which is influenced by the Perceived Ease of Use and Perceived Usefulness, can play a greater role in the use or rejection of a particular system.

According to Davis, Bagozzi and Warshaw (1989, p. 320), Perceived usefulness (U) is defined as "the degree to which a person believes that using a particular system could enhance his or her job performance". In contrast, they defined the Perceived ease of use (E) as "the degree to which a person believes that using a particular system would be free of effort" (p. 320). They also asserted that once users perceive one system to be easier than the other, users will likely go for the easy one. And a system that is rated high in usefulness will be used. The actual system use is determined by the users' attitude (A) and intention (BI) to use the system and the relation between A and BI. All things being equal, people's intention to use or reject a particular system can yield positive results ($BI = A + U$).

The TAM is relevant to this study since it explains how using a particular system will depend on several factors which include; Perceived Ease of Use, Perceived Usefulness and the Attitude toward using a particular system. The theory is also relevant since it indicated that the attitude of users', which is influenced by the Perceived Ease of Use and Perceived Usefulness, can play a greater role in the use or rejection of a particular system. The application of TAM in this study is based on the fact that the Perceived Ease of Use and Perceived Usefulness of Artificial Intelligence tools to get information on sexual and reproductive health by women explain female undergraduates' acceptance or rejection of Flo Period and Ovulation tracker which uses Artificial Intelligence to communicate their sexual and reproductive health without visiting the hospital.

LITERATURE REVIEW

How Artificial Intelligence is Streamlining Health Communications

According to Bloom Communication (2019), AI and other technological advancements are allowing healthcare providers to streamline their marketing and communication efforts with patients and potential clients. Online portals where patients can message doctors along with text messages from other health experts are just a few ways medical providers are improving their communication efforts. Some of these few advancements in telehealth that are changing the outdated communication protocols of the healthcare industry as outlined by Bloom Communication (2019) include:

Telehealth

Telehealth involves the use of technology and online systems to access healthcare services remotely. Telehealth is a broad term for a few of the AI-powered communication methods described in further detail below.

Automated Text Messages

An illustration of AI in action is automated SMS messages. Although it is not yet commonplace, a number of firms are already utilizing text messaging in the healthcare sector. To confirm

patient appointments and refill medicines, for example, many major healthcare companies use text texts.

Online Patient Portals

There are online patient portals for many large healthcare systems where patients may communicate with their doctors, schedule appointments, examine test results, renew prescriptions, make payments, and more. Patients now have much easier access to vital health information, and doctors can contact with their patients much more easily thanks to online portals.

Healthcare Chatbots

The amount of healthcare-related apps and online chatbots powered by AI is practically endless. Here are some examples:

- **Forksy** is a conversational food diary that allows you to track your food, count calories, and ask nutrition-related questions. Forksy makes food tracking extremely easy — all you have to do is message Forksy what you've eaten and she does the rest. Even more, Forksy is available on platforms that you probably already use, like Facebook, Viber, and Kik.
- **WebMD** is an app and website that allows you to look up medical conditions, common symptoms, drug and treatment options, identify pills, and local health listings.
- **Ada** is an AI-powered healthcare platform to bring personalized healthcare to all. Patients who use Ada can make informed decisions about their health based on the virtual doctor's database of knowledge.
- **SkinVision** is an app that helps you maintain skin health. All you have to do is take a photo of a skin spot and the app will assess your photo with the power of machine learning for signs of skin cancer. Your image is then categorized as low, medium, or high risk.

Flo (app) Description and Functionality

The Flo app, according to Jain, Negris, Brown, et al. (2021), is a platform for health and wellbeing that helps women throughout their whole reproductive lifetimes, from the start of their first period to menopause and early childbirth. On the symptom panel interface, which has 84 symptoms and includes categories like sex and sex drive, mood, symptoms (cramps, painful breast, headache, etc.), vaginal discharge, physical activity, menstruation products, and others, Flo also enables users to track symptom information. Users of Flo can also enter their weight, use of contraception, water intake, sleep duration, and results from ovulation and pregnancy tests. For individualized period and ovulation forecasts, Flo uses AI algorithms.

Moreover, Flo uses artificial intelligence (AI) algorithms to offer its consumers individualized, fact-based, and expert-reviewed courses and articles on the health and wellbeing of women. Also, Flo offers its users a safe space to talk about private matters, post inquiries anonymously, and receive support from millions of women across the world. The Flo platform also features a variety of chatbots that proactively start user conversations on a range of health-related topics, provide data feedback and real-time health alerts based on monitored symptoms (Jain, Negris, Brown, et al., 2021).

As it can be used at home, Flo is not required at doctor consultations. But, Flo users who have been using the app for at least six months get access to a Health Report that compiles information on their average period and cycle length over the previous six months as well as the symptoms and indicators they noted each cycle. With over 150 million users, Flo (<https://flo.health>) is the most popular AI-driven women's health tracking app globally (AppAnnie, 2020). Almost 36 million people use Flo each month, with the majority (55%) residing in the US and Europe. Flo is currently accessible on iOS and Android in over 200 countries, including Nigeria, and in 22 different languages (Jain, Negriz, Brown, et al., 2021). Moreover, a health report can be downloaded and shared with the doctor. Flo can also be downloaded for free from the Apple App store or Android's Google Play.



Flo app

Figure 1: Flo App

METHODOLOGY

The survey research design was adopted for this research work. The survey method is the most appropriate research design for this study because the study entails eliciting the opinions and perceptions of the female undergraduates about the usage of Flo Period and Ovulation tracker to get information about their sexual health. The study was carried out in Chukwuemeka

Odumegwu Ojukwu University Igbariam using the final year female student from the various departments in the campus. This is to ensure that those sampled are matured enough to use Flo Period and Ovulation tracker to get information about their sexual health. The population of the study according the Registry departments was 10,832. A sample size of 382 was derived using Krejcie & Morgan (1970) sample size determination table. The purposive sampling technique was adopted in selecting those who were qualified to provide answers to the research question. The questionnaire was used as a data-gathering instrument while gathered data were presented in a frequency table.

DATA PRESENTATION

Table 1
Return Rate of Questionnaire

Item	Frequency	Percentage
Returned and found usable	355	94.00
Not usable	20	4.00
Not Returned	7	2.00
Total	377	100

Table one shows that the return rate of questionnaire is 94% (n = 355) while the mortality rate is 6% (n = 27). The return rate is higher than the mortality rate. The mortality rate of 6% does not affect the study because it is insignificant compared to the return rate of 94%. Thus, the copies were considered good enough to represent the population. The presentation and analysis of data obtained from the questionnaire were therefore based on the 355 copies that were returned and found usable.

Research Question One

Do the respondents use Flo Period and Ovulation Tracker to get information about their sexual and reproductive health?

Table 2
Respondents' Usage of Flo Period and Ovulation Tracker

Response	Frequency	Percentage
Yes	302	85.00
No	38	11.00
Can't Say	15	4.00
Total	355	100.00

Table two shows respondents' responses to research question one. Data reveals that 85% (n=302) of the respondents indicated yes meaning that they use Flo Period and Ovulation Tracker to get information about their sexual and reproductive health, 11% (n=11) of the respondents indicated no while 4% (n=15) of the respondents declined opinion. Data on Table 2 imply that there is high usage of Flo Period and Ovulation Tracker among the respondents to get information about their sexual and reproductive health.

Research Question Two

What kind of information do respondents source from Flo Period and Ovulation Tracker about their sexual and reproductive health?

Table 3

Respondents' Reason for Usage of Flo Period and Ovulation Tracker

Response	Frequency	Percentage
Menstrual Information	68	19.00
Ovulation Information	45	13.00
Pregnancy Information	42	12.00
All of the above	200	56.00
Total	355	100.00

Table 3 shows respondents' responses to research question two. Data reveals that the majority of the respondents (56%, n=200) source information about their menstruation, ovulation and pregnancy from Flo Period and Ovulation Tracker thereby helping them to plan their sexual activities. Also, 19% (n=68) said that they source for only menstruation information from Flo Period and Ovulation Tracker to understand their menstrual cycle, 13% (n=45) indicated that they source for only ovulation information to know when to have or not to have sex while 12% (n=42) indicated that they source for information from Flo Period and Ovulation Tracker about pregnancy especially when they missed their period. Data on Table 3 imply that there is a staggering variety of usage of Flo Period and Ovulation Tracker among the respondents to get information about their sexual and reproductive health but majority of the respondents use the Artificial Intelligence App to source information about their menstruation, ovulation and pregnancy

Research question three

What is the perceived usefulness of Flo Period and Ovulation Tracker in providing information about the respondents' sexual and reproductive health?

Table 4

Perceived Usefulness of Flo Period and Ovulation Tracker

Response	Frequency	Percentage
Provides accurate personalized information	28	8.00
Provides privacy	12	3.00
Provides personal notes on sexual health	15	4.00
Provides ease of usage	40	11.00
All of the above	260	73.00
Total	355	100.00

Table 4 shows respondents' responses to research question three. Data reveals that the majority of the respondents (73%, n=260) indicated that Flo Period and Ovulation Tracker is useful in providing information about the respondents' sexual and reproductive health as it provided accurate personalized information, privacy, personal notes on sexual health and very easy to use.. Also, 8% (n=28) said it is useful only because it gives accurate personalized information about the user, 3% (n=12) indicated that it provides privacy for the user who may find it difficult to share information about their sexual health with a doctor, 4% (n=15) indicated that the app is useful because it provides personal notes on sexual health based of the information logged by the user while 11% (n=40) indicated that of Flo Period and Ovulation Tracker app provide ease of usage since it communicates in simple terms and is available in many languages. Data in Table 3 imply that Flo Period and Ovulation Tracker is useful in providing information about the respondents' sexual and reproductive health as it provided accurate personalized information about the user, provides privacy for the user who may find it difficult to share information about

their sexual health with a doctor, provides personal notes on sexual health based of the information logged by the user and provides ease of usage since it communicates in simple terms and is available in many languages.

Discussion of Findings

Finding from research question one revealed that there is high usage of Flo Period and Ovulation Tracker among the respondents to get information about their sexual and reproductive health. This finding justifies the assertion of Sohda, Suzuki, and Igari (2017) who contend that for a woman to comprehend ovulation and menstrual cycle patterns necessary for planning a pregnancy or using contraception, she must be aware of her personal fertility. Consequently, keeping track of ovulation time aids in identifying early physical indications like the emergence of cervical secretions a few days prior to ovulation as well as giving women a greater awareness of their own bodies and mental states. Women adopting the use of AI-powered period and ovulation tracking applications like Flo, which explains its exponential adoption and usage globally, seek ways to achieve this (Jain, Negris, Brown, et al., 2021).

Findings from research question two revealed that there is a staggering variety of usage of Flo Period and Ovulation Tracker among the respondents to get information about their sexual and reproductive health but majority of the respondents use the app to source information about their menstruation, ovulation and pregnancy. This supports the assertion of Ford, Roman, McLaughlin et al., (2020) aver that Mobile fertility tracking apps (FTA) have been popular in the mHealth app sector. As the FTA reveal the day of ovulation, they are frequently sold to women who want to become pregnant or avoid becoming pregnant. Women use the FTA primarily to follow their menstrual cycle. Women can use the applications to track their menstrual cycles and get an estimate of when their subsequent cycles will begin, according to Worsfold, Marriott, Johnson, and Harper (2021). Almost all applications also offer forecasts for the fertile window and the day of ovulation. Some of these apps have stated that they employ self-learning algorithms that enhance forecasts as long as a user keeps track of their data, which is mostly based on average cycles.

Findings from research question three revealed that Flo Period and Ovulation Tracker is useful in providing information about the respondents' sexual and reproductive health as it provided accurate personalized information about the user, provides privacy for the user who may find it difficult to share information about their sexual health with a doctor, provides personal notes on sexual health based of the information logged by the user and provides ease of usage since it communicates in simple terms and is available in many languages. This finding supports the assertion of Al-Azzam, Alzoubi, Muflih, and Hawamdeh (2020) who affirm that due to their useful features for self-care and symptom management, mobile applications might be helpful resources for women who want to track their periods. These elements include linkage to social media or their own social network, reminders, graphic analysis, feedback, pharmaceuticals, health education, and interactive inquiries. Mangone, Lebrun, and Muessig (2016) continue by stating that they also provide advice on how to use contraceptives as well as details on their adverse effects, services that are offered, and reminders of regular activities that improve prescription adherence. As a result, approaches based on fertility awareness that can be accessed via a mobile app without the need to communicate with medical specialists are regarded as a

special technique that aids in monitoring ovulation cycles and fertility symptoms (Simmons, Shattuck, and Jennings, 2017).

The findings also justifies the Technology Acceptance Model used in this study as it explains that the respondents accepted the use of Flo Period and Ovulation Tracker which uses Artificial Intelligence to communicate their sexual and reproductive health because of its Perceived Ease of Use and Perceived Usefulness.

CONCLUSION

mHealth apps, in general, provide a potentially affordable solution to symptoms monitoring, mood tracking, medication reminders, and promotion of patient engagement in their care. They can also improve interactive care and communication with users who have the same condition for healthcare providers. These results imply that apps are nearly immediately adaptable to routine tracking and management, but they still require further improvement to provide full symptom management for users to obtain reliable results. The rigorous evaluation of app quality will be one of the continuous priority for integrating mHealth apps into health care. Yet, if employed correctly in health communication, artificial intelligence algorithms can be used to address the majority of these issues.

Recommendations

Based on the research findings, the researcher made the following recommendations:

1. Female Undergraduates should not wholly rely on Flo Period and Ovulation Tracker to source for information on their sexual health. They know when to see a doctor for prolonged or ambiguous health issues about their sexual health which may not have information on
2. Flo Period and Ovulation Tracker should be domesticated to reflect local Nigerian languages for better interaction with Nigerian users.
3. Flo should be more interactive by adding voice to the app and be linked to various hospitals users can contact for fast medical attention.
4. Flo should incorporate videos in the app to explain certain sexual health information which may not be demonstrable using text formats.

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