

W.A.S.H Away Diseases

NAMRATA GHOSH

Launched in October 2014, the Swachh Bharat Mission aims at attaining 100 per cent “open-defecation-free India” by 2019 through delivery of individual latrines, sanitary complexes, waste management funds, as also information and education campaigns.

But provisions of sanitation without water will not wash. This article analyses data from two Indian states to show that, both, sanitation and water, are required if the incidence of infectious diseases is to be reduced.

Keywords: *water; sanitation; diseases; health; infection*



Source: NextBillion.net

Unsafe water, sanitation and hygiene (W.A.S.H; Water and Sanitation Hygiene) are the leading causes of infectious disease in developing regions of the world including India. Child health, particularly in less developed countries, is determined by a large number of factors (environmental such as water and sanitation or maternal reproductive factors). The effect of these (risk) factors on an outcome might be direct or mediated through other factors. These in turn may affect the risk of a child getting an infectious disease as well as its severity. Hence, to determine changes in health outcomes, one has to look at multiple risk factors that might comprise a number of disease transmission routes. This article looks at the link between availability of water and sanitation facilities with infectious diseases (specifically diarrhoea) in an area. Diarrhoea is usually a symptom of an infection in the intestinal tract, which can be caused by a variety of bacterial, viral and parasitic organisms. Infection is spread through contaminated food or drinking-water, or from person-to-person as a result of poor hygiene.¹

¹ <http://www.who.int/mediacentre/factsheets/fs330/en/>

The importance of considering water and sanitation together can be illustrated through an example. Consider two villages, A and B. In A, suppose water coverage to households is 100 per cent but none of the households have toilets. In B, 100 per cent households have toilets but only 10 per cent of them have water supply at home. In village A, where there are no toilets at home, there is likely to be open defecation which might contaminate water, especially groundwater. In village B, for those households that have toilets available but no water supply, people are not likely to use toilets, and again openly defecate. Also, even if an area has water supply but no proper drainage system, the area is highly likely to be affected by infectious diseases. In such cases, as a policy maker, it might not be a good idea to prioritise provision of services in terms of which area should get water supply first or, indeed, which should get sanitation first. The policy move has to be such that they are both provided together at the same time. One could also say that the value that one gets from provision of water alone or sanitation alone is much lower than the value one gets when both water and sanitation services are provided together. We illustrate this point further through district-wise data that is available on these indicators for two states.

DISTRICT WISE DATA FOR TWO STATES

In India, there is wide disparity amongst states in access to improved drinking water and sanitation facilities. States that have higher poverty rates (Bihar, Odisha, Jharkhand, and Chhattisgarh) are the ones with poor sanitation coverage in terms of number of latrines (Census 2011). Taking the two states of Bihar and Madhya Pradesh (MP),² we look at the district-level water and sanitation coverage and health indicators to check if there is a link between the two. For health indicators, we took incidence of diarrhoea per 100,000 population and infant mortality rate (IMR).³ We have taken IMR because of its association with diarrhoea. The three major causes of neonatal deaths worldwide are infections (36 per cent, which includes sepsis, pneumonia, tetanus, and diarrhoea), pre-term (28 per cent) and asphyxia (23 per cent).⁴ According to Census 2011, we find that the major source of drinking water in rural Bihar (total of 38 districts) is through hand pumps (86.60 per cent). However, water coverage explicitly does not tell us if the water that is supplied through hand pumps is free of toxic contamination. To check this, we look at incidence of diarrhoeal diseases in the state. We find that districts that have higher than the state average (2095 per 100000) of diarrhoeal diseases are the ones that have more than 85 per cent water coverage. This indicates that even though there is adequate water coverage in these districts, incidence of diseases is still high. Hence, there could be an issue with water quality or food contamination that led to higher diarrhoea in these districts. As we know, infection is more common when there is a shortage of adequate sanitation and hygiene and safe water for drinking, cooking and cleaning. Water contaminated with human faeces, for example, from sewage, septic tanks and latrines, is of particular concern. Animal faeces also contain microorganisms that can cause diarrhoea.⁵ Next, we look at sanitation services in the state. One of the indicators we look at is households with latrines at home. On an average, only 18 per cent of households have latrines in rural Bihar. We find that the districts that have higher than the state average of diarrhoeal diseases also have low sanitation coverage (about 54 per cent of these districts have lower sanitation coverage than the state average). Let us look at the situation in MP (total of 45 districts). Majority of water in these districts is

² These states fall under the Empowered Action Group states that are high focus for government of India due to their relatively high fertility and mortality indicators.

³ Annual Health Survey 2011-12 Fact Sheet, Census of India

⁴ http://www.who.int/pmnch/media/press_materials/fs/fs_newbornddeath_illness/en/

⁵ <http://www.who.int/mediacentre/factsheets/fs330/en/>

provided through hand pumps and uncovered wells. In fact, 82.3 per cent of households have water coverage. The districts in MP that have higher than the state average of diarrhoeal diseases (836 per 100,000) are the ones that have more than 75 per cent water coverage. On the other hand, on an average the state has 13 per cent rural households with latrine. Those districts that have higher incidence of diarrhoeal diseases are the ones with lower sanitation coverage (about 70 per cent of these districts have lower sanitation coverage than the state average). Again, for MP, it seems that just providing water alone is not enough as water could be contaminated due to low provision of sanitation facilities.

To test if there indeed is an association between water and sanitation indicators and health indicators, we calculate the correlation coefficient for the two states (Table 1).

CORRELATION COEFFICIENT			
State	Water & Diarrhoea	Sanitation & Diarrhoea	Sanitation & IMR
Bihar	0.50	-0.57	-0.51
MP	0.35	-0.14	-0.43

The correlation coefficient⁶ between water provision and diarrhoeal incidence is positive for both states (0.50 for Bihar and 0.35 for MP). That is, states with higher water coverage have higher incidence of diarrhoea. This could be because of poor water quality or sanitation in the area. The correlation coefficient for sanitation (proportion of households with toilets at home) is negative for both states (-0.57 for Bihar and -0.14 for MP). This implies that better sanitation services in an area correlate with lower incidence of diarrhoea for that area. Similarly, the correlation coefficient between IMR and sanitation is negative for both states (-0.51 for Bihar and -0.43 for MP) implying higher IMR in districts with low sanitation coverage.

CONCLUSION

The Ministry of Drinking Water and Sanitation is the nodal department for the overall policy, planning, funding, and coordination of programmes of drinking water and sanitation in India. As part of this, the government of India launched the Swachh Bharat Mission (SBM) in October 2014, which aims at attaining 100 per cent “open defecation free” India by 2019. The major components of SBM (rural) are provision of individual latrines, construction of community sanitary complexes, fund for solid and liquid waste management, provision of Information, Education and Communication (IEC) campaign among other things.⁷ Hence, one has to look at provision of water and sanitation services to achieve the overall health outcome. From the above data, we have shown that water and sanitation are required together if states have to reduce the incidence of infectious diseases. This is in line with studies by the World Health Organization (WHO). Provision of one without the other can drag us back to where we started in terms of health outcomes without any progress. For instance, if the government spends large amounts of money on constructing toilets at home but there is no piped water supply as a result of which toilets are not clean, then the risk of disease increases. We have to look at the issue as a pro-active preventive healthcare strategy rather than a reactive response to any disease outbreak due to poor sanitation facilities.

⁶ Correlation does not measure causation but measures an association between two variables.

⁷ <http://tsc.gov.in/tsc/NBA/AboutSBM.aspx?id=NBA>