



Original Research Article

COVID 19 pandemic and behavioural change toward water hygiene and sanitation (WASH): A study in rural Odisha, India

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ABSTRACT

Background: COVID-19 Pandemic is not the first-ever pandemic which hit this globe, but it is the deadliest and possesses enough capability to shake the so-called developed global system. Additionally, the SARS-CoV-2 virus has been detected in feces of infected individuals, leading to the possibility that fecal-oral transmission could also play a role in virus transmission, particularly in low- and middle-income countries (LMICs) with high rates of open defecation, ineffective fecal sludge management, and poor access to safe drinking water. So people's behaviour towards WASH is very important at this time.

Materials and Methods: This study was done in two rural districts of Odisha, i.e. Sambalpur and Mayurbhanj. The district, blocks, villages were selected with simple random sampling. A sample size of 50 was taken through telephonic interviews.

Results: This study was done to understand the real life scenario of rural Odisha and how COVID 19 pandemic shape their behaviour toward the water hygiene and sanitation. So the research was designed in such a manner so that it can capture the important dimensions of WASH. The sample size includes a non-homogeneous group which represents the rural population in terms of social, economic, educational and gender perspectives. During the S1 situation if the source of drinking water is taken into consideration people were using those sources from many years and after lot of efforts from the government side people never changed their behaviour, people's perspective on water treatment and hand washing were so strong that there was 32 percent people who never used to wash their hands they don't even think it was important (38% people. At least 34 percent people used to thought there was no need of treating water before drinking when 46 percent of the sample population was using the open water source. But these scenarios changed after they lose their hope on their own immunity during the S2 situation. The numbers of washing hands increase, people started using soap and the perspective towards the water treatment also changed towards a positive aspect.

Conclusion: This study clearly finds that 3As (Availability, Accessibility and Affordability) is not enough for behavioural change towards WASH but it needs 4As (Availability, Accessibility, Affordability and Accountability) and II (Intension). Because until people understand that they are accountable for their own vulnerability they will not able to think about the behavioural change and without their intension they cannot start the process.

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1. Introduction

A novel coronavirus, formerly called SARS-CoV-2 by ICTV (severe acute respiratory syndrome coronavirus 2, by the International Committee on Taxonomy of Viruses)

caused an outbreak of typical pneumonia, now officially called as COVID-19 by WHO (coronavirus disease 2019, by World Health Organization) first in Wuhan, of China (Lai et al., 2019).¹ COVID-19 Pandemic is not the first-ever pandemic which hit this globe, but it is the deadliest and possesses enough capability to shake the so-called

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developed global system. Due to this pandemic, a huge portion of the world population is now in danger. On one hand, there is a high risk to get infected by this deadly virus on the other hand the loop of poverty and unemployment chocking the neck of the common masses. As of June 2021, the WHO reports the disease has already caused over 3.8 million deaths globally (WHO, 2021).² Many preventive measures have been promoted in the country including a Nationwide lockdown. The particular emphasis on avoiding large crowds and social distancing from others, wearing a face mask around others, frequent hand washing with soap, and avoiding touching one's face (WHO, 2020).^{3,4}

Additionally, the SARS-CoV-2 virus has been detected in feces of infected individuals, leading to the possibility that fecal-oral transmission could also play a role in virus transmission, particularly in low- and middle-income countries (LMICs) with high rates of open defecation, ineffective fecal sludge management, and poor access to safe drinking water (Pandey, et al., 2021 & Bauza et al., 2021).^{5,6} In addition (Huraimel et al., 2020 & Aboubakr et al., 2021)^{7,8} stated that diarrheal symptoms have been found in some individuals infected with COVID-19. SARS-CoV-2 may have higher stability and longer survival times in diarrheal stools, which could increase the risk of environmental transmission along potential fecal-oral routes. So it is quite clear that COVID-19 may not be a water-borne disease but poor access to water, sanitation, and hygiene (WASH) can increase the risk of infection. On this WHO highlighted the importance of safe management of human feces and treatment of drinking water as precautions against COVID-19 in their interim guidance related to WASH and COVID-19 (WHO, 2020 & Bauza et al., 2021).^{3,5}

The main objective of the research was to identify the changes among people's perspectives about the WASH behaviours after one year of the COVID-19 pandemic hit the country. The research was done in the rural parts of Odisha. WASH behavioural changes were identified and compared with baseline data collected at the same time. The open and closed-ended questions were used to assess the behavioural change among the community. The findings of the research will help to build a better understanding of the people's perspective over WASH in the before and after COVID 19 world.

2. Materials and Methods

This study was done in two rural districts of Odisha, i.e. Sambalpur and Mayurbhanj. The district, blocks, villages were selected with simple random sampling. A sample size of 50 was taken through telephonic interviews. According to (Tripathy, 2020)⁹ telephonic interview is a successful tool for data collection during the pandemic to avoid the infection, the protocols and guidelines used was followed as mentioned by (Tripathy, 2020).⁹ The Sample respondents

were randomly selected from the list of mobile numbers provided by the local resource persons of the respective districts. Before the collection of the data proper consent was taken from the respondents and it was promised that their personal details will not be shared with anyone else.

For the collection of data, a semi-structured questioner was created, to understand its efficiency of collecting the right information a pre-test was done with 8 samples which are not included in the final sample size. Later with the findings of the pre-test the questioner was updated. Data analysis was done with the basic quantities techniques. To understand the situation in depth few FGDs were also conducted online with the people who have access to technology.

3. Results and Discussion

A total of 50 respondents were interviewed for the research which represents the mixed population of the state in terms of age, sex, occupation, income, and educational level. The respondents are from 16 different villages which are part of 13 different blocks of the two districts viz. Sambalpur and Mayurbhanj.

3.1. Demographic profile of the respondents

Among all 56 percent of respondents are male and 44 percent of respondents are female. All of them are from diverse age groups. The minimum and maximum value of the age is 17 and 87, 34 is the average age of the sample population. The classified age groups are 0-20 years, 21-40 years, 41-60 years, 61-80 years, and 81-100 years which contain a sample population of 8 percent, 56 percent, 26 percent, 8 percent, and 2 percent respectively. Among the sample population, 60 percent are married and 40 percent are unmarried. The educational background of the sample population is also classified into six categories i.e. primary education (22%), secondary education (16%), higher secondary education (24%), graduate (16%), postgraduate (20%), and other (2%).

Among the sample population, 4 percent belongs to the banker's community, 2 percent is carpenter, 2 percent is driver, 22 percent is farmer, 4 percent is government employees, 16 percent are housewife, 10 percent is labour, 10 percent is engaged into a private-sector job, 6 percent is self-employed, 2 percent is shopkeeper and 11 percent are a student.

The average annual income of the sample population is below Rs.50000. There 44 percent such respondent who can earn less than Rs.50000 a year, 28 percent of the respondents can earn between Rs.50001-100000 a year, there is 8 percent of the sample population can earn in between Rs.100001-150000 and Rs.150001-200000 a year. Only 12 percent of the population can earn more than Rs.200000 a year.

Among the samples, 34 percent of the respondents were infected with COVID 19 and recovered, among them, 94 percent of people did the COVID 19 test at government hospitals, and only 6 percent people did it at private hospitals.

3.2. WASH behavioural change

Universal, affordable and sustainable access to WASH is a key community health issue within international development and is the focus of the first two targets of Sustainable Development Goal 6 (SDG 6). In Odisha where around 83 percent of people stay in the rural area with very low access to medical facilities WASH is very important to lead a better life for them. It is not always true that people do not have access to better water sources or sanitation facility or hygiene practices but sometimes the behavioural pattern of people stops them to be changed towards a healthy lifestyle. According to (Khan and Tripathy, 2022)¹⁰ Human behavior is one of the unpredictable things in the world. But if it can be shaped in a well-defined manner it can solve a lot of problems in the world. It is not a very easy task. Understanding the pain points of the public mind and using them for the benefit of society as well as individuals is a very sensitive skill. It may take few minutes to several years to change human behavior, depending on people. But the fear of death can change any behavior among the people. This COVID 19 pandemic proved that only maintenance of proper hygiene and sanitation practices can keep people safe than anything else present in the globe. In this study, we find such interesting facts which show if the community wants they can change their behavior and lead a healthy lifestyle.

3.3. Source of drinking water

Table 1: Source of drinking water people usually use before and after COVID 19 pandemic

Source of Drinking water	S1 (%)	S2 (%)
Bore Well	44	80
Open Well	26	8
Pond	18	0
River	2	0
Treated water supply	10	12

From the collected samples of rural Odisha, we found that before this COVID 19 pandemic people rarely thought about the safe source of the drinking water. We can see in the Table 1 in the case of S1 there are 26 percent people who use the open well water for drinking, 18 percent people use pond water for drinking, and 2 percent people used to drink water from the rivers but in the case of S2 people stopped drinking water from river and ponds the percentage of people who used to drink water from the open well is also drastically reduced to 8 percent. On the other hand, the percentage of people drinking water of bore well increased to 80 percent

compared to S1 which was 44 percent. There is also an increase of 2 percent for the treated supply water from the previous S1 situation. From this, it is very clear that people are slowly shifting toward safer drinking water sources and trying to avoid the open waters. When few respondents were asked in an organised FGD they stated: “prevention is better than cure. In this tough time we do not want to take any type of risk so we are shifting towards the safer source of water”.

3.4. Importance of treating water and washing hand with soap

Table 2 is clearly defining the change in people’s perspective and behaviours towards water treatment and handwashing. If we observe during S1 36 percent people used to think that sieving water after collecting from the source and before drinking is not at all important whereas in the Table 1 it was clear that during S1 there is 46 (26+18+2) percent people use to collect and drink water from the open-source i.e. open wells, ponds, and rivers. During S1 only 50 (20+14+16) percent of people thought that it is important. But these numbers changed during the S2 situation, where 92 (14+34+44) percent of people think it is important and do sieve their water before drinking though most of them shifted to a safer source of water. In the case of boiling the situation was worse than sieving during the S1 situation only 46 (18+10+18) percent of people used to though that boiling water before drinking is important. But later on during the S2 situation people started to understand the value of boiling water when a few of their relatives and neighbours or themselves got the infection of COVID 19 the percentage of people now think boiling water before drinking is important are 94 (14+14+66). During S 1 situation there was 38 percent population who used to think that using soap is not at all important for washing hands. But after this COVID 19 pandemic arrived the number became only 2 percent of the sample population. And 98 (2+30+66) percent of people understood that using soap is important and they started to wash their hand with soaps.

In Table 3 it can be observed that during the S1 situation there was 32 percent of people who not even wash their hand once in a day. 14 percent people did washing hand only once 12 percent people twice, 24 percent people thrice, only 8 and 10 percent people did it four to five times a day. After this pandemic came later on people understand that washing hands is the only way to survive in this tough time and only 2 percent people remain in the no hand wash section and 84(32+52) percent of people started wash their hand 4 to 5 times a day.

In the Table 4 it can be observed that there was 48 percent people who do not used to wash their legs and hands after returning home from outside and 26 percent people used to wash sometimes during S1 situation. After S2 situation arrives people became very aware about these things and 92 percent population started to wash their hands and legs after

Table 2: People’s perception on the importance of water treatment and handwashing before and after the COVID 19 pandemic

Operations	S1					S2				
	P1 (%)	P2 (%)	P3 (%)	P4 (%)	P5 (%)	P1 (%)	P2 (%)	P3 (%)	P4 (%)	P5 (%)
Sieving water before drinking	36	14	20	14	16	2	6	14	34	44
Boiling water before drinking	34	20	18	10	18	2	4	14	14	66
Washing hand with soap	38	14	10	22	16	2	0	2	30	66

Note: S1 – Before COVID 19 Pandemic, S2 – After COVID 19 Pandemic, P1 – Not at all important, P2 –Slightly important, P3- Important, P4- Fairly important, P5- Very important.

Table 3: Frequency of people washing hand with soap before and after COVID 19 pandemic

Situation	Numbers of hand wash					
	0 (%)	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)
S1	32	14	12	24	8	10
S2	2	0	4	10	32	52

Note: S1 – Before COVID 19 Pandemic, S2 – After COVID 19 Pandemic

they come back from outside. Not only this there were 36 percent people who used to bite their nails during the S1 situation but now only 2% people have that habit.

3.5. Place of bathing and defecation

Table 5 is the clear representation of people’s behaviour of bathing before and after COVID 19 pandemic. During the S1 situation, there was 46 percent people who use to take bath at pond which is an open and common source of bathing. Where they had a higher risk of infection and spread of several diseases. But after this COVID 19 Pandemic people started to move toward the solo bathing practice like near the open well, or tube well or bore well (10%, 24%, 6%) and the percentage of people take bath in the pond reduced to 8 percent. There is a slight increase of 2 percent in the category of people who take bath in personal bathrooms. Not only this there were 48 percent people who used to defecate in the open ground earlier. But now the number reduced to only 20 percent. When they were asked how the behaviour of people changed people replied that “The continuous campaign by the ASHA workers and village health workers made us aware about that very earlier, but people started to change when they understand they are increasing the life risk of themselves by doing this. After the death of few villagers many people voluntary stop defecating outside.

This study was done to understand the real life scenario of rural Odisha and how COVID 19 pandemic shape their behaviour toward the water hygiene and sanitation. So the research was designed in such a manner so that it can capture the important dimensions of WASH. The sample size includes a non-homogeneous group which represents the rural population in terms of social, economic, educational and gender perspectives. During the S1 situation

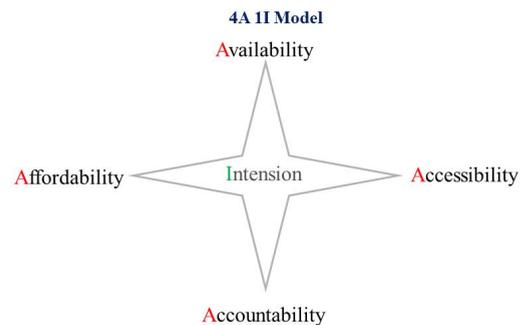


Fig. 1: 4 A 1I Model

if the source of drinking water is taken into consideration people were using those sources from many years and after lot of efforts from the government side people never changed their behaviour, people’s perspective on water treatment and hand washing were so strong that there was 32 percent people who never used to wash their hands (Table 3) they don’t even think it was important (38 % people – Table 2). At least 34 percent people used to thought there was no need of treating water before drinking (Table 2) when 46 percent of the sample population was using the open water source (Table 1). But these scenarios changed after they lose their hope on their own immunity during the S2 situation. The numbers of washing hands increase, people started using soap and the perspective towards the water treatment also changed towards a positive aspect

4. Conclusion

Human behaviour is one of the unpredictable things in the world. But if it can be shaped in a well-defined manner

Table 4: Details of washing hands and legs after returning home from out side

Responses	S1 (%)	S2 (%)
Yes	26	92
No	48	8
Maybe	26	0

Note: S1 – Before COVID 19 pandemic, S2 – After COVID 19 pandemic

Table 5: Details of place for bathing before and after COVID 19 pandemic

Place of bathing	S1 (%)	S2 (%)
Bathroom	48	52
Bore well	0	6
Open Well	6	10
Pond	46	8
Tube well	0	24

it can solve a lot of problems in the world. It is not a very easy task. Understanding the pain points of the public mind and using them for the benefit of society as well as individuals is a very sensitive skill. It may take few minutes to several years to change human behaviour, depending on people. But a regular maintaining of the habit is very important to achieve the level of termination. In this study it was found very phenomenon that the COVID 19 pandemic changed the people's perspective towards WASH and provoke them to change their behaviour. The amenities and sources were there may be some had easy access of it and some did not, but still, people did not want to change their behaviour. Their perspective towards their choice was so strong that they did not get any scope to re think on it until it came on their lives. When people lose their hope in their immunity and started to feel the suffering they changed their mood and rethink it. When they rethink they understood that they are accountable for their vulnerable situation and they change their behaviour. This study clearly finds that 3As (Availability, Accessibility and Affordability) is not enough for behavioural change towards WASH but it needs 4 As (Availability, Accessibility, Affordability and Accountability) and II (Intension). Because until people understand that they are accountable for their own vulnerability they will not able to think about the behavioural change and without their intension they cannot start the process.

5. Source of Funding

None.

6. Conflict of Interest

The authors declare that there is no conflict of interest.

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