

WhatsApp Chatbot As A Crisis Communication Platform: Lessons from Rajasthan

By

Yukta Sharma

*Dissertation submitted in partial fulfillment of the requirements of the degree
MBA Hospital and Health Management*

Academic year, 2018-2020



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To Whomsoever it may concern

This is to be certified that **Miss. Yukta Sharma** from IIHMR University, Jaipur has attended the organization for her dissertation from 27/02/2020 to 31/05/2020 . She has been found capable in delivering all tasks in a well-organized manner. Her dissertation project is well presented and approved

on the topic of **“WhatsApp Chatbot as A Crisis Communication Platform: Lessons from Rajasthan”**

During the period of her dissertation with us she had been exposed to different processes & she is a hardworking person and bears a good moral character.

Wishing the best to **Miss. Yukta Sharma** for her future endeavours .

Khushi Baby Association

A handwritten signature in dark ink, appearing to read "Moh Shahnawaz", is written over the printed name. Below the signature, the word "Director" is printed in a bold, sans-serif font.

Director

(Mohammed Shahnawaz)
Chief Operation Officer
Khushi Baby, Udaipur

THE IIHMR UNIVERSITY, JAIPUR

CERTIFICATE BY SCHOLAR

This is to certify that the dissertation titled **“WhatsApp Chatbot As A Crisis Communication: Lessons From Rajasthan”** and submitted by **Yukta Sharma**, enrolment no. **0862** under the supervision of **Dr. Sandesh Kumar Sharma** for award of MBA in Hospital and Health Management in Health and Hospitals of the University carried out during the period from **27th February, 2020 to 31st May, 2020** 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.

A handwritten signature in blue ink that reads 'Yukta'.

(Yukta Sharma)
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The dissertation opportunity I had with Khushi Baby was a great chance for learning and professional development. Therefore, I consider myself a very lucky individual to be a part of it. I am also grateful for having a chance to meet and learn from professionals working in the public health.

I express my deepest thanks to Mohammad Shahnawaz (COO), Khushi Baby for his continuous help and guidance towards completing my project successfully.

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I perceive this opportunity as a big milestone in my career development. I will strive to use the gained skills and knowledge in the best possible way.

Sincerely,

Yukta Sharma

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INTRODUCTION

Coronavirus(COVID-19) is a disease which is spread by droplets of saliva produced when coughing or sneezing or by coming in contact with any object which might carry the virus. It is spread only when a person comes in direct contact with the person who might have the disease or when a person touches an infected object and then touches their eyes, nose or mouth. Coronavirus causes respiratory infections leading to damage to other organs as well. The initial symptoms include cough, fever, difficulty breathing among others.¹Error! Reference source not found.Error! Reference source not found.Error! Reference source not found.

This disease was first reported in Wuhan, China but slowly spread throughout the globe with over 79 lakh cases worldwide. The infection has now spread to 188 countries with over 4,33,648 deaths globally.

India has been successful in preventing the mass spread of this disease by implementing a nationwide lockdown in the early stages of the disease itself. Currently there are 3,00,000+ total reported cases in India out of which 1,69,798 people have recovered while 9520 deaths have been recorded.²

In Rajasthan, the government implemented a lockdown on 24th March initially for a period of 21 days across the whole state as per the guidelines from Government of India. During the lockdown period certain necessary services are available such as police stations, grocery shops, dairy or milk booths, hospitals, pharmacies, Banking and ATMs, etc. There have been more than 5 lakh tests for the virus out of which 12,401 are currently positive and under treatment.³

Lockdown 5.0 or unlock phase 1 was implemented in the state with several relaxations for the citizens till 30 June. The relaxations include functioning of shops and services, inter-state movement of people, no requirement of emergency pass for within the state

¹ https://www.who.int/health-topics/coronavirus#tab=tab_1

² <https://coronavirus.jhu.edu/map.html>, 15th June, 2020

³ <https://coronavirus.jhu.edu/map.html>, 15th June, 2020

among others. Religious places/places of worship, shopping malls, hotels and restaurants will also be opened after June 8

AIM: The overall aim is to develop WhatsApp chatbot for community awareness, providing information about personal hygiene and protective equipment for the health workers, reporting of symptoms and also to ensure safe delivery for the expectant mothers.

OBJECTIVE:

- A.** To provide a platform with verified information to the citizens and health workers of Rajasthan along with ensuring the availability of services to the expectant mothers and to the population most vulnerable in this pandemic
- B.** To analyse the impact of WhatsApp chatbot, as a crisis communication platform for Rajasthan

ABOUT THE ORGANIZATION

Khushi Baby is a global health technology start-up currently operational in Rajasthan, India. We have built a platform to motivate and track mother and child health care to the last mile. Focusing on maternal and child health and improving indicators such as Maternal mortality rate, Infant and Under-5 year child mortality rate and Immunization has been the mission for Khushi Baby. Starting from the district of Udaipur, and succeeding in their goals to reduce maternal deaths and increase rates of immunization, Khushi Baby is now expanding their reach to more districts of Rajasthan, such as Sikar, Jodhpur, Jaipur, Ajmer among others.

Innovation:

Khushi Baby has developed a comprehensive platform for tracking Reproductive Maternal Neonatal and Child Health care, tailored for last-mile settings without connectivity. The platform consists of the following key elements:

1. Near Field Communication (NFC) based health card for beneficiaries
2. Mobile application for frontline health workers to support point of care clinical decision making and planning for preventative health care camps

3. Analytics dashboard for health officials to take data driven engagements
4. Targeted automated voice call reminders in the local dialect for beneficiaries

The novelty of the platform begins with the NFC-based health card which allows the beneficiary to carry their health record with themselves, allowing for informed care when they interface with their next health provider. And because the health provider must scan the NFC-card and take the live biometric of the beneficiary, our system is also uniquely able to confirm the beneficiary was actually seen for services - a vital accountability check missing in other mHealth solutions.

Impact:

- Over 150 ANM health workers in 5 blocks (~400 villages) have used the system continuously since 2017 to track the health of 47,000+ mothers and infants
- Our 2-year, 3200-mother randomized controlled trial, supported by the International Initiative for Impact Evaluation, showed the Khushi Baby system improved full infant immunization by 12 percentage points and decreased infant malnutrition by 4 percentage points.

Taking into account the recent events of COVID-19 pandemic, Khushi Baby has emerged as one of the key contributors in the management of this pandemic with the Government of Rajasthan. As a part of their contribution, Khushi Baby has taken the help of social media platform, WhatsApp, to develop an effective mode of communication for the people of Rajasthan so that they may get the best services/assistance in this situation of pandemic. Major activities that are being done in this area are, spreading awareness among the community, keeping a track of the people infected with the virus and also to provide the necessary support on an official level i.e. helping those in need of assistance from the government or the police or any other emergency service.

I. WHAT HAS BEEN DONE FOR COVID-19 IN RAJASTHAN BY THE GOVERNMENT

- To combat the COVID-19 pandemic, the Rajasthan government has decided to utilize social media platforms such as WhatsApp, Facebook and Twitter as much as they can. These platforms are being used to create awareness, instruct and inform the people about the latest COVID-19 related information and also about the services and facilities being provided to the less fortunate population so that they do not face problem in the lockdown situations.
- Facebook and Twitter have been a handy source for the Chief Minister of Rajasthan, Mr. Ashok Gehlot in providing first-hand and authentic information to the public. He uses these platforms to keep the people updated with the actions that the government is taking to control and prevent the spread of this pandemic.
- Distribution of ration by the Food and Civil Supplies Department
- Movement of migrant workers from Rajasthan to their native states via trains and buses.

II. EFFORTS OF KHUSHI BABY IN MANAGING THIS PANDEMIC

Manual WhatsApp Tracking

- Use of WhatsApp to actively track the people who have recent travel history to Rajasthan, we followed up with 5000 people in this regard.
- This was done by manually messaging the people and keeping a track of their health status such as living conditions, symptoms, and ensuring that the people follow the guidelines released by the government.
- To simplify this complex process, we designed a chatbot for WhatsApp which will have the questions that were earlier asked manually and based on the user's query pre-recorded answer/suggestion will be given to them
- This will not only maintain the universality of the answer/suggestion but will also be quick and easy to navigate for the people

WHAT IS A CHATBOT?⁴

- It is a text-based dialogue system, which allows users to communicate with a technical system.
- Users can communicate their question/concerns directly or a specific flow of communication can also be followed which allows users to communicate with the chatbot according to the option provided by the bot itself.

RAJASTHAN GOVERNMENT COVID-19 HELPLINE : **THE WHATSAPP CHATBOT**

After doing WhatsApp based follow-up, a WhatsApp chatbot was launched on **15th April, 2020** with the support of DoHFW and Do-IT, Rajasthan Government, to make it easy to reach a larger population across the state and also to provide streamlined responses in order to help the citizens.

This decision of developing a chatbot was also dependent on the people, the response rate and receiving self-updates by them regularly showed how useful and trusting people were towards such initiatives. These reasons made it evident that a better and quick method to help them was needed to be developed.

Our WhatsApp chatbot is different than the other COVID-19 specific chatbots in many ways, such as:

1. This is the only state-specific chatbot in India. It provides two main languages, i.e. Hindi and English, Hindi being the default language for all
2. The information gathered through this bot is directly conveyed to the officials at district and departmental levels. This ensures that necessary steps will be taken by the government
3. Daily stats are updated on the chatbot for people.

⁴ <https://www.messengerpeople.com/chatbots-what-is-a-whatsapp-bot-actually/>

4. This chatbot provides the people with an option to report any symptoms that they may be experiencing. This way the bot works as a screening tool for assessing the health status of the person and further action, such as sending a district level team to examine the person, can be taken
5. Along with reporting the symptoms, the person can also talk to an agent, i.e. a person from the department directly, in case their health condition needs immediate attention or they have any related query
6. During this period of lockdown, there might be many expectant mothers waiting to deliver in the upcoming month/s, to provide apt service to these mothers, this chatbot has an option to send the information to the government regarding the pregnancy which will allow the mother to receive proper care and service at the time of her delivery. Tracking of the pregnant ladies is being done through a GPS enabled survey tool, which enables the department to locate such mothers in case they need any assistance
7. The Chatbot also takes this opportunity to support health service providers through providing them the necessary safety information regarding hand hygiene maintenance, PPE use, disinfection, how to collect samples and information regarding coronavirus
8. People can get various information regarding Covid-19 through this Bot, viz, current situation, Dos' and Don'ts, nearby Public Health Centres, Rajasthan states' policy updates about covid-19. Apart from the information, the citizens can also report the shortage of food, violation of rules in their area and can apply for passes for essential or emergency services
9. Citizens can also contribute to the CM relief fund through this platform
10. Query and problems can be shared by the people to the department via the chatbot
11. Information about people in vulnerable populations can be easily shared for further action

LITERATURE REVIEW

Detecting information requirements for crisis communication from social media data: An interactive topic modeling approach by Deng Q, Gao Y, Wang C, Zhang H ([2020](#)). This article talks about the importance of timely and accurate information disclosure to the public at the time of a crisis. The Chinese microblog data is used in this study to learn about the behaviour of people by the means of a man-made disaster. This resulted in analysis and presentation of information such as requirement of information by the people and also in tracking them with the help of social media. The results from this study are useful in managing a robust disclosure of the information on the basis of need of information by the public.

Roshan M, Warren M, Carr R ([2016](#)). Understanding the use of social media by organisations for crisis communication tells us that social media is often not used at its full potential for crisis communication. This study involved analysis of more than 15,000 Facebook and Twitter messages from 17 Australian organizations. The results show lack of awareness by the organizations about the potential of social media in crisis communication. Organizations often did not respond to the stakeholder and also chose to not select any response strategy which might affect their stature. This paper discusses the key implications of a successful crisis communication method.

Eriksson M. ([2018](#)) in his paper “Lessons for crisis communication on social media: A systematic review of what research tells the practice” talks about the usage of social media and how organization’s changed policies for crisis management. Our crisis management system is weak because of unsystematic studies done in previous years which led to the existing measures and what is now known to be the best practices. This study tells us the effective way of crisis communication is by choosing the right message, source and time and

making the use of ones potential of dialogue. Another lesson is to be prepared and understand social media and use it as a monitoring tool.

Liu BF, Bartz L, Duke N. (2016), in their article, Communicating crisis uncertainty: A review of the knowledge gaps discussed the point that the discipline of communication has always helped people in knowing the what, how and when of communicating information in a crisis but what is not known is how to handle lack of knowledge in situations where there is a lot of uncertainties at the time of a crisis. Managing this uncertainty will allow the crisis to be handled in a way which gives benefit or is positive for the people it affects the most. The study proposes a roadmap to understand the concept of uncertainty in crisis communication.

An article, Communication barriers in crisis management: A literature review by Fischer, Diana; Posegga, Oliver; and Fischbach, Kai (2016), tells us that for coping with any type of disaster, it is essential to establish a communication between the crisis response organizations and the public. this research emphasises on the fact that how difficult it is to establish an effective communication because of a number of barriers which result in inability to mitigate, prepare, respond and recover from a crisis. This study also showed that there are certain technical, organizational and social barriers in communication which leads to an ineffective crisis management system.

METHODOLOGY

KEY RESEARCH QUESTION:

How can social media platforms like WhatsApp be used to develop an effective mode of communication for the citizens and the Government of Rajasthan?

RESEARCH DESIGN: Review based study

STUDY SETTING: The state of Rajasthan

STUDY POPULATION: Population of Rajasthan- 7.95 Crore

SAMPLE SIZE: people who reached out- 1,80,000+ citizens

SAMPLING TECHNIQUE: Inclusion of all the participants

DATA COLLECTION PROCEDURE: The data will be collected through WhatsApp chatbot developed for the purpose of providing assistance to the people regarding COVID-19

ETHICAL CONSIDERATIONS: This WhatsApp Chatbot saves only the mobile number of the citizens who reach out to the bot for gathering various information and/or to report the symptoms. This data remains in our dashboard for as long as 1 month only. In case the citizens reach out to us using our 'Chat with an Agent' service, the information gathered is the Name, Mobile Number, Address/GPS location, information related to the person's living situation i.e., whether the person follows home isolation norms or do they require to step out of the house due to their occupation or any emergency. This data is subject to the citizens willingness. They share the previously mentioned data only if they want to.

FINDINGS FROM THE CHATBOT

I. RESPONSES RECEIVED BY THE WHATSAPP CHATBOT



FIGURE 1⁵

What does the figure tells us:

- Total number of responses received since the day of launch till last updated date are approximately, 1,80,000
- Majority of the responses were received in the first few days of launch, i.e., till April 18th
- Delivery rate is 99.85% due to the messages being rejected. Messages may be rejected in case automatic blocklist is enabled.

⁵ Figure 1 last updated on 20 May, 2020

II. DISTRIBUTION OF RESPONSES

Table 1

Responses	Frequency
Responses according to the Bot	20908
Other Responses	34796
Total Responses	55704

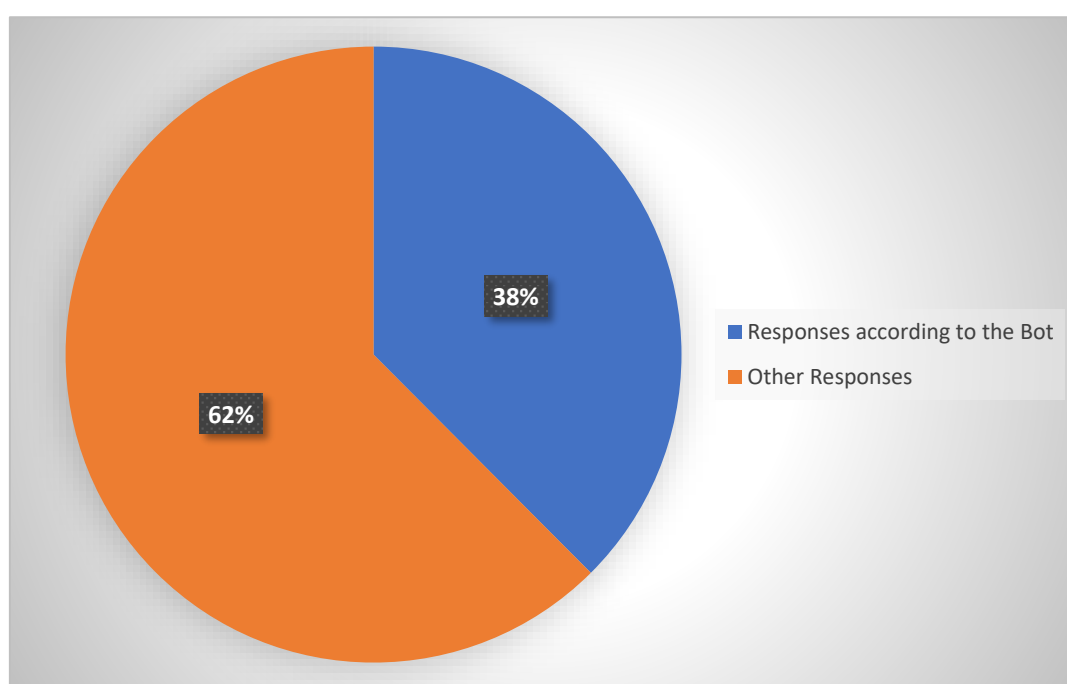


FIGURE 2⁶

What does the figure tells us:

- The responses valid according to the bot were found to be 20,908 out of 55,704 which makes up 38% of the total responses received.
- Other responses were also received by the bot which made up 62% of the total responses.

⁶ Figure 2 last updated on 20 May, 2020

III. MENU SPECIFIC RESPONSES RECEIVED ON THE CHATBOT

Table 2

Text	Frequency
Clicked on citizen specific COVID-19 Information	12107
Clicked on Health worker specific COVID-19 Information	4596
Clicked on reporting pregnant women who are expecting to deliver in the months	1822
Reported symptoms	2383

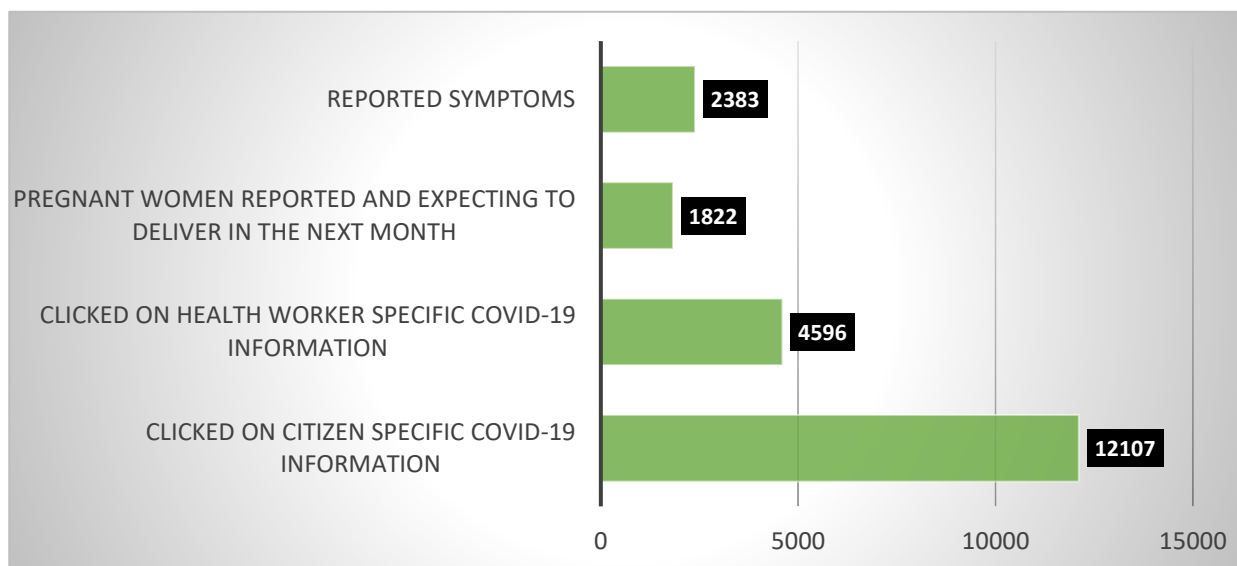


FIGURE 3⁷

What does the figure tells us:

- Most of the citizens clicked on the bot for citizen specific COVID-19 information, i.e., 12,107 responses out of 22,908
- Very few, i.e., only 1,822 people chose the option to report pregnant woman who is expecting to deliver in the coming months.

⁷ Figure 3 last updated on 20 May, 2020

IV. RESPONSES SPECIFIC TO MENU 1 (Citizen Specific COVID-19 Information)

Table 3

Text	Frequency
Donate to CM's relief fund	310
Find public health centres near you	1121
Do's and Don'ts of Coronavirus	1165
Apply for a police pass for essential/emergency services	1229
To learn about Rajasthan and India policy updates	1579
What is the COVID-19 lockdown and what are the services affected by it	1868
To learn about Rajasthan and India COVID-19 status	4006

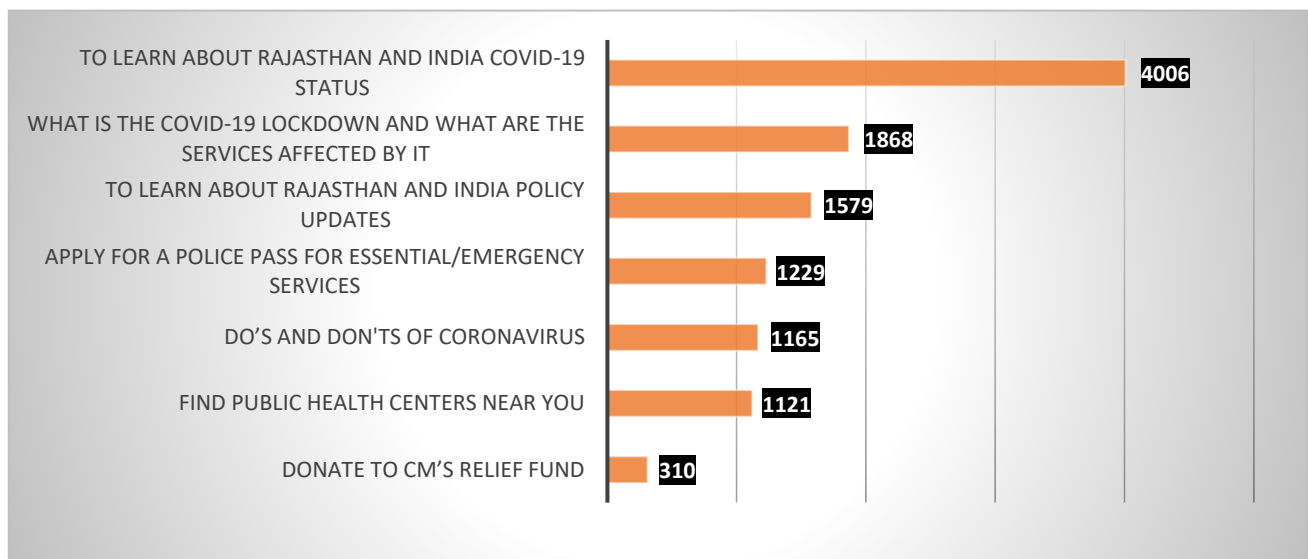


Figure 4⁸

What does the figure tells us:

- Most number of responses were for Rajasthan and India related COVID-19 status
- Only 310 people chose to donate to the Chief Minister's Relief Fund through the chatbot

⁸ Figure 4 last updated on 20 May, 2020

V. RESPONSES SPECIFIC TO MENU 2 (Health Worker Specific COVID-19 Information)

Table 4

Text	Frequency
Coronavirus Case Definition	301
Sample Collection Procedure	404
Disinfection	893
How to properly put on and take off PPE	1108
Hand Hygiene	4185
Personal Protective Equipment for different settings	4596

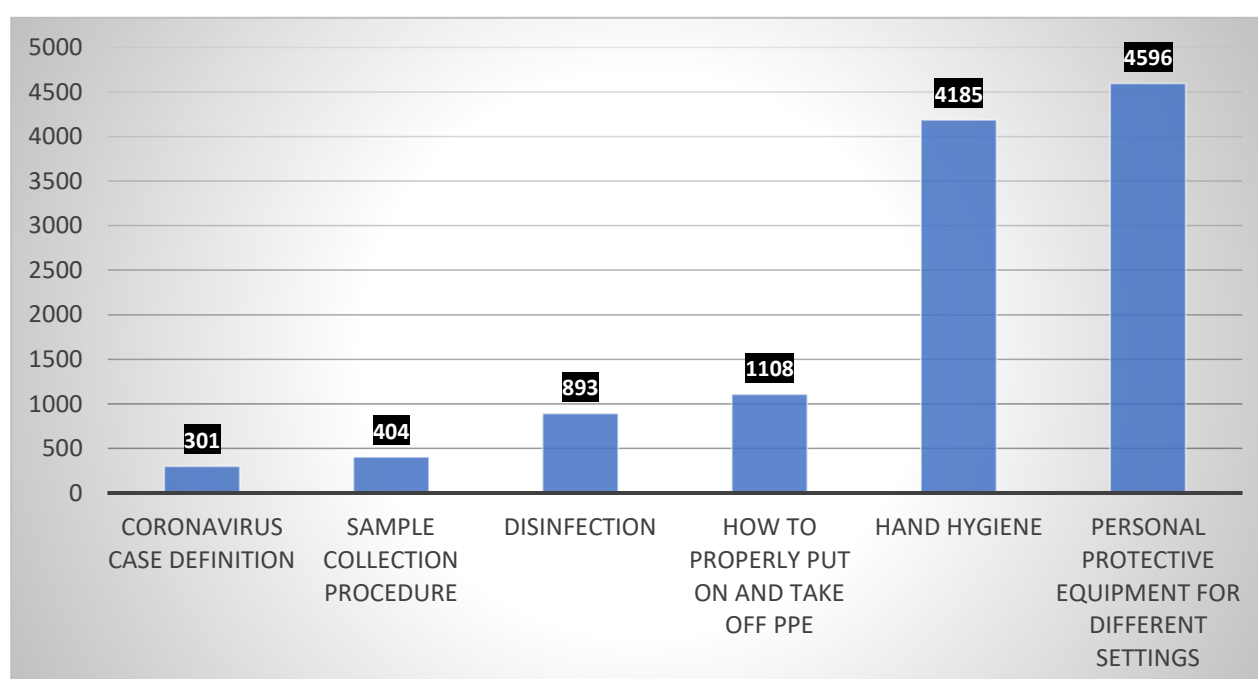


Figure 5⁹

What does the figure tells us:

- Majority of the health workers chose to get the information related to the Personal protective Equipment
- A very small amount of workers selected coronavirus case definition information

⁹ Figure 5 last updated on 20 May, 2020

VI. DISTRESS MESSAGES

Table 5

Text	Frequency
Ration	8
Forwarded messages	43
Help required	158
COVID-19 related information	281

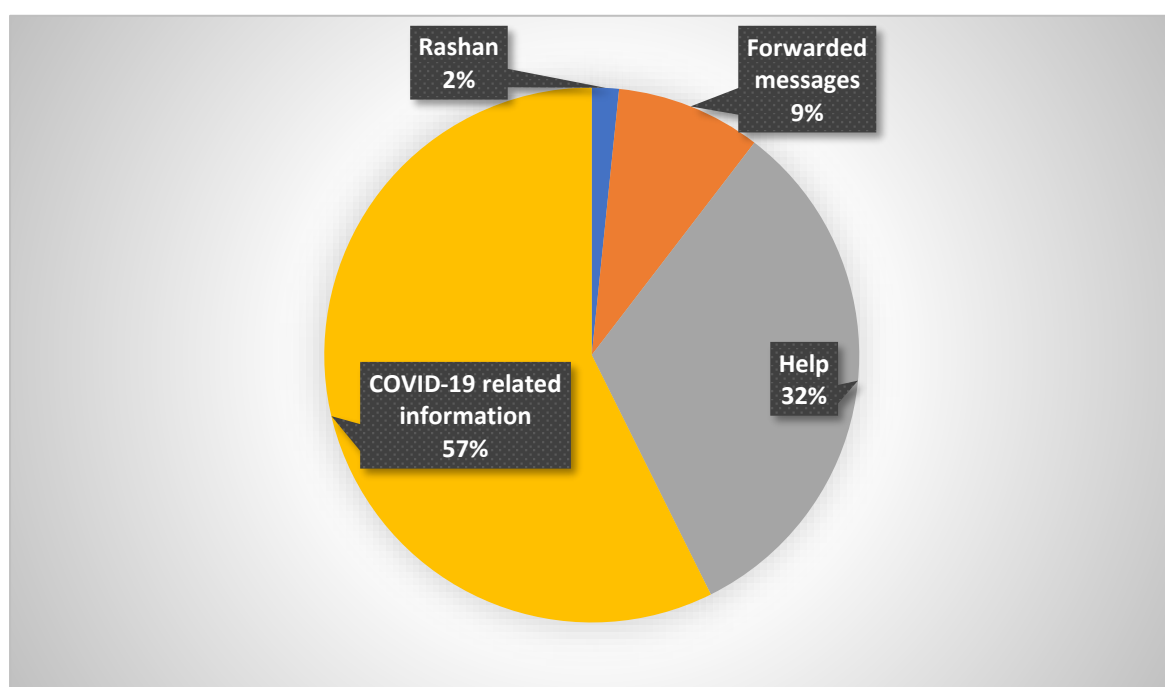


Figure 6¹⁰

What does the figure tells us:

- This figure tells us that apart from the information given on the chatbot, the citizens still preferred to know information regarding the signs and symptoms, update of cases among others
- Messages asking for any kind of help including movement from one state to another and information about ration distribution
- The distress messages includes all the messages the citizens wrote to us regarding their problem and situation

¹⁰ Figure 6 last updated on 20 May, 2020

VII. RESPONSES FROM EXPECTANT MOTHERS

Table 6

Text	Frequency
Expectant mothers who reached out to us	268
Follow-ups done	167

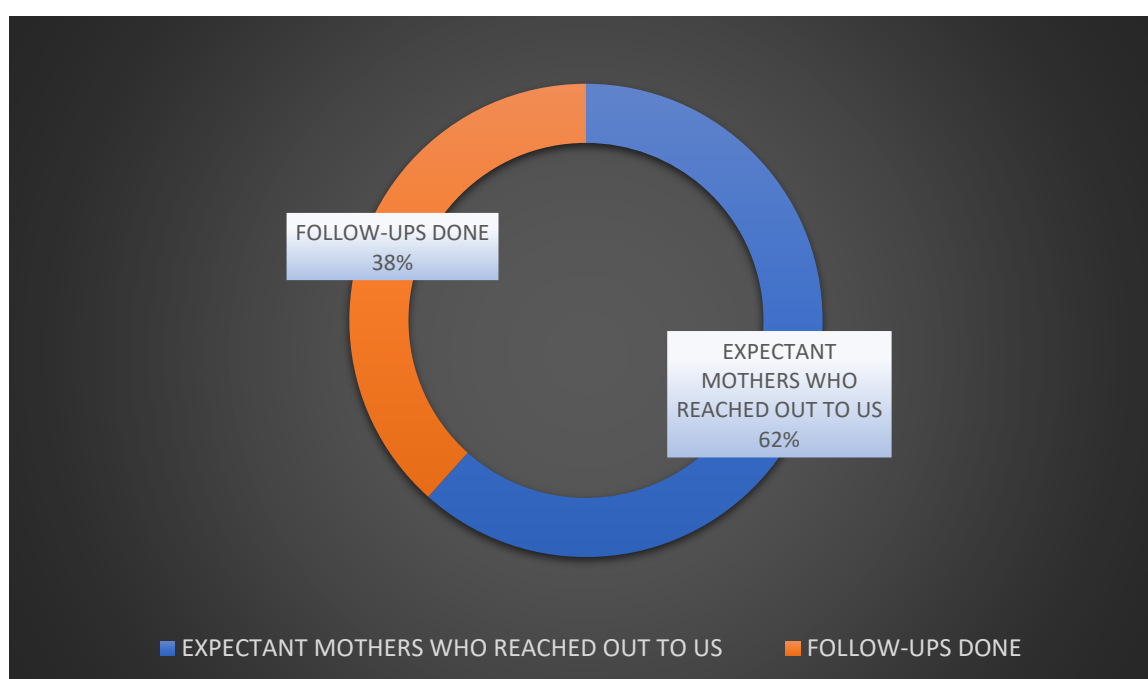


Figure 7¹¹

What does the figure tells us:

- This graph tells us that very few mothers have contacted us via WhatsApp Chatbot
- Out of all the mothers who contacted, till date we have taken a follow up of 38% of them
- Follow up is being taken via manual calls to the beneficiary and gathering data related to their health and pregnancy

¹¹ Figure 7 last updated on 20 May, 2020

DISCUSSION

➤ WhatsApp chatbot impact:

- WhatsApp Chatbot has provided assistance to more than 2 lakh people of Rajasthan in this pandemic in one or the other way.
- More than 160 expectant mothers have been contacted and followed up with to ensure that their health is being tracked
- Now the people can also share information about the vulnerable population which includes infants of less than 1 year of age, pregnant women, people more than 75 years of age and any person suffering from comorbidities and illnesses.
- Since people shared their problems with us earlier, a new option where people can simply send us their queries or problems have been added in the chatbot
- The people who shared their symptoms with us were also followed up via an agent WhatsApp system where we directly communicated with the people regarding their condition and provided necessary help to them

CONCLUSION

➤ The WhatsApp chatbot provides the users with all the necessary information during this pandemic.

- The citizens get the information related to the pandemic such as number of cases, latest policy updates by the government, nearest health centres, etc.
- Health workers can access the information related to hand hygiene, PPE use, among others.
- For expectant mothers, a system has been developed under which information regarding the mothers health, due for delivery date are asked after which manual calls are done for keeping a track of the mothers health

➤ Some suggestions might include:

- The chatbot should be advertised by the government more so that more people learn about this initiative and use the chatbot in this pandemic
- Maternal health initiate, i.e., the form for expectant mothers should be made available to the women in rural areas who might not be able to get proper service for her delivery due to lack of information
- People should be encouraged to reach out to us and tell us in case they may be having symptoms so that assistance can be provided to them on time
- WhatsApp chatbot can be used as a tool to disseminate all COVID-19 related information in the state of Rajasthan

SUPPLEMENTARY

A. Study Tool: WhatsApp Chatbot

B. Bibliography

WHATSAPP CHATBOT: THE TOOL



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