Study on Awareness of Femtech

By

Shradha Shetty

Dissertation submitted for the partial fulfillment of the

MBA Hospital and Health Management

Academic year, 2016-2018

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INSTITUTE OF HEALTH
MANAGEMENT RESEARCH
(WHO Collaborating Centre for District Health System Based on Primary Health Care)

IIHMR UNIVERSITY

TO WHOMSOEVER MAY CONCERN

This is to certify that **Shradha Shetty** student of MBA Hospital Management from The IIHMR University, Jaipur has undergone dissertation at **Allizhealth, Pune** from **5th Feb 2018 to 4th May-2018.**

The Candidate has successfully carried out the study designated to her during dissertation training and her approach to the study has been sincere, scientific and analytical.

The Internship is in fulfillment of the course requirements.

I wish her all success in all his future endeavors.

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The certificate is awarded to

Ms. Shradha Shetty

In recognition of having successfully completed her
Internship in the department of

Marketing

and has successfully completed her Project on

A Study on Awareness of
Femtech

Date: May 4, 2018

Organization: AllizHealth (Caressa Solutions Pvt. Ltd.)

She comes across as a committed, sincere & diligent person who has a strong drive and zeal for learning.

We wish her all the best for future endeavors.

VP, Strategy

Director and COO

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CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled ....A STUDY ON AWARENESS OF FEM TECH..... and submitted by (Name) MS SHRADHA SHETTY .....Enrollment No..IIHMR-4/01/2016-18/0495 under the supervision of NUTAN P. JAIN ..... for award of MBA in Hospital and Health/ Pharmaceutical / Rural Management in Health and Hospitals of the University carried out during the period from 1st FEB 2018 to 5th MAY 2018.....embodies my original work and has not formed the basis for the award of any degree, diploma associate ship, fellowship, titles in this or any other institute or other similar institution of higher learning.

Shetty

Signature

ABSTRACT

Title: A Study on Awareness of Femtech

Author: Shradha Shetty

Background: Women have certainly come a long way having triumphed many hurdles in their way. The health of the women in India requires the utmost attention given the crucial role they play as mothers, not just their personal well-being but also bearing and nurturing the future generations of tomorrow. In the waking change because of digital evolutions and its implementation in healthcare, women have begun playing an increasingly instrumental role across the health care continuum, as result of the exponential rise in women empowerment and independent decision-making along with higher purchasing power. With increase in adoption of technology in urban and rural India due to ease of accessibility and various choices available at economical prices in the market, there are has been an upsurge in the usage of internet and smartphone. Activities such as app usage and mobile-net surfing that has become a ritual and part of everyday routine in the digital era especially in Indian urban households; making it the biggest reason for media utilization amongst Indian consumers. And with this, an interesting e-commerce omnichannel has surfaced bringing about a change in the shopping pattern and marketing strategies to increase outreach, provide customized need-based solutions thereby enabling a path for the emergence of new kind of healthcare tech-solutions.

Objectives:

1.To study perceptions of urban women towards women's health, challenges faced, and viable solutions including technology

2. To study factors that drive and influence the adoption and usage of tech solution like FemTech.

Methodology: The study is exploratory and descriptive in nature comprising of a closed ended questionnaire-based survey. A sample size of 111 with a confidence interval of 95% and 10% of margin of error would represent a population of 10,000 women was considered for an initial pilot study.

Key Words: Femtech, women's health, technology

Conclusions

- Women were concerned about seeking healthcare yet face barriers.70% women were aware of health apps available to them and 46% of them were using it. This shows the level of penetration of use of health apps among urban Indian women.
- Women of the younger cohort of the adult population use apps for several reasons. They have also mentioned the features of influence the use and discontinue of the app. This could affect the reliability of the women on technology as a solution to seek healthcare
- Women felt that they were prone to diseases/ conditions like Anemia, Obesity, Irregular cycles, mental health issues. There are aware of the rise in NCD's in the country. They were aware of health practices those that are essential to improve health status.
- Major challenges that women face while seeking healthcare and seem to influence their behavior were high pricing of health services, access to trusted doctors and other health professional, time constraints, long waiting time and insufficient financial funds resources and long waiting time at the health facility.
- Women who use health apps were asked about factors that drive them. These factored were mostly technical like the user interface of the app, accuracy of information and analytics, customer support and pricing. Their need to use an app s what influence them to do so.
- Women about mentioned about various sources of information through which they seek information about health issues. The most frequent sources were health professionals, health websites, browsing the internet, recommendation from people like family and friends and social media. These were the sources through which women were aware of health apps.

ACKNOWLEDGMENT

It is with a profound sense of gratitude, I acknowledge the efforts of the entire hosts of well-wishers who have in some way or the other contributed to the success and completion of this Summer Internship Project.

I convey my heartfelt gratitude to my guide Dr. Nutan P. Jain for her guidance and uplifting encouragement throughout my internship and dissertation. Despite her hectic schedule and tremendous responsibilities, she has always extended endless support, timely cooperation and provided me with valuable discussions and constructive criticisms, making it possible on my part to plan, review and give shape to my dissertation.

I would like to express my gratitude and appreciation to everyone at Allizhealth, Pune, for providing me an opportunity to intern with them and carry out my dissertation. I am immensely grateful to Mr. Chinmoy Mishra, CEO at AllizHealth, Mrs. Rashmi Mishra, COO at AllizHealth and Mr. Abhishek Verma, VP Strategy at AllizHealth whose suggestions and advices were instrumental in directing the course of my dissertation.

I would also like to take this opportunity to thank our beloved Dean (Academics) Dr. Ashok Kaushik, all the esteemed faculty, Mr. Hem Bhargava (Deputy Registrar) for providing me with the necessary infrastructure, and for their immense support and faith.

Above all, I express my indebtedness to my loving parents and my sister for their motivation, support and faith in me, which inspired me to carry out this work despite of all hardships of life.

This project has been a great learning experience for me for which I would like to thank the Almighty for giving me patience and strength to overcome the difficulties which crossed my way in accomplishment at this endeavor. And lastly, I would like to thank all respondents whom I networked during my project for their participation and helping me to successfully complete my study.

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1. INTRODUCTION

Women have certainly come a long way having triumphed many hurdles in their way. Women have made significant strides in history to attain their rightful and equal place in society. Yet, despite acknowledging the fact that women have made monumental accomplishments and embarking historical milestones especially in achieving women's rights in the world in various aspects, it is the absolute need of the hour to shed light on the multitude problems women face especially in health. The average life expectancy of women in India was about 23 years 100 years ago and now the life expectancy is about three times more. The country has come a long way from where it once was earlier; Improving healthcare outcomes, in terms of infrastructure, cost and productivity for all right from an infant to a geriatric person, significantly contribute to the economic growth of the country, initiatives from both the government and community has led to improvement and development of the health of the people of the nation but the numbers aren't adequate to surpass the global average. Outreach of quality healthcare is limited in India not just geographical but socio-economically as well, these gaps have made India one of the lowest in rankings in human development amongst the developing countries.
The health of the women in India requires the utmost attention given the crucial role they play as mothers, not just their personal well-being but also bearing and nurturing the future generations of tomorrow. Existing in a patriarchal society like India where roles are defined such that men are considered the primary bread winner and the women's role is to look after the needs of her children and family. India although being one of the largest economy in the world on the contrary falls far behind in aspects of women's health and empowerment. There are several disparities that exist in both the urban as well rural parts of the country in seeking access to quality healthcare not just due to gender bias but also due to ethnicity and socio-economic status of the people. Moreover, the presence of cultural, religious and psycho-social attributes which are the result of deeply rooted prejudices and taboos that have persisted and passed down from generations, further aggravates the issue.

The women's health market is often positioned as niche even though they comprise of about 50 per cent of the population in the world. There have been numerous remarkable technological advancements over the past few decades, yet negligible innovations have been made to improve and design the healthcare system specifically to improve the women's health. Areas such as female contraception, fertility, reproductive health have

hardly seen few successes in implementing technological innovations. The use of data science and mining for analysis to predict consequences and design models, products and solutions to better comprehend and tackle the various issues of women health at grassroot level is something that has come into limelight only quite recently. However, in the waking change because of digital evolutions and its implementation in healthcare, women have begun playing an increasingly instrumental role across the health care continuum, as result of the exponential rise in women empowerment and independent decision-making along with higher purchasing power. With increase in adoption of technology in urban and rural India due to ease of accessibility and various choices available at economical prices in the market, there are has been an upsurge in the usage of internet and smartphone. Activities such as app usage and mobile-net surfing that has become a ritual and part of everyday routine in the digital era especially in Indian urban households; making it the biggest reason for media utilization amongst Indian consumers. And with this, an interesting e-commerce omnichannel has surfaced bringing about a change in the shopping pattern and marketing strategies to increase outreach, provide customized need-based solutions thereby enabling a path for the emergence of new kind of healthcare tech-solutions.

One such tech solution that is said to have disrupted the global health market and now making a paradigm shift from the developed to the developing countries is Feminine or Female Technology solution. Female Technology in other word 'Femtech' is defined as "software, diagnostics, products and services that use digital technology to improve women's health". Femtech concerns the use of digital health platforms like apps, cloud systems that better help in integrating solutions at the same time providing choices to cater to personal needs rather than addressing a generalized need. These high-tech solutions better assist patients to seek healthcare consultations or treatments making it easier to access at an individual's convenience while providing options to choose the medium and professionals to which he/she can communicate health problems. It also plays a major role in preventing diseases or further preventing serious complications using data analytics to predict possible consequences or outcomes and uses scientific functions (algorithm based) for monitoring as well as managing several women's health issues ranging from general health (medication management), reproductive and maternal health (fertility, period cycle), and wellness including aspects like social, mental and physical for example mental health (depression), chronic diseases (diabetes, weight management), and communicable diseases (sexually transmitted diseases, etc). Femtech

in India hasn't thrived as it is still in the nascent stage although organizations have started working in the field, realizing its potential and market viability to solve major women's health issues in an efficient and ambiguous manner.

1.1 Rationale of the Study:

Women's health plays a very crucial in determining her status and empowerment in several aspects be it society or their personal lives and family. Hence their health should hold vital importance to them as it is critical in influencing their decisions involving choice of lifestyle, livelihood, marital decisions related to contraception, family planning and fertility. There are diseases that are common to both men and women, but certain diseases are more prevalent in women or the women are at a greater risk to suffer from them. There are also diseases that are confined to the female population primarily pertaining to the reproductive health of women to which they could be susceptible throughout their life span. These diseases differ among women based on their demographic profile that is their age profile, marital status, occupation, residing in the rural or urbans segments of the country. Hence an assessment to evaluate and understand the level of awareness of women regarding existing women health issues and the perceived prerequisites of their health needs is important in urban and rural areas amongst different age groups. It will help us to better identify issues and gaps in the women' health sector and take necessary measures and actions to improve the status quo of their health.

In the past, there were certain man-made limitations imposed on women that were defined as per social and cultural norms and traditions however now women play pivotal roles in different sectors. The lifestyle choices of women (increased life expectancy, career, etc.) living in urban India is significantly different from the rural counterparts which are also determinants of certain diseases. The factors that influence them to adopt in terms choice or behavior or even attitude towards diseases that affect them is also crucial to understand. There is an increase in use of technology as result of urbanization and industrialization amongst the urban population. Internet access across India is escalating swiftly and it's expected that by 2017 it is to become the second largest smartphone market on the planet. Though technology is evolving in various domains, medical technology has been unable to cater to the generalized as well as individualized need which has led to gaps in delivery. The twofold influence of acceptance to digital solutions facilitating to improve women's health and welfare, combined with backing for the rise in entrepreneurship, setting a platform to address the gender imbalance. Precise inclusion of technology in terms of

delivery of healthcare services at the most fundamental level to provide better holistic care would contribute to better-quality of health of an individual especially women.

Awareness and appropriate information are integral factors for addressing health issues faced by women. Gaps pertaining to healthcare delivery and healthcare needs of urban women need to be identified and addressed timely to ensure that these problems can be tackled, and appropriate solutions can be provided to them. This study would address these factors and help the various health challenges faced by them.

1.2. Research Questions

- What are the perceived health needs and challenges faced among urban women?
- What is the perception of urban women regarding use of technology in healthcare?

1.3 Objectives of the Study

The objectives the study are as follows:

- To study perceptions of urban women towards women's health, challenges faced, and viable solutions including technology
- To study factors that drive and influence the adoption and usage of tech solution like Femtech.

2. LITERATURE REVIEW

There is limited paper trail mainly research content on the adoption of technology more specifically mobile technology for women's health and wellbeing in India as well as on a global scale since Femtech is still in "its nascent stage of growth having been evolved just half a decade ago". Most of the articles are based on the need of the hour of Femtech, its potential and market size and the diverse types of Femtech services currently available in the market. There is are still gaps in the fundamentals of its regulatory framework as well as its viability in the market.

CBInsights has categorized "Femtech into following subsegments- Fertility solutions, Period and fertility tracking, At-home fertility monitoring, Pregnancy and nursing care ng, Pelvic healthcare, General healthcare, Period care and Women's sexual where Clinical apps, wearables, and personal trackers take the spotlight within these categories". One such significant research carried about by the Frost and Sullivan has accomplished to shed some light on Femtech and identified some intriguing insights on women's purchasing power and behaviour: The report ascertains facts about the Femtech "The past few years have seen the rise of Femtech, mainly due to higher funding and also because of a conducive regulatory environment that has seen the approval of new-age digital applications for Femtech. Personalized wellness and consumer healthcare technology has been a top-5 investment area in digital health for several years now, and Femtech has brought in overall funding of approximately $1 billion since 2014. Since 2016, regulatory agencies have also approved digital applications for conventional women's health issues and this has paved the way for Femtech applications in the mainstream market. For instance, the first ever mobile application for contraception from Natural Cycles received CE approval as a Class-Two medical device to be marketed in Europe in 2017, and the FDA approved Ava, a fertility tracking wearable as a Class-One medical device in 2016."

In the report based on primary research carried out by Frost and Sullivan, researchers have mentioned the principal areas of concern for women with respect to health "it is centred on access to affordable healthcare, maternal and child care, family planning and fertility, mental health, management of chronic diseases and elderly care. Most Femtech applications therefore revolve around key women's health issues, such as reproductive and maternal health, general health, and wellness, which includes mental health, chronic diseases, and communicable diseases".

“Key Drivers and influencers of market are physicians who are increasingly becoming tech-savvy, often relying on third-party information to support their decision-making process. As a direct consequence, healthcare companies are using multi marketing channel to continuously engage with patients and healthcare professionals; especially in the case of women users because 75–85% of women are more likely to use digital tools for their healthcare needs compared to men.”

According to Shruti Parrakal, transformational analyst Frost and Sullivan “In the Femtech market, to engage users, there is a need to work on the segmentation, targeting, and positioning (STP) of applications by better understanding the preferences and needs of women patients, users, and healthcare professionals, thereby targeting end users with the right applications. In addition, it is important to assess the women’s health landscape to identify critical pain points, to differentiate products and services in this category and gain a market footprint.”

Though the Femtech market seems very promising, full of potential yet there are barriers that needs to be overcome. Dr Raoul Scherwitzl, co- founder of Natural Cycled (a period and fertility tracking app) states that “obtaining more research and large-scale clinical data to put a product in the market is critical to the success of Femtech revolution”. Dr. Berglund. CTO Natural cycles and Nobel prize winner says that “Tech and information is the future of women’s health and contraception, but quality clinical studies and the evolution of a regulatory framework is paramount. Better insights mean women can be empowered to take control and safely self-manage their health, Fertility and future with more choice”.

According to a report by GSMA IN 2010 surveying women from Bolivia, Egypt, India and Kenya, 77% used the internet to further their education, 54% used internet for financial services and banking. These findings show that access to and use of technology can improve bring a positive impact on empowerment and health however women in emerging markets face significant barriers such as technology adoption and access, challenges include cost, literacy, cultural norms, safety and lack of understanding of applications.

India being one of the largest economies in the world, ranks lowest in the aspects of human development. India is the most populous cities in the world, the literacy rate, male to female ratio as well as maternal mortality is much lower than the global average. In the wake of a paradox, India has attempted at implementing technology wherever possible to

improve status. Initiatives like MAMA (Mobile Alliance for Maternal Action) and mMitra that helps deliver information to expectant mothers, eCompliance for ASHA workers for treatment of TB have achieved successes in the endeavour. The market is growing as investors and organization are able to visualize its ability to grow and bridge gaps in healthcare delivery in India particularly to India women

3. RESEARCH METHODOLOGY

The study is exploratory and descriptive in nature. The study was undertaken at the company's (Allizhealth) head office in Pune for a duration of three months from 5th February 2018- 30th April 2018.The researcher had access to contact details of approximately 300 women in the age group 18-60 years from the database of the organisation. A sample size of 111 with a confidence interval of 95% and 10% of margin of error would represent a population of 10,000 women adequate for an initial pilot study. The following are criteria that was considered to include women in the study: -

· Women who are 18 years and above but below 60 years,

· Have access to the internet,

· use smartphones,

· and use apps to manage their health/daily tasks.

Those who belonged to semi-urban and rural areas and do not satisfy the first two criteria which were excluded from the study.

Out of the 300, 196 (65%) women have shown their willingness to participate in the study. A total of 196 women were administered the e-questionnaire using Whatsapp. A response rate of 57% was achieved i.e. only 111 women successfully filled out the questionnaire.

Data Collection Tools and Methods

- Review of Literature: Initially a thorough review of literature was done on existing content on women health issues with facts and figures, perception of women health issues among urban women, Femtech and current and similar apps/technology in India, penetration of technology and internet users and government schemes, policy, rules and regulatory framework of technology implementation.

- Online research portal- Google scholar, e-articles, blogs

- E-questionnaire: this questionnaire has 25 questions, spread into 3 parts which includes demographic profile (5 questions), perceptions of women health (10 questions) and use of technology (10 questions)

- Newspaper and articles
- MS-excel to consolidate data and analysis

Data Collection Tool

The questionnaire consisted of 25 close ended questions divided into 3 sections to meet the objectives of the study. The sections were as follows:

- Demographic profile
- Perception of women health issues
- Use and adoption of technology/ Femtech.

The items in the questionnaire included urban Indian women's health issues related key parameters like barriers in seeking healthcare treatments, personal health issues, awareness about women health issues and perceived factors that influence decisions and barriers, sources of seeking information and educating themselves, access and use of technology, awareness and use of Femtech and factors that influence use of Femtech.

Data collection procedure:

A structured close ended e-survey was conducted the e-questionnaire were circulated using the contact details extracted from the compiled database to all the women. The researcher sent a set of instructions regarding the contents and steps to filling in responses along with approval/consent to volunteer to fill the form and to be a part of the research. The potential respondents were asked about the preferred channel to communicate or circulate the questionnaire for example WhatsApp or email. After receiving a consent, a link of the survey form was sent to them via the preferred channel and they would receive follow-up on the same channel every alternate or a two-day gap on account of failing to fill the questionnaire. The timeline set for collecting the data is one-week post which data collection shall be discontinued and analysis shall begin. The filled responses will be simultaneously recorded and consolidated on the MS-excel.

Consent was taken from each respondent to ensure their voluntary participation. An informed consent was taken before starting the interview. Non-one involuntarily disagreed to be part of the data collection process; they were not forced by any means. Confidentiality was ensured as the data was managed by the researcher only. No other

person had access to data. The analysis was done after compilation of the data, and therefore, their identity was not disclosed. Privacy was maintained during data collection.

4. RESULTS

SECTION A: DEMOGRAPHIC PROFILE

Table 1: Percent distribution of respondents by their demographic profile

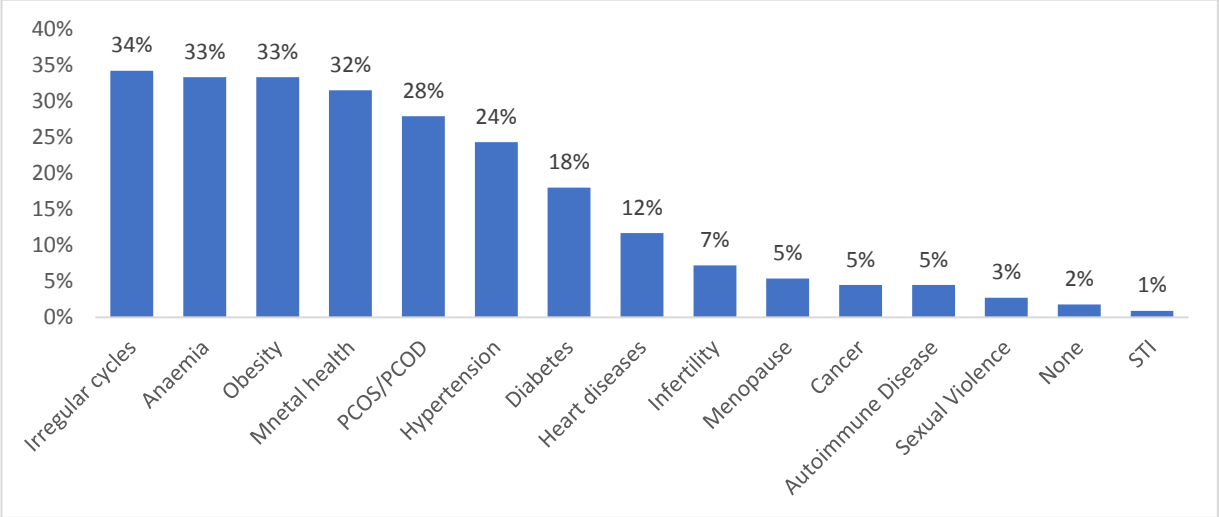
Age (in years)	n=111
19-23 years	20
23-27 years	68
27-31 years	17
31- 35 years	3
35- 39 years	1
39- 43 years	0
43-47 years	2
Age Range	19-45
Average age	26
Educational status	
Secondary school	2
Under graduation	30
Post-graduation	79
PhD	0
Marital status	
Married	15
Unmarried	96
Occupation	
Student	44
Employed	61
Unemployed	2
Home duties	4

- The age of the respondents lies in between 19-45 years with the respondents' average age is 26 years.

- 71% of the respondents had completed their post-graduation as highest level of education.
- More than half of the respondents (55%) were employed. 40% of them were students.
- The marital status in majority (86%) were unmarried.

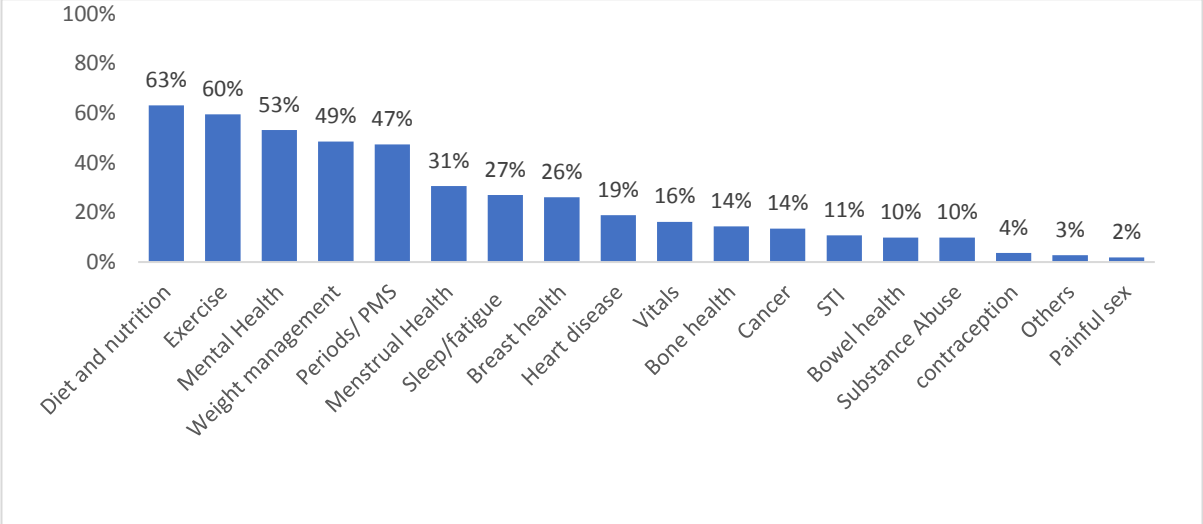
SECTION B: PERCEPIONS ON WOMEN'S HEALTH NEEDS

Figure 1: Percent distribution of respondents by their perception on women's health needs



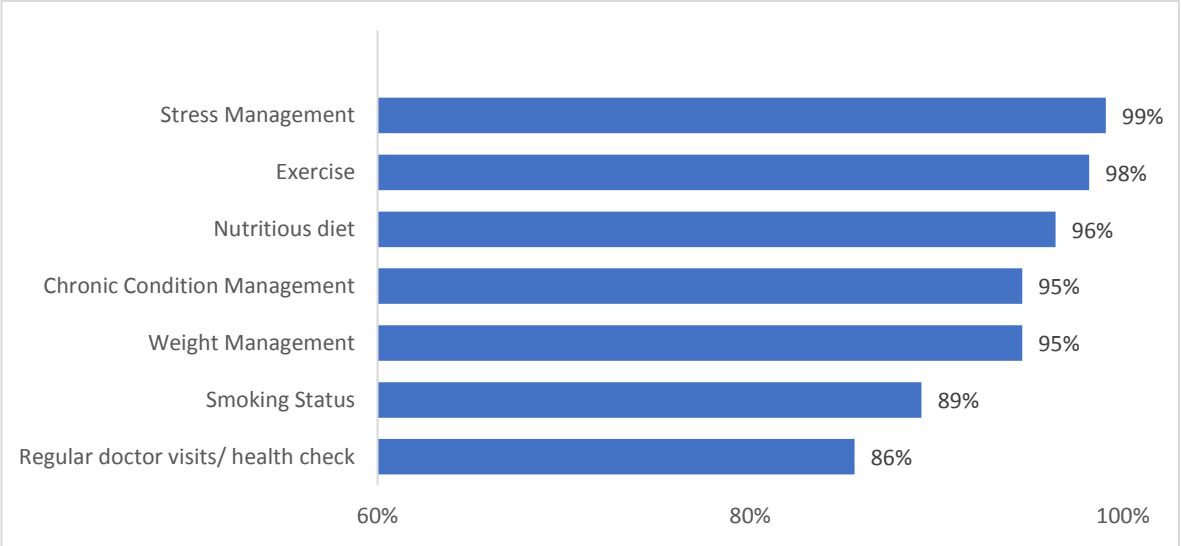
98% of the respondents felt they were susceptible to one disease or condition. The most common among them were irregular period cycle (34%), Anaemia (33%), obesity (33%), mental health issues (32%) and PCOD (28%).

Figure 2: Percent distribution of respondents by the health topics they seek information



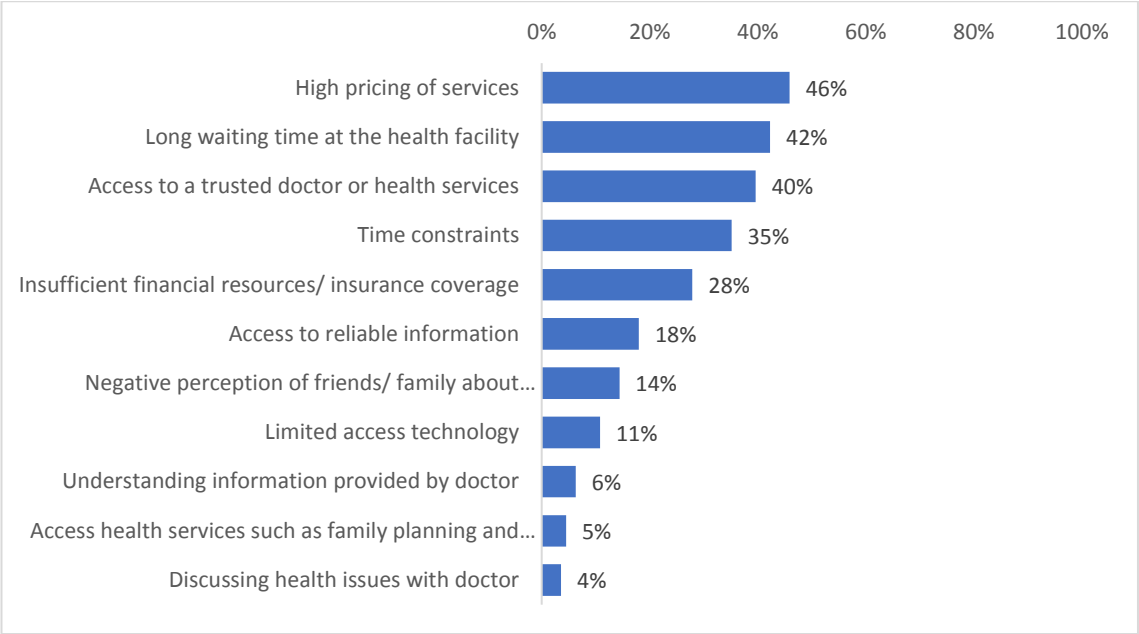
All of the respondents seek information about health issues to better educate themselves. The most common topics about which the respondents seek information were diet and nutrition (63%), exercise (60%), Mental health (53%), Weight management (49%) and period/PMS (47%). Least common topic not read were contraception (4%), other (3%) which included PCOD, anxiety and skin.

Figure 3: Percent distribution of respondents by practices they believe are essential



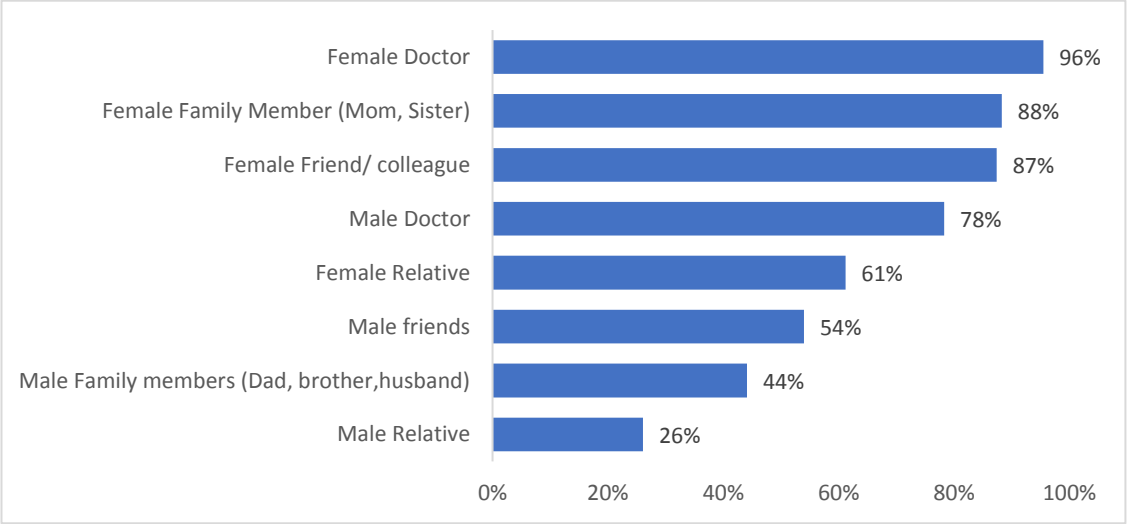
Respondents felt that the most important practice that is essential for good health was stress management (99%) followed by diet and nutrition (96%), exercise (98%), weight management (95%) and chronic condition management (95%).

Figure 4: Percent distribution of respondents by their perception on barriers towards women's health



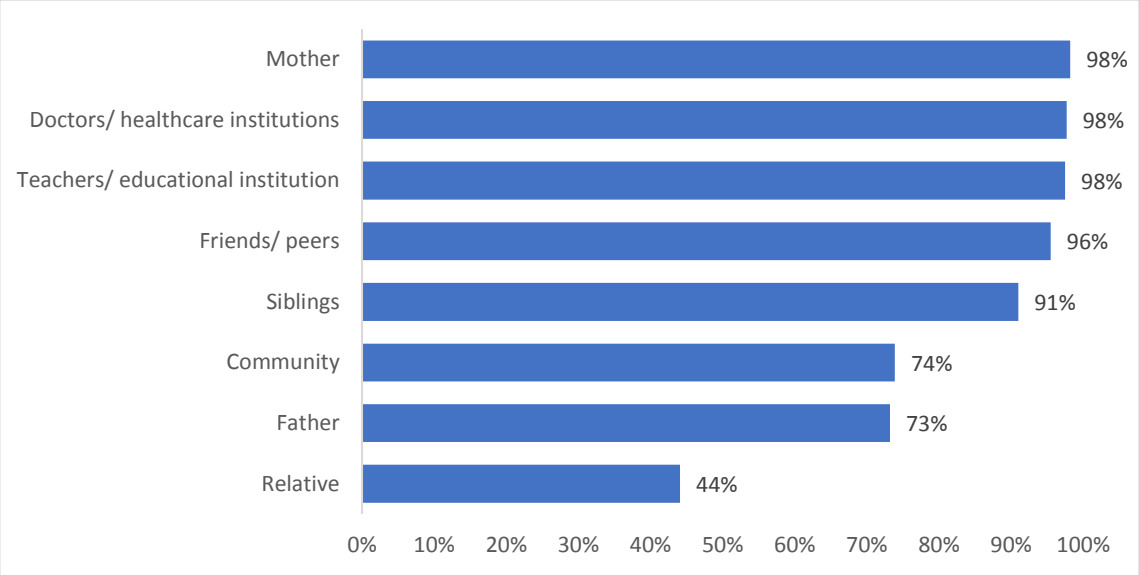
All respondents feel that there are barriers when they seek healthcare. About half the respondents felt high pricing of services was the barrier commonly faced while seeking healthcare. 42% of them felt the long waiting time was another common barrier. Other common barrier includes lack of trusted doctors/ health services (40%), time constraints (35%) and insufficient financial funds (28%)

Figure 5: Percent distribution of respondents by degree of comfortability to discuss health issues



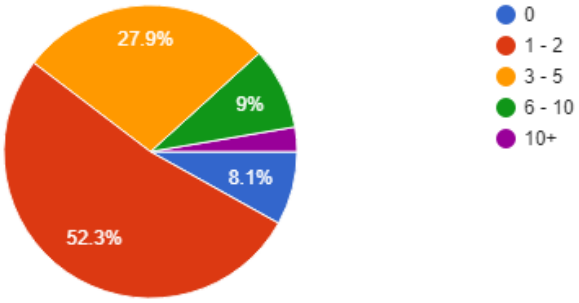
96% of the respondents felt like female doctors were the most comfortable to discuss women health issues. Followed by the female family member (88%) and female coworkers (87%)

Figure 6: Percent distribution of respondents by their perception of importance of different individual role in education of women health



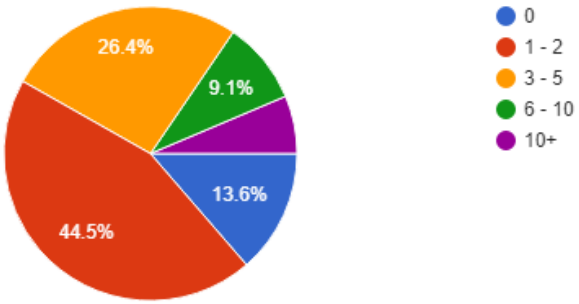
98% of the respondents felt that the mother, doctors and healthcare institutions and teachers and education institution play the most important roles in the education of women health

Figure 7: Percent distribution of respondents by number of doctor visits annually



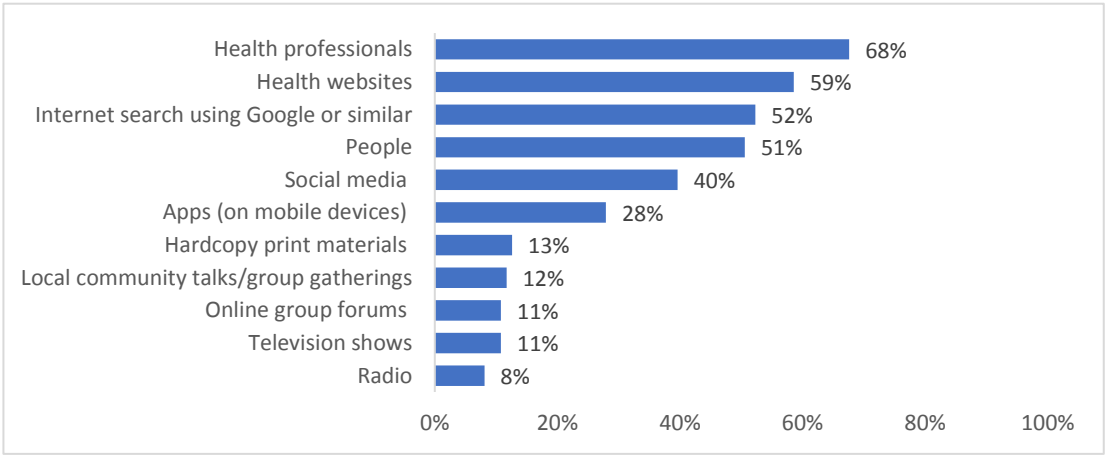
More than half of the respondents meet a doctor at least once a year. 28% of them visit a doctor at least 3-5 times in a year. Meanwhile 45% of the respondents say that they screen themselves at least once a year and 14% of them don't do so at all.

Figure 8: Percent distribution of respondents by number of health checkups undertaken annually



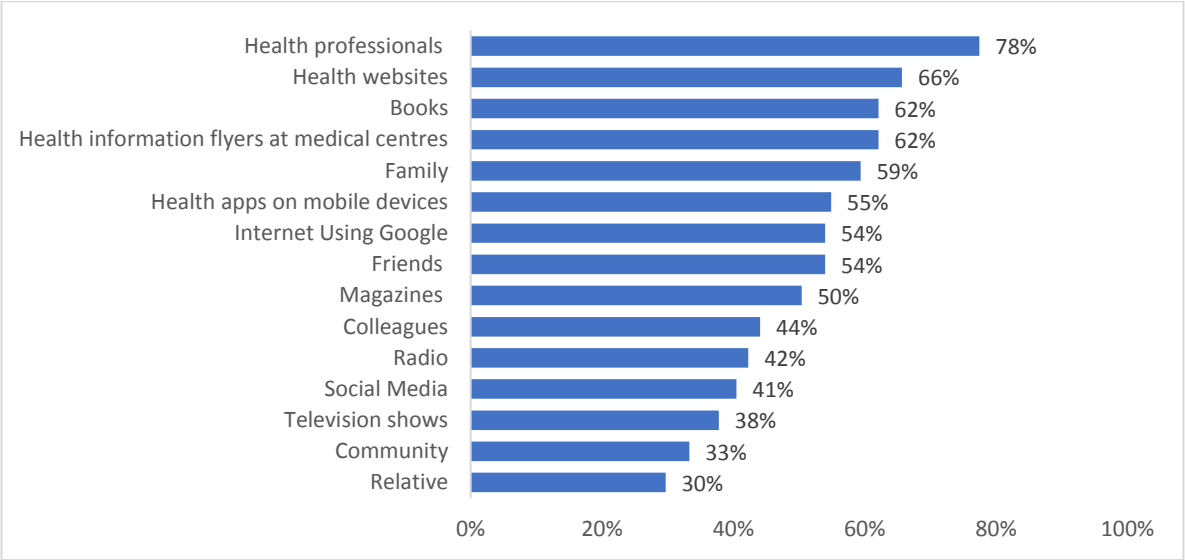
SECTION C: USE AND ADOPTION OF TECHNOLOGY

Figure 9: Percent distribution of respondents by utilization of method/ channel to seek information about health issues



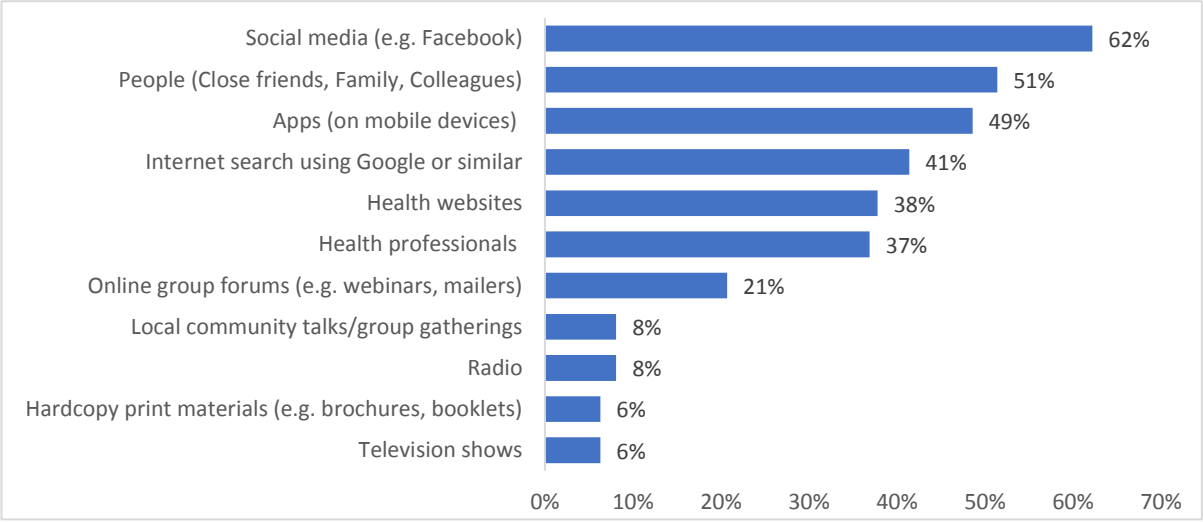
68% of the respondents prefer to seek infromation from health professionals like doctors while 59% of the respondents prefer to seek information from health websites. Other sources that respondents prefer were internet search (52%), people (51%) and social media (40%)

Figure 10: Percent distribution of respondents by degree of reliability of the sources of health information



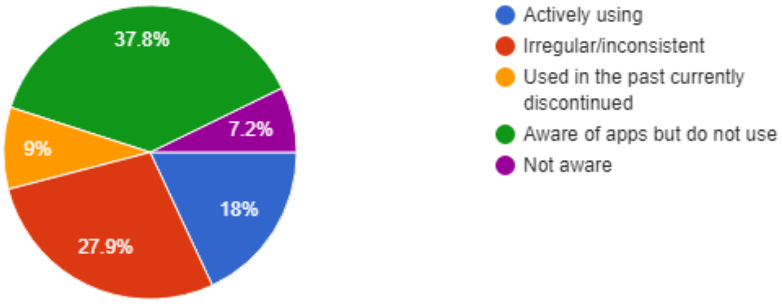
78% of the respondents felt that health professionals provide the most reliable halth information. Followed by health websites (66%), books (62%), Health information flyer (62%) and 59% from families. Health apps and internet use accounts for 55% and 54% respectively.

Figure 11: Percent distribution of respondents by method/channel of awareness about health apps



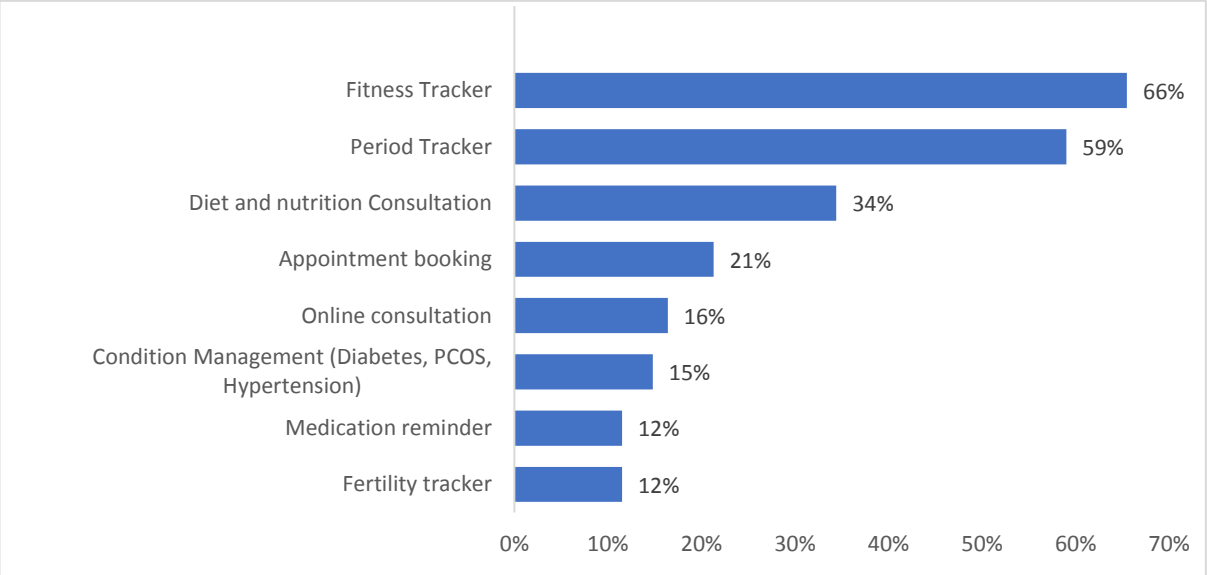
62% of respondents say that social media is the channel they were aware of health apps. Followed by the recommendation or suggestions by people close to them which 51% and through other mobile apps which accounts for 49%. It can also be observed that the internet played a crucial role in awareness where internet search like google (41%) and health websites (38%) have created awareness.

Figure 12: Percent distribution of respondents by use of health app



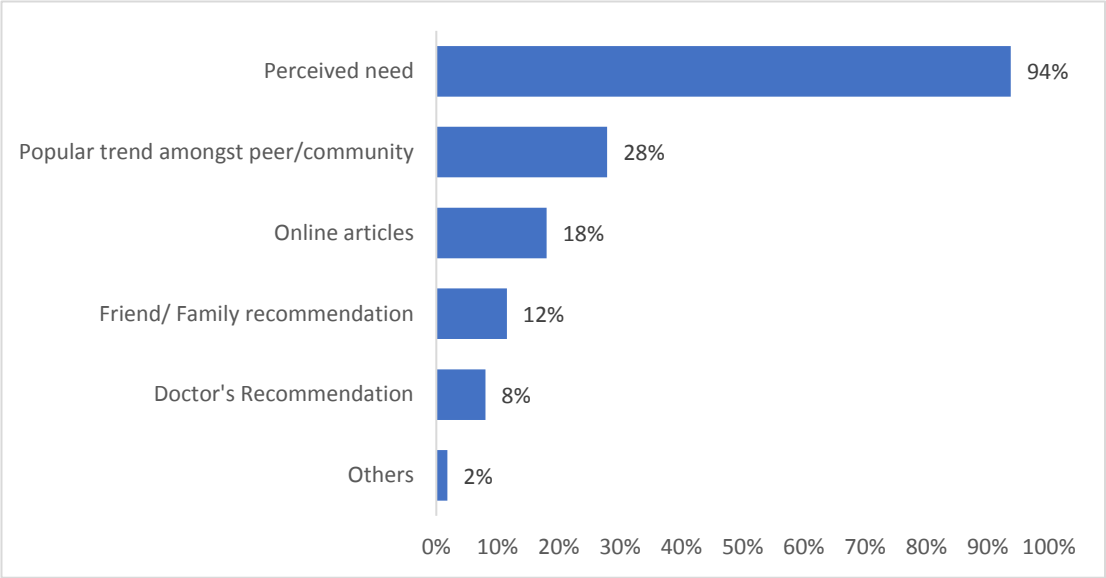
46% of the respondents have said that they use a health app, out of which 18% of them were actively using and 28% are inconsistent. 38% of them have said that they do not use an app although they were aware. This could be because they didn't feel the need to use an app or reliability issues with respect to using technology.

Figure 13: Percent distribution of respondents by purpose of use of a health app



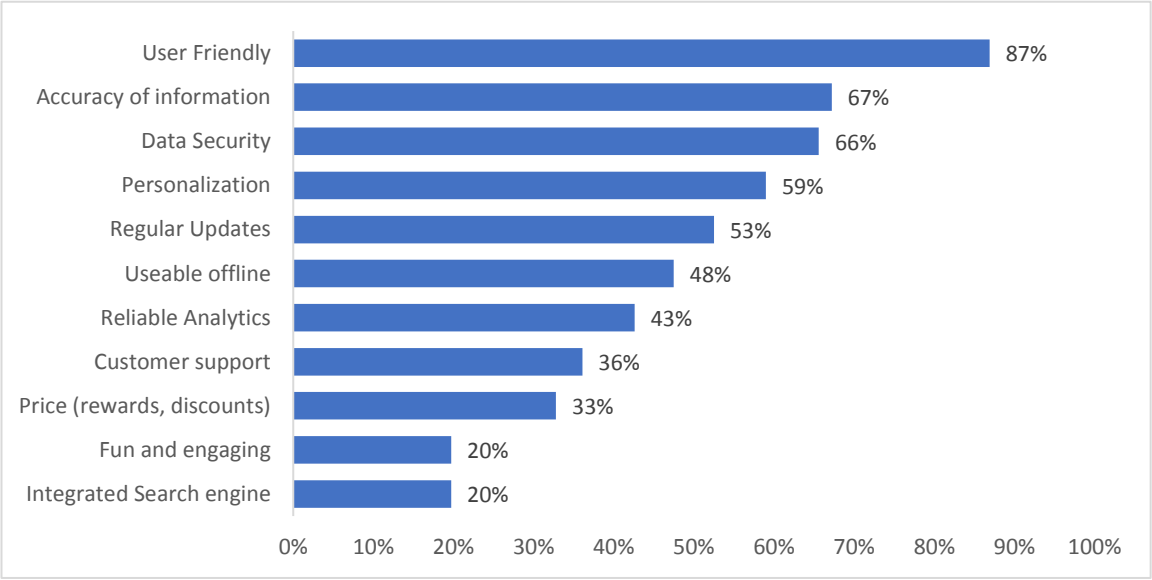
Fitness tracker was the most used app as per the survey completed by respondents which 66%. Other reasons were period tracker (59%), diet and nutrition consultation (34%) and appointment booking which was 21%.

Figure 14: Percent distribution of respondents by factors that influence to start to use of app



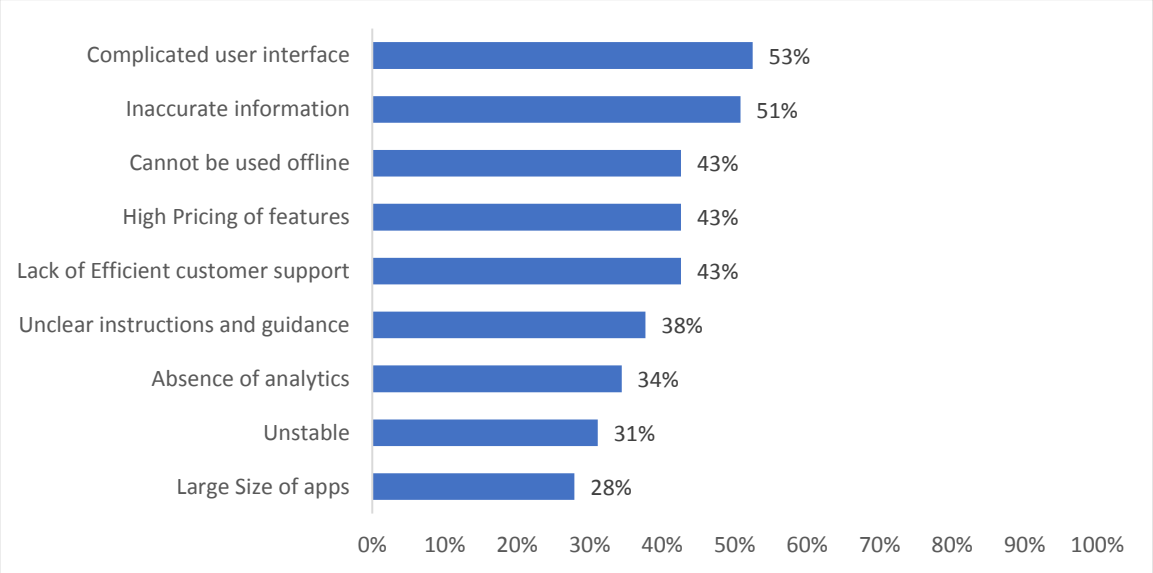
94% of the respondents felt a need to start to use the app. Interestingly doctor's recommendation has the least responses due which respondents were influenced to use an app

Figure 15: Percent distribution of respondents by factors that influence use of an women's health app



87% of the respondents felt that user friendly feature was the most important factor that influence the use of an app. Other features that contributed to use of an app were accuracy of information (67%), Data security (66%), Personalization (59%) and regular updates (53%)

Figure 16: Percent distribution of respondents by factors that influence discontinued use of an women's health app



More than half of the respondents felt that a complicated interface (53%) and inaccurate information (51%) were common factors that often lead one to discontinue a health app. Other factors that 43% of the respondents felt could be possible influences for discontinuation were could not be used offline, high pricing of features and lack of customer support.

5. CONCLUSION

- Women were concerned about seeking healthcare yet face barriers.70% women were aware of health apps available to them and 46% of them were using it. This shows the level of penetration of use of health apps among urban Indian women.

- Women of the younger cohort of the adult population use apps for several reasons. They have also mentioned the features of influence the use and discontinue of the app. This could affect the reliability of the women on technology as a solution to seek healthcare

- Women felt that they were prone to diseases/ conditions like Anaemia, Obesity, Irregular cycles, mental health issues. There are aware of the rise in NCD's in the country. They were aware of health practices those that are essential to improve health status.

- Major challenges that women face while seeking healthcare and seem to influence their behaviour were high pricing of health services, access to trusted doctors and other health professional, time constraints, long waiting time and insufficient financial funds resources and long waiting time at the health facility.

- Women who use health apps were asked about factors that drive them. These factored were mostly technical like the user interface of the app, accuracy of information and analytics, customer support and pricing. Their need to use an app s what influence them to do so.

- Women about mentioned about various sources of information through which they seek information about health issues. The most frequent sources were health professionals, health websites, browsing the internet, recommendation from

people like family and friends and social media. These were the sources through which women were aware of health apps.

6. RECOMMENDATIONS

- Implementation of technology can reduce gaps in healthcare delivery and improve health status of women.
- Due to the dependency of technology of women to seek healthcare, technology can be successful yet viable solution to bridge gaps.
- Due to lack of data on the knowledge and awareness of health apps and its use amongst Indian population, it would be difficult to standardize and general findings for urban Indian populations.
- There are preventive, predictive as well as monitoring health apps are available for Indian women, yet the technical features have caused an inconsistency in use of technology especially apps.
- Health apps with better interfaces and analytics along with personalization and right pricing can aggregate the use of technology to improve health of an individual

7. SUPPLEMENTARY

Part A- DEMOGRAHIC DETAILS

1) Name (optional):

2) Age:

3) Employment Status:

Student
Employed
Unemployed
Home duties(Housewife)

4) Highest level of education:
   Secondary school:
   Under graduation:
   Post-graduation:
   PhD
   Vocational Education
   Others Specify:

5) Marital status:
   Unmarried
   Married

PART B: Perceptions

1. Which of the following factors are barriers to access/seek healthcare services?

   Long waiting time at the health facility
   Access to a trusted doctor or health services
   Access health services such as family planning and child health centers
   Insufficient financial resources/ insurance coverage
   High pricing of services
   Discussing health issues with doctor
   Understanding information provided by doctor
   Limited access technology
   Time constraints
   Access to reliable information

Negative perception of friends/ family about healthcare services
other please specify

2. Which of the following practices you believe are essential to improve personal health

	Important	Somewhat Important	Neutral	Somewhat unimportant	not important
Exercise					
Weight Management					
Nutritious diet					
Stress Management					
Have more time to myself (by working less)					
Regular doctor visits/ health check					
Smoking status					
Chronic Condition Management (Diabetes, Hypertension)					

3. Which of the following topics do you commonly seek information for?
   Diet and nutrition
   Exercise
   Mindfulness/meditation
   Sleep/fatigue
   Memory/concentration
   Weight management
   Stress management
   Physical activity/exercise
   Bone health/osteoporosis
   Natural therapies/supplements
   Life/work balance
   Menopause
   Bowel health
   Breast health
   Anxiety/worry
   Cholesterol levels
   Cardiovascular disease
   Depression
   Blood pressure
   Cancer
   Diabetes
   Polycystic ovary syndrome
   Painful sex
   Periods/ PMS
   Endometriosis
   Sexuality
   Abnormalities or irregularities of reproductive parts (signs, symptoms, treatments)
   Prescription drug use
   Falling pregnant
   Contraception

IVF
Sexually transmitted infections
Illegal drug use
Tobacco smoking
Others please specify

4. According to you, which of the following diseases/conditions are Indian women predisposed to? (Likert scale)
   Likely somewhat likely neutral somewhat unlikely unlikely
   a. Cancer
   b. PCOS/PCOD
   c. Sexual Violence
   d. Heart diseases
   e. Anaemia
   f. Pre-natal/ post-partum complications
   g. Infertility
   h. Irregular cycles
   i. Menopause
   j. Diabetes
   k. Hypertension/ hypotension
   l. Depression and Mental Health issue
   m. Sexually transmitted diseases
   n. Autoimmune Disease
   o. Obesity
   p. Stroke
   q. Cardiovascular Disease
   Others please specify

5. Do you believe that openly discussing about women health (reproductive and sexual health) is still a taboo?
   a. Yes, No Unsure

6. How comfortable are you to discuss women health issues especially sexual and reproductive health with the following? (Likert scale) comfortable somewhat comfortable neutral somewhat uncomfortable uncomfortable
   Male Doctor
   Female Doctor
   Male Family members (Dad, brother, husband)
   Female Family Member (Mom, Sister)
   Male friends
   Female Friend/ colleague
   Male Relative
   Female Relative

7. Do you believe that education of sexual and reproductive health is essential?
   Yes, No Unsure

8. Which of the following person/s play important role in the education/ awareness of women health issues especially sexual and reproductive health?
   Mother
   Father
   Siblings
   Relative
   Community
   Doctors/ healthcare institutions
   Teachers/ educational institution
   Friends/ peers
   Others please specify

9. How often do you visit the doctor annually?
   0 1-2 3-5 6-10 10+

10. How many times have you got your health check/screening done in the last 5 years?
    0 1-2 3-5 6-10 10+

PART C- Questions related to use of technology.

1. Do you use any technological devices like mobile phones, laptops, tab?
   Yes No
2. How often you access the internet access to internet?
   Everyday Couple times a week Occasionally (e.g. once a week)
   Rarely (e.g. once a fortnight) Not at all

3. Which of the following method would you prefer to seek information regarding health issues?
   Online (e.g. websites)
   Videos or podcasts
   People (Close friends, Family, Colleagues)
   Social media (e.g. Facebook)
   Apps (on mobile devices)
   Hardcopy print materials (e.g. brochures, booklets)
   Local community talks/seminars/ group gatherings (e.g. conferences, exhibitions)
   Online group forums (e.g. webinars, mailers, messages)
   other please specify

4. According to you, rank each of the following for Degree of reliability as sources of health information?
   Unreliable somewhat unreliable neutral somewhat reliable reliable
   Family
   Friends
   Colleagues

Relatives
Community
Internet search using Google or similar
Health websites
Health information flyers at medical centres
Health apps on mobile devices
Health professionals (doctor, specialist, allied health, nurse)
Social Media (Facebook, Twitter, Instagram...)
Television shows
Magazines (e.g. Women's Weekly)
Books
Radio
other please specify

5. Do you use any app to monitor/manage your health?

   Actively using
   Irregular/inconsistent
   Used in the past currently discontinued
   Aware of apps but do not use (answer next question and click submit)
   Not aware (click submit)

6. How are you aware of the apps available to monitor/manage health issues for women?

   People (Close friends, Family, Colleagues)
   Social media (e.g. Facebook)
   Apps (on mobile devices)
   Hardcopy print materials (e.g. brochures, magazines)
   Local community/ group gatherings
   Online advertisements (e.g. pop-ups, mailers, messages)
   Internet search using Google or similar
   Health websites
   Health professionals (doctor, specialist, allied health, nurse)
   Television shows
   Radio
   other please specify

7. Tick the following reason/s for which you are using an app
   Fertility tracker
   Period Tracker
   Weight Management
   Diet and nutrition Consultation
   Fitness Tracker
   Condition Management (Diabetes, PCOS, Hypertension)
   Appointment booking
   Online consultation
   Medication reminder
   Women health blogs and article

other please specify

8. What were the factors that influenced you to use the app?
   Doctor's/ Health professional recommendation
   Family/ Family recommendation
   Online articles
   Online reviews
   Popular trend amongst peer/community
   Perceived need
   other please specify

9. Which of the following features do you feel are important for active/ potential usage of a women health app?

   User Friendly
   Data Security
   Useable offline
   Regular Updates
   Personalization
   Integrated Search engine
   Reliable Analytics
   Accuracy of information
   Customer support
   Price (rewards, discounts)
   Fun and engaging
   Others please specify

10. Which of the following issues do you feel could be possible reasons for discontinue/irregular use of the app?
    Complicated user interface
    Unstable
    Lack of Efficient customer support
    Inaccurate/ Irrelevant information
    High Pricing of features
    Absence of analytics
    Cannot be used offline
    Unclear instructions and guidance
    Large Size of apps
    other please specify

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