

# Use of Chatbot for Addressing Adolescent's Queries on Sexual and Reproductive Health-related Issues – Findings from a Field Implementation in Madhya Pradesh, India

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## ABSTRACT

As per the Census of 2011, adolescent and young people (10–24 years of age) constitute around 30% of the India's population. Young people face number of challenges in accessing information on sexual and reproductive health (SRH) due to associated taboos. To address these challenges, an initiative was launched to provide life skill-based education to the adolescent across 120 villages in two districts of Madhya Pradesh. After the program implementation for a year, it was observed that adolescents were not comfortable during the SRH sessions. Hence, after discussion with adolescents a chatbot was designed and launched. The chatbot had access to more than 9000 question and answers including audio and video materials. After 6 months, a brief assessment was undertaken with 2047 adolescent (boys - 1186 and girls - 861) to assess its relevance and usefulness. The concept of chatbot was appreciated by 93% of the respondents and they prefer it instead of having face-to-face conversation with counselor or health-care providers. About 90% respondents appreciated the fact that it is easily accessible, 87% respondents appreciated that it has comprehensive information and 86% respondents found chat messages appropriate. About 24% respondents were worried that as their family members may see their chats. About 38% respondents also expressed the need of making it multilingual and support some regional languages. Chatbot can be very powerful medium to address adolescent's queries on SRH-related issues as it is easily accessible, and adolescent feel more comfortable. At the same time, it needs to be backed with quality service provision.

**Keywords:** Adolescent health, Adolescent, Chatbot, Sexual and reproductive health

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## INTRODUCTION

As per the India's 2011 census, young people (10–24 years) constitute nearly one-third (365 million, 30.1%) of the population.<sup>[1]</sup> It is increasingly recognized that achievement of the sustainable development goals and realization of demographic dividend depend on the well-being and empowerment of the young people. Country has made good strides in improving the health and education status among adolescents and young people. The proportion of young people who had completed education till class 10<sup>th</sup> increased from 42% to 62% among boys and from 32% to 54% among girls between 2005–2006 and 2015–2016 and in the same period, the percentage of 20–24 years old women who were married before the age of 18 years declined from 47% to 27%.<sup>[2]</sup> Nonetheless, vulnerabilities persist and many challenges exist that limit the young people's ability to make informed choices and exercise their agency, especially in the area of sexual and reproductive health (SRH).

These challenges are reflected in terms of limited progress on some of the indicators related to SRH. Unmet need for family planning (FP) services remains substantial and 22% of currently married girls (15–19 year) reported an unmet need for FP.<sup>[2]</sup> Besides that, while there has been increase in number of young people engaged in premarital sex, just 32% of young men and 22% of young women aged 15–24 had comprehensive knowledge of HIV/AIDS.<sup>[2]</sup> Although the need of comprehensive sexuality education (CSE) and SRH services for young people is well recognized, due to opposition from different groups and associated taboos, young people face numerous barriers in accessing SRH-related information and services which makes them vulnerable to HIV, sexually transmitted infections (STIs), and unplanned pregnancies.<sup>[3]</sup>

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## BACKGROUND OF THE INITIATIVE

Madhya Pradesh is the second largest state in India in terms of geographical area.<sup>[1]</sup> Around 28% population of the state resides in urban areas and rest 72% population lives in rural areas.<sup>[1]</sup> In the state, young people especially young girls faced numerous challenges in accessing SRH services. Among married women (15–19 years), unmet need for FP services was 248% and only 9.1% married women (15–19 years) had knowledge of any FP methods.<sup>[2]</sup> Child marriage is also quite prevalent in the state and 32.4% women aged 20–24 years were married before the age of 18 years and 31.2% men aged 25–29 years were married before the age 21 of years.<sup>[2]</sup> Furthermore, knowledge on mensuration and use of hygienic method were quite low and in the age group of 15–19 years, only 37.4% girls were using the using a hygienic method during mensuration and in the rural areas, it was only

26.4%.<sup>[2]</sup> Considering that large scale surveys done by Government do not capture information about utilization of SRH services among unmarried young people, there is lack of data regarding their awareness and needs.<sup>[4]</sup> However, surveys done by other organizations in different parts of the country show that there is lack of awareness among the youth on SRH-related issues.<sup>[5]</sup>

To create awareness among adolescent and young people on health including SRH, the NGO Madhya Pradesh Gramin Vikas Mandal started an initiative to provide life-skill based education to the adolescent across 120 villages in two districts of Madhya Pradesh, that is, Balaghat and Mandla. As part of the initiative, 120 adolescent clubs were formed at the village level in these two districts and adolescents were provided life skill focused learning on reproductive and sexual health issues in a gender sensitive manner. In each club, four peer educators (PEs) were selected (two girls and two boys) to transact the curriculum. These PEs were provided training, resource materials, and mentoring support. PEs conducted regular meetings of adolescent clubs and transacted the life skill-based learning with the support of resource materials provided to them. While the most of the meetings were mixed-sex sessions, sensitive topics (menstruation, nocturnal emission etc.) were discussed in single sex groups. The initiative was implemented from April 2018 to March 2019. During the program implementation, it was observed that while adolescents were actively participating in the sessions focusing on life skills, nutrition, and careers, during the sessions related to SRH, mensuration their participation declined sharply. The PEs, despite mentoring and support, do not feel comfortable in transacting the curriculum on these sensitive topics.

While working with the adolescent, it was observed that the majority of the adolescent had access to internet, either on their phones or through the phones of their friends and family members. Hence, it was explored as potential medium to provide correct information on sensitive topics. A discussion was undertaken with adolescent to understand their needs, concerns, and expectations from the phone-based solution. Based on the discussions, a chatbot was developed and it was hosted on Facebook messenger platform. Initially, the chatbot was field tested with a smaller group of 60 adolescents (30 boys and 30 girls). Further chatbot was improved and was provided access to more than 9000 question and answers including audio and video materials. In July 2019, chatbot was rolled-out primarily for adolescent in the age group of 15–19 years. In January 2020, a survey was undertaken to understand adolescent's perspective about the chatbot.

### Role of Internet, Artificial Intelligence in Providing Information on SRH Services

Providing CSE/information on SRH has remained a challenging task specially in developing countries like India.<sup>[5]</sup> With growth in mobile and internet services along with reduction in associated cost, several solutions were developed focused on using technology and internet for providing information on SRH to different population groups.<sup>[6]</sup> Although quality and correctness of the information, at times remains questionable, such solutions/platforms have emerged as preferred medium for the young people. It can be very useful, in providing information on sensitive issues like SRH especially in countries India where with high load and vacancies in public health system, it is difficult to ensure privacy and comfortable environment for young people in health facilities.<sup>[6]</sup> The growth in the area of artificial intelligence has

facilitated the development of conversational agents like Chatbots which are able to access to access large amount of data and resource materials and are able to address the queries of user in real time while giving an experience closer to real world without associated challenges like concerns related to privacy.<sup>[7]</sup> At the same time, use of information shared on internet for bullying, blackmailing, online violence, and leaking of personal data requires the safeguards to protect the right and information of young people.<sup>[8]</sup>

### COVID-19 and Need to Expedite the Utilization of Technology

COVID-19 outbreak along with restrictions to control the pandemic has disrupted the provision of SRH services across the work. United Nations Population Fund has estimated that the epidemic may contribute up to 7 million additional unwanted pregnancies along with thousands of deaths from illegal abortions and birth complications due to disruptions in access to health services.<sup>[9]</sup> It was estimated that lockdown imposed by Government of India to control COVID-19 may lead to an additional 2.3 million unintended pregnancies and over 8,00,000 illegal abortions.<sup>[10]</sup> These restrictions further increased the challenges for adolescent and young people in accessing SRH-related information and services. Increased use of technology like chatbots can play crucial in ensuring provision of information on SRH and linking them with the nearest service provider.

## RESULTS AND DISCUSSION

### Utilization of Chatbot

Table 1 shows the utilization of chatbot by adolescent. The initiative to provide life skill-based education was reaching to total 5273 adolescents in the age group of 10–19 years. Two thousand seven hundred and thirty-eight adolescents were in the age group of 15–19 years, and with them information about chatbot was shared and also demonstration was given during the adolescent group meeting. Out of the adolescent covered, 2047 adolescent participated (boys - 1186 and girls - 861) in the brief assessment.

Among the adolescent group members, boys were better educated than the girls and while 71% of the boys studied till class 10<sup>th</sup> or higher, only 28% of the girls achieved similar level of education. One of the key reasons for the same was patriarchal nature of society and gender-based discrimination. The gap in

**Table 1:** Utilization of chatbot among adolescents

Indicators	Boys		Girls		Total	
	N	%	n	%	n	%
Education status						
5 <sup>th</sup> class or less	71	6	146	17	218	11
6 <sup>th</sup> –8 <sup>th</sup> class	273	23	474	55	746	36
10 <sup>th</sup> class or more	842	71	241	28	1083	53
Frequency of utilization						
Once in 6 months	59	5	69	8	128	6
2–5 times in 6 months	154	13	189	22	344	17
2–3 times in a month	546	46	319	37	864	42
4–5 months in a month or more	380	32	164	19	543	27
Access to chatbot						
Own phone	535	47	155	21	691	37
Parent's phone	216	19	96	13	313	17
Elder sibling's phone	159	14	215	29	374	20
Friend's phone	194	17	237	32	431	23
Others	71	4	34	3	37	5

**Table 2:** Feedback of the adolescent on chatbot

Indicators	Boys		Girls		Total	
	n	%	n	%	n	%
Accessibility	1070	94	615	83	1685	90
Relevant information	1047	92	585	79	1632	87
Appropriate message	1047	92	563	76	1610	86
Preferred over face to face	1082	95	674	91	1755	93

education also reflected in the gaps in utilization of chatbot. While 96% of the boys accessed chatbot at least once during the 6-month period, similar percentage for the girls was 86%. Furthermore, higher proportion of boys (78%) accessed the chatbots multiple times in a month than the girls (56%). One reason for the variation in utilization of chatbot utilization was also difference in ownership and access to mobile and internet. While around one in two boys owned a smartphone (47%), only one in five girls had owned the smartphone (21%).

### Feedback on the Chatbot

Table 2 shows the feedback provided by respondents on the chatbot. Out of the 2047 adolescent, who participated in the assessment, 1879 adolescent (92%) has accessed the chatbot at least once during the 6-month period.

The chatbot was appreciated by 93% of the respondents (95% – boys and 91% – girls) and they preferred it over having face-to-face conversation with counselor or health-care providers for information on SRH- and menstruation-related issues. 90% respondents appreciated that it is easily accessible (94% – boys and 83% – girls), 87% respondents (92% – boys and 79% – girls) appreciated that it provided relevant information and 86% respondents (92%– boys and 76% – girls) found chat messages were appropriate.

In terms of the preference for the content (multiple response was provided; hence, total percentage was more than 100%), 83% girls like information related to menstruation, 76% like the information related to change in body, and 72% girls liked the information on the FP methods and preventing STIs. Among boys, 79% respondents liked the information related to myths and misconceptions related to SRH and 77% boys preferred the information on FP methods and preventing STIs.

### Concerns among the Adolescent in Accessing Chatbots

About 24% respondents were also worried that as their family members may see their chats. The percentage was much higher among the girls at 42%, in comparison of 13% among the boys. About 26% girls also shared that they face some restrictions from their parents in using mobile and internet, while only 11% boys faced restrictions from their parents. This also highlights increased restrictions and challenges faced by girls in accessing the mobile

and internet. About 38% respondents also expressed the need of making it multilingual and support some regional languages like Marathi. A major concern among the adolescent was lack of access to stigma free SRH services. In absence of availability of quality SRH services with privacy, awareness generation will be of limited benefit for the adolescent.

### CONCLUSION

Chatbot can be very powerful medium to address adolescent's queries on SRH and other sensitive issues as it is easily accessible and adolescent feel more comfortable. At the same time, it needs to be backed with quality service provision. There is also need to create enabling environment for adolescent to avail services like condoms from health facilities. Besides that, not all adolescent has access to internet and appropriate strategies need to be developed for reaching such adolescent. There is also need to develop and implement strong safeguards to protect the data and confidentiality of the users of digital technologies.

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