



ASSESSMENT OF KNOWLEDGE AND PRACTICE OF PERSONAL HYGIENE AND SANITATION AND ITS RELEVANCE IN CURRENT COVID 19 PANDEMIC SITUATION: A STUDY AMONG ANTE-NATAL MOTHERS IN A TERTIARY HOSPITAL OF WEST BENGAL

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ABSTRACT

Background: A woman is more susceptible to infections during pregnancy. Unhygienic practices during this period may lead to infectious diseases like COVID-19, gingivitis, pyelonephritis; adverse obstetric outcomes like prematurity and low birth weight. Among these, COVID 19 deserves special mention in present world scenario. With immunocompromised status and physiological adaptive changes during pregnancy, pregnant women could be more susceptible to COVID-19 and other infections than the general population. The provision of safe water, sanitation, waste management and hygiene practices are imperative to limit the transmission of infection and protection of health during this pandemic. Thus it is imperative that personal hygiene and sanitation are maintained by antenatal mothers so as to prevent maternal and neonatal morbidity and mortality.

Objectives: To determine the knowledge and existing practice of personal hygiene and sanitation among the antenatal mothers in a tertiary hospital of Kolkata.

Method: A cross-sectional study was performed in a tertiary hospital in Kolkata where 120 antenatal mothers visiting the OPD and 50 antenatal mothers admitted in the Obstetrics ward during the study period were selected for the study by consecutive sampling and complete enumeration, respectively. Data was collected from the chosen antenatal mothers with the help of a pre-designed pre-tested questionnaire and then analysed by suitable descriptive and analytical statistical methods.

Results: Among 170 antenatal mothers, majority (98.2%) were housewives; 41.8% were between 25-30 years of age and 63.5% of them were primigravida. The study revealed that majority of the interviewed antenatal mothers (75.9%) cleaned their teeth twice daily and 72.4% bathed once in a day. About 44.7% cleaned their genital area twice daily. Most of them (83.5%) washed their nipples with soap and water among which 70.4% stated that this is important to protect the newborn from any infection during the lactation period by keeping their nipples clean. Majority 99.4% washed their hands before eating and after using the toilet. 75.9% had no idea about the 6 steps of hand washing. 37.7% used domestic filter as their source of drinking water. The use of community toilets was still in practice among a few (7.1%). Majority (44.7%) opined that use of toilet is necessary to prevent access of animals and flies to the urine and faecal matter.

Conclusion: In this study, it was found most of the mothers had adequate knowledge as well as practices regarding personal hygiene and sanitation.

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INTRODUCTION

Worldwide, 1.1 billion People live without clean water and 2.6 billion people lack adequate sanitation (2002, WHO/UNICEF 2004). Water-related diseases do have specific impacts on maternal health and pregnancy outcomes. Good hygiene is an important barrier to many infectious diseases, including the faeco-oral diseases, and it promotes better health and well-being. 216 Countries and Territories around the world have reported a total of 143,445,675 confirmed cases of the coronavirus COVID-19 that originated from Wuhan, China, and a death toll of 3,051,736 deaths including 16.3 Million cases and 187,000 deaths in India as on 22nd April 2021.

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COVID-19 patients can shed the virus in faeces for days after all respiratory symptoms have disappeared (Wu *et al.*, 2020).¹ To achieve the greatest health benefits, improvements in hygiene should be made concurrently with improvements in the water supply and sanitation and be integrated with other interventions, such as improving nutrition and increasing incomes. One of the most important contributions we can make to slowing down transmission of infectious diseases like COVID-19 and keeping ourselves and our community's safe is to wash our hands. This is the main message of World Water Day 2020 on 22 March, and everyone has a role to play. Safely managed water, sanitation, and hygiene (WASH) services are an essential part of preventing and protecting human health during infectious disease outbreaks, including the current pandemic caused by SARS CoV 2.

Under laboratory controlled conditions, the median half-life of infectious SARS-CoV-2 on surfaces is 1-7 hours depending on the surface (copper being the shortest and plastic the greatest). However, infectious virus can be detected as long as 7 days. With regards to drinking water sources, treated or untreated, the presence of infectious virus though possible has not been detected yet. Infectious SARS-CoV 2 has not been detected in treated or untreated sewage but viral RNA fragments have been found in untreated sewage and sludge in various countries and municipalities. Faeces pose as a potential risk towards transmission of SARS CoV 2. It is suggested that transmission via faeces is possible especially under conditions where faeces become aerosolised but there is little evidence available to validate this.²

Good WASH and waste management practices, that are consistently applied, serve as barriers to human-to-human transmission of the COVID-19 virus and other water born viral and bacterial diseases in homes, communities, health care facilities, schools, and other public spaces. One of the most cost-effective strategies for increasing pandemic preparedness, especially in resource-constrained settings, is investing in core public health infrastructure, including water and sanitation systems.

Antenatal period is a vital period in a woman's life. Maintenance of personal hygiene during this period is of utmost importance as pregnancy is often associated with increased susceptibility to infections. This may be due to the physiological, anatomical and biochemical changes that occur in the body of antenatal mothers particularly the increase in hormonal levels, suppression of the immune system and may also account for the increase in the excretion of sweat, mucous, urine, saliva etc.³ In general, pregnant women are at increased risk for all infections and serious illness due to physiological and immunologic changes in their bodies. While data on COVID-19 are limited, pregnant women should be considered an at-risk group. With immunocompromised status and physiological adaptive changes during pregnancy, pregnant women could be more susceptible to COVID-19 and other infections than the general population. Unhygienic practices prevalent among the antenatal mothers include use of insanitary latrines, improper washing of hands without soap, use of dirty and wet underwear etc. which increase the susceptibility to infections.

Hormonal changes during pregnancy along with neglected oral hygiene often lead to gingivitis and periodontitis in the antenatal mothers.⁴ The physiological increase in plasma volume results in urine concentration and about 70 % of pregnant women develop glycosurea which facilitates bacterial growth in urine. Thus genital hygiene during pregnancy is to be stressed as pregnancy enhances the progression from asymptomatic to symptomatic bacteriuria which may lead to pyelonephritis and obstetric outcomes like prematurity, low birth weight and increased neonatal mortality.⁵

Keeping in view of the above consideration a cross-sectional study was conducted with the following objectives

Aims and Objectives

To determine the knowledge and existing practice of personal hygiene and sanitation among the antenatal mothers in a tertiary hospital of Kolkata, West Bengal.

MATERIAL AND METHODS

An observational, descriptive and cross-sectional study was conducted in the Department of Gynaecology and Obstetrics of a tertiary hospital in Kolkata. All the antenatal mothers attending the OPD and those admitted in the Obstetrics ward of the Gynaecology and Obstetrics Department of a tertiary hospital in Kolkata during the study period were selected as study population.

A total of 170 Antenatal mothers were selected for the study. 120 antenatal mothers who visited the OPD of the Gynaecology and Obstetrics Department of a tertiary hospital in Kolkata during the study period was selected for the study by consecutive sampling and another 50 antenatal mothers admitted in the Obstetrics ward of the Gynaecology and Obstetrics Department of a tertiary hospital in Kolkata during the study period were also selected for the study by complete enumeration.

The study subjects were selected as per the following criteria:

Inclusion Criteria: Antenatal mothers attending the OPD and those admitted in the Gynaecology and Obstetrics ward of a tertiary hospital in Kolkata during the study period and willing to participate in the study and gave written consent were included in the study.

Exclusion Criteria

1. Antenatal mothers who were critically ill and not in a state to participate in the study.
2. Antenatal mothers not willing to participate in the study and not giving written consents.

The antenatal mothers fulfilling the inclusion criteria were chosen for participation in the study.

After taking informed consent, they were interviewed and given a pre-designed and pre-tested questionnaire for data capture.

The questionnaire was pre-tested among 30 antenatal mothers prior to the initiation of the study and necessary modifications were made accordingly. The participants of the pretest were not included in the study.

The hygiene practices of the antenatal mothers admitted in the Obstetrics ward of the Gynaecology and Obstetrics Department of a tertiary hospital in Kolkata were also observed during the study period.

They were assured that their personal details would be kept private and used solely for the purpose of this study.

The collected data was analysed by descriptive and analytical statistical methods.

Ethics approval was obtained from the Institutional Ethics Committee prior to the conduction of the study. Informed consents were also obtained from the participating antenatal mothers.

RESULTS

It was found from the study that majority of the interviewed antenatal mothers were housewives (98.2%) and 41.8% were in the age group 25-30 years. Equal proportion of the antenatal mothers resided in urban and rural areas. 46.5% of the antenatal mothers had completed only their secondary education and 2.9% of them were illiterate. Among the

husbands, majority (48.8%) had completed only their secondary education. According to modified BG Prasad socioeconomic classification (2019), ⁶ majority of the study population (43.5%) belonged to upper middle class. 63.5% of the antenatal mothers were primigravida while the rest were multigravida. (Table I)

Table I Distribution of the antenatal mothers according to their sociodemographic profile (N=170)

	Number	Percentage
Age group of antenatal mother		
Between 17-20 years	16	9.4%
Between 20-25 years	66	38.8%
Between 25-30 years	71	41.8%
Above 30 years	17	10%
Occupation of antenatal mother		
Housewife	167	98.2%
Employed	3	1.8%
Residence of antenatal mother		
Urban	85	50%
Rural	85	50%
Educational qualification of antenatal mother		
Illiterate	5	2.9%
Primary	15	8.8%
Secondary	79	46.5%
Higher Secondary	23	13.5%
Graduate	34	20%
Post-graduate	14	8.3%
Educational qualification of husband		
Illiterate	3	1.8%
Primary	18	10.6%
Secondary	83	48.8%
Higher Secondary	18	10.6%
Graduate	43	25.3%
Post-graduate	5	2.9%
Socio-economic status (according to modified BG Prasad socio-economic classification 2019) ⁶		
Upper Class	66	38.8%
Upper Middle Class	74	43.5%
Middle Class	10	5.9%
Lower Middle Class	11	6.5%
Lower Class	9	5.3%
Gravida		
Primigravida	108	63.5%
Multigravida	62	36.5%

The study revealed that majority of the interviewed antenatal mothers (75.9%) cleaned their teeth twice daily, i.e., before breakfast and before going to bed at night. 19.4% cleaned their teeth only after breakfast, 0.6% before going to bed at night and 2.4% cleaned their teeth after every major meal respectively. Most of the antenatal mothers (77.6%) believed that it is important to clean their teeth before going to bed at night to prevent dental caries. Majority (97.6%) used toothbrush and toothpaste to clean their teeth. 34.9% changed their toothbrush once in 2 months and 15.1% once in 6 months. (Table II):

Table II Distribution of the antenatal mothers according to their knowledge and practice of oral hygiene (N=170)

	Number	Percentage
Number of times teeth are cleaned		
Once a day	34	20%
Twice a day	129	75.9%
More than twice a day	7	4.1%
Importance of daily cleaning the teeth		
So that food is not stuck anywhere in the mouth and the mouth is kept clean	71	41.8%
To prevent gum diseases	26	15.3%
To prevent bad breath	68	40%

Do not know	5	2.9%
Time when the teeth are cleaned		
Before breakfast	33	19.4%
Before going to bed at night	1	0.6%
Both before breakfast and before going to bed at night	129	75.9%
Every time after major meals	4	2.4%
Others	3	1.7%
Importance of cleaning the teeth before going to bed at night	(n=136)	
To prevent dental caries.	132	77.6%
Just to prevent bad breath	9	5.3%
Just to keep the mouth clean	19	11.2%
Do not know	10	5.9%
The teeth are cleaned with		
Toothbrush	166	97.6%
Fingers	2	1.2%
Twigs	2	1.2%
If toothbrush is used, number of times it is changed	(n=166)	
Once in a month	40	24.1%
Once in 2 months	58	34.9%
Once in 3 months	33	19.9%
Once in 6 months	25	15.1%
Every time when the brush is damaged	10	6%
Substance used to clean the teeth		
Toothpaste	166	97.6%
Tooth powder	2	1.2%
Guraku	1	0.6%
Ash	1	0.6%

It was found from the study that majority of the interviewed antenatal mothers (72.4%) bathed once in a day while 71.8% used shampoo 2-3 times a week to clean their hair and 88.2% used soap every time while bathing, respectively. 52.9% of mothers believed that bathing is important to keep away germs. Majority (95.3%) changed their clothes after bathing. Most of them (44.7%) cleaned their genital area once daily while 2.4% are not in a habit of cleaning their genital area. Majority (76.5%) used soap and water to clean their genital area. Only 1 antenatal mother answered that she cleaned her genital area with mud. 83.5% of the antenatal mothers washed their nipples with soap and water among which 70.4% were of the opinion that this is important to protect the newborn from any infection during the lactation period by keeping their nipples clean. 50% of the antenatal mothers were not in a habit of using undergarments during pregnancy while the remaining 50% used undergarments among which majority (96.5%) cleaned their undergarments daily. (Table III)

Table III Distribution of the antenatal mothers according to their knowledge and practice of bathing and genital hygiene (N=170)

	Number	Percentage
Number of times the mothers take bath		
Once a day	123	72.4%
Twice a day	42	24.7%
More than twice a day	5	2.9%
Importance of daily bathing		
Just to keep the body clean and to keep away bad odour	63	37.1%
To feel refreshed	17	10%
To keep away germs and diseases	90	52.9%
Number of times shampoo is used to clean hair		
Once a week	48	28.2%
2-3 times a week	122	71.8%
How often soap is used while bathing		
Every time while bathing	150	88.2%
Occasionally	20	11.8%
Never	—	—
Clothes changed after bathing		
Yes	162	95.3%

No	8	4.7%
Number of times the genital area is cleaned		
Every time after going to the toilet	60	35.3%
Twice a day	17	10%
Once a day	76	44.7%
Once in 2 days	7	4.1%
Once a week	6	3.5%
Never	4	2.4%
Soap used to wash the genital area		
Yes	130	76.5%
No	40	23%
Nipples cleaned regularly with soap and water while bathing		
Yes	142	83.5%
No	28	16.5%
Importance of cleaning nipples regularly with soap and water (n=142)		
Just to keep the nipples clean	37	26.1%
To keep the nipples free from germs so as to protect the newborn from infections during the lactation period	100	70.4%
Do not know	5	3.5%
How often the undergarments are changed during pregnancy		
Once a day	44	25.9%
Twice a day	38	22.3%
Once in 2 days	2	1.2%
Once a week	1	0.6%
Do not use undergarments	85	50%
Importance of changing the undergarments (n=85)		
To maintain intimate hygiene	46	54.1%
To prevent infection due to sweating	16	18.8%
Do not know	23	27.1%
Undergarments washed daily (n=85)		
Yes	82	96.5%
No	3	3.5%

The study revealed that majority (99.4%), of the interviewed antenatal mothers washed their hands before eating and after using the toilet, (97.1%) before serving food and (97.6%) every time after returning home from outside while all of them washed their hands after cleaning anyone else's stool (elderly, sick, children) and urine. Most of them (71.8%) used soap every time while washing hands while 26.5% used it occasionally and 1.7% did not use soap at all to wash their hands. 87.6% believed washing hands with soap is important to keep away germs and diseases. Majority (75.9%) did not know about the 6 steps of hand washing even if they know the 6 steps of hand washing 39% could not demonstrate the whole procedure. (Table IV)

Table IV Distribution of the antenatal mothers according to their knowledge and practice of hand washing (N=170)

	Number	Percentage
Hands washed before eating		
Yes	169	99.4%
No	1	0.6%
Hands washed after defecation/ using the toilet		
Yes	169	99.4%
No	1	0.6%
Hands washed before serving food		
Yes	165	97.1%
No	5	2.9%
Hands washed every time after returning home from outside		
Yes	166	97.6%
No	4	2.4%
Hands washed after cleaning anyone else's (elderly, sick, children) stool/urine		
Yes	170	100%
No	—	—
How often soap is used while washing hands		

Every time	122	71.8%
Occasionally	45	26.5%
Never	3	1.7%
Importance of washing hands with soap		
To keep the hands free from germs and prevent diseases	149	87.6%
Do not think it is important	21	12.4%
Know about the 6 steps of hand washing		
Yes	41	24.1%
No	129	75.9%
If yes, can demonstrate the 6 steps (n=41)		
Yes	25	61%
No	16	39%

64.7% of the interviewed antenatal mothers had a habit of cutting their nails weekly and majority (88.2%) opined that cutting the nails at regular intervals helps to keep away germs and diseases. 19.4% had a habit of biting their nails. (Table V) It was observed in the study that majority of the interviewed antenatal mothers (37.7%) used domestic filter as their source of drinking water and in 30.6% mothers the source of drinking water was Tube Well. (Table VI)

Table V Distribution of the antenatal mothers according to their knowledge and practice of cutting nails (N=170)

	Number	Percentage
How often nails are cut		
Weekly	110	64.7%
Monthly	20	11.8%
Every alternate month	3	1.7%
Every time the nails grow big	37	21.8%
Importance of cutting the nails regularly		
To keeps away germs as germs stuck in the nails can cause diseases like diarrhoea etc.	150	88.2%
Long nails look untidy	18	10.6%
Do not know	2	1.2%
Have a habit of biting nails		
Yes	33	19.4%
No	137	80.6%

92.9% of the interviewed antenatal mothers had a toilet in their house while 7.1% used community toilets. Majority (55.3%) answered that their toilets were cleaned once a week. Most of them (44.7%) opined that use of toilet is necessary to prevent access of animals and flies to the urine and faecal matter and 31.1% answered that toilet is necessary to prevent pollution of ground water and soil. (Table VI)

Table VI Distribution of the antenatal mothers according to their Source of drinking water and knowledge and practice of sanitation (N=170)

	Number	Percentage
Source of drinking water		
Packaged water	47	27.6%
Domestic filter	64	37.7%
Tube well	52	30.6%
Dug well	5	2.9%
Pond water	2	1.2%
Have a toilet in the household		
Yes	158	92.9%
No	12	7.1%
Use a community toilet		
Yes	12	7.1%
No	158	92.9%
How often the toilet is cleaned		
Every day	27	15.9%
2-3 times a week	33	19.4%
Once a week	94	55.3%
Once in 2 weeks	13	7.7%
Once a month	3	1.7%
Importance of using a toilet for urination and defecation		
Prevent pollution of ground water and soil	53	31.1%
Prevent nuisance of odour and unsightly	37	21.8%

appearance		
Prevent access of animals and flies	76	44.7%
Provide privacy and security	4	2.4%

DISCUSSION

Regarding socio-demographic profile, majority of the interviewed antenatal mothers (98.2%) in the current study were housewives and majority of them belonged to the age group 25-30 years and literate. Among the husbands, 1.9% was illiterate. Majority of the study population (43.5%) belonged to upper middle class. In the study conducted by Ray *et al* (2012)⁷ in a rural community of West Bengal, it was found that 95.2% of the antenatal mothers were housewives and majority of them (68.7%) was between 19 and 25 years of age. 18.1% of the antenatal mothers were illiterate while among the husbands, 10.8% were illiterate. 49.5% of them belonged to the lower middle class. In the same study it was found that majority of antenatal mothers (60.4%) were multigravida in contrast to the present study where majority (63.5%) of the antenatal mothers was primigravida. Patrick Martial Nkamedjie Pete *et al* (2013) observed in their study in Cameroon that majority of the participating mothers (46.2%) was between 15-25 years of age 33.8% were housewives and 2.4% had had no education at all.⁸

The practice of hygiene among the antenatal mothers is crucial for both the mother and the child.

In the present study, it was found that 72.4% of the antenatal mothers bathed once in a day while 71.8% used shampoo 2-3 times a week to clean their hair and 88.2% used soap every time while bathing. 52.9% of antenatal mothers believed that bathing is important to keep away germs and 95.3% changed their clothes after bathing.

With regards to oral hygiene, it was observed in the present study, that 75.9% of the interviewed antenatal mothers cleaned their teeth twice daily, i.e, before breakfast and before going to bed at night while 19.4%, 0.6% and 2.4% cleaned their teeth only after breakfast, before going to bed at night, after every major meal, respectively. Ravleen Nagi *et al* observed in a study that 99.8% of the antenatal mothers in Chattisgarh brushed at least twice daily while 50.2% brushed daily before breakfast and after dinner.⁹ Shima Abdelrahim Khalaf *et al* (2017) observed in Assuit, Egypt that 51.6% and 21.4% of the antenatal mothers brushed only in the morning and after each meal, respectively while only 9.4% of them brushed daily before breakfast and after dinner. 41.1% of the participants knew that teeth are cleaned to prevent dental caries while only 8.8% believed that gum diseases can be avoided by regular brushing of teeth. 47.4% of them did not know about the importance of regular brushing of teeth. They observed that 85.9% used a toothbrush to clean their teeth.⁴ In the present study, it was observed that 97.6% of the interviewed antenatal mothers used a toothbrush and 41.8% answered that teeth should be daily cleaned to prevent food from getting stuck in the teeth; 15.3% believed that gum diseases can be avoided by regular brushing of teeth and 40% brushed their teeth daily to avoid bad breath while 2.9% did not know about the importance of regular brushing of teeth.

With regards to genital hygiene, Patrick Martial Nkamedjie Pete *et al* (2013) reported that 66.3% of the antenatal mothers cleaned the vagina and vulva simultaneously. Majority of them (63.8%) used non-irritant agent like water for cleaning the

genital area. Almost one participant out of four used antiseptic solutions for genital cleaning (vulva area and vagina). Antiseptic solutions along with water were used only by 34.5% of the participants while in 65% of the cases it was used only for cleaning the vagina.⁸ In the present study, it was observed that 44.7% cleaned their genital area once daily and 76.5% cleaned it with soap and water and no other antiseptic solutions were used by the mothers for cleaning the genital area.

Padhi K. Bijaya *et al* observed in a cohort study in coastal and inland tribal settings of Odisha, India that 58.2% of the antenatal mothers did not have any access to latrines and defecated in open fields while 45.8% of them living in households with access to latrines used them regularly and 32% rarely used latrines. Water source was present in about 60% of the latrines and faecal contamination was seen on the floor in 21.5% of the latrines. 58% of the antenatal mothers did not wash their hands with soap or detergent after defecation and 14.7% of the study participants used pipe water for bathing.¹⁰

In the present study it was found that majority of antenatal mothers (92.9%) had a toilet in their house while 7.1% used community toilets. Most of them (55.3%) answered that their toilets are cleaned once a week and 44.7% opined that use of toilet is necessary to prevent access of animals and flies to the urine and faecal matter and 31.1% answered that it is necessary to prevent pollution of ground water and soil.

In the present study, majority of the antenatal mothers washed their hands before eating (99.4%), after using the toilet (99.4%), before serving food (97.1%) and every time after returning home from outside (97.6%) and all of them washed their hands after cleaning anyone else's stool and urine. Most of them (71.8%) used soap every time while washing hands while 1.7% did not use soap at all to wash their hands. Out of them, 87.6% believed washing hands with soap is important to keep away germs and diseases and 75.9% did not know about the 6 steps of hand washing.

Most of the antenatal mothers (64.7%) had a habit of cutting their nails weekly and 88.2% opined that cutting the nails at regular intervals helps to keep away germs and diseases. Out of them, 19.4% had a habit of biting their nails.

In the present study, it was observed that majority of the antenatal mothers used domestic filter and tube well as their source of drinking water.

Since clean water and basic sanitation are so closely related to healthy pregnancy outcome, they were integrated in the beginning because in the declaration of Alma Ata in 1978, clean water, basic sanitation and maternal and child services have been outlined as components of the Comprehensive Primary Health Care strategy of "Health For All" (WHO, 1978). WASH (Water, Sanitation and Hygiene) and maternal health interventions should be integrated through the comprehensive primary health care approach so that governments and their partners could implement them together as long term strategy for maternal and child health.

CONCLUSION

Knowledge as well as practices of hygiene of the antenatal mothers were found to be satisfactory in the present study.

However, 50% of them did not use undergarments which is detrimental to their health as it makes them susceptible to a variety of genital infections. The use of community toilets is still in vogue among 7.1% of them. 71.8% used soap every time while washing hands but 26.5% used it occasionally to wash their hands. Only 24.1% knew about the 6 steps of hand washing. Health workers like ASHAs, Anganwadi workers etc. should educate and promote the importance of proper hand washing with soap and water among antenatal mothers. Healthcare programmes should be organised promoting awareness and good hygiene practices among pregnant women. Education and awareness can promote the practice of hygiene and sanitation among the antenatal mothers which is crucial for both the mother and the child. They can utilise this knowledge of personal hygiene in the postnatal period and can maintain the hygiene of the newborn as well. Practice of proper hygiene and sanitation can reduce the incidences of diarrhoeal diseases, perineal sepsis, PID (pelvic Inflammatory Diseases), skin diseases and other infective conditions like COVID 19 in the antenatal and postnatal mothers thereby reducing maternal and infant morbidity and mortality.

One of the most cost-effective strategies for increasing pandemic preparedness, especially in resource-constrained settings, is investing in core public health infrastructure, including water and sanitation systems. Good WASH and waste management practices, that are consistently applied, serve as barriers to human-to-human transmission of various infections including SARS CoV 2 virus in homes, communities, health care facilities, schools, and other public spaces specially among vulnerable and high risk population like pregnant mothers, children and people belonging to older age group and thus are imperative for protection of health in this current pandemic.

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