

Sanitation for health : the link

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Knowledge, access & practice to safe water, sanitation & hygiene

Gravis



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2017

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FOREWORD

Sanitation is a key developmental challenge in India and in many parts of the world. Lack of sanitation arrangements have kept communities under poor health over a long period of time causing severe health problems and grave socio-economic consequences. Recently, sanitation has been identified as a key priority for various development initiatives in India.

GRAVIS as a key non-governmental organizations working in the Thar Desert and other regions of India, takes a holistic approach towards improving health status of the communities. Sanitation and hygiene related interventions are an integral part of our health work. Under the project IHNS, we are addressing this critical issue.

This study is an effort to understand the sanitation related issues in India and to suggest some ways moving forward in order to provide sanitation and hygiene to many deprived communities. I sincerely thank Dr. Manju Singh for leading this study and GRAVIS team as well as the Thar Desert communities for their valuable support. We also recognize and appreciate the financial support of TAMY, Finland and the Government of Finland for the study

Dr. Prakash Tyagi

Executive Director, GRAVIS



AUTHOR'S NOTE

Human health is an essential component of sustainable development. Unsafe drinking water and inadequate sanitary provisions have direct as well as indirect implications on health. It affects every section of life be it child, women, old aged, poor or rich until universal coverage of sanitation and waste management is not done. Severity of problem is increasing day by day with the tremendous growth of the human populations.

Patterns of marginalization and exclusion are present all over the world with stark and persisting inequalities in access to water and sanitation. According to National Sample Survey Office (NSSO) from a survey conducted in 2012, only 32% of rural households have their own toilets and that less than half of Indian households have a toilet at home. There were more households with a mobile phone than with a toilet. Of the estimated billion people in the world who defecate in the open, more than half reside in India. Despite progress, India missed the achievement of Millennium Development Goal of having the proportion of people with sustainable access to basic sanitation by 2015.

Provision of safe and clean water, as well as the maintenance of sanitation systems is a difficult task without the involvement of community organizations and people power. GRAVIS working in rural areas of Thar Desert from last 32 years has a great role to play in sanitation. Lot more needs to be done for improving sanitation and health situation of rural areas of Thar desert for enhancing overall quality of life of people of the area.

Dr. Manju Singh

CHAPTER 1

Global Scenario of Water, Sanitation and Hygiene impacting Health

1.1 Introduction : Safe water, adequate sanitation and proper hygiene education and practices are the fundamental elements of healthy community. There is no doubt that these not only reduce illness and death but also have positive impact on poverty reduction, gender equality and socio economic development. Water, Sanitation and Hygiene are grouped together in the commonly known concept as WASH as the impact of deficiencies in each area overlap strongly. The UN's Millennium Development Goals included improvement of WASH services in Target 7.C: "Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation." Post 2015, Sustainable Development Goal 6 'Ensure availability and sustainable management of water and sanitation for all' has remained the concerns internationally. It recognizes that universal access to WASH is an essential component of an integrated approach to tackling poverty, hunger and under- nutrition, ill- health and inequality. It sets ambitious targets to achieve universal access to WASH by 2030 and prioritized the following¹:

- No one practices open defecation
- Everyone has safe water, sanitation and hygiene at home
- All schools and health facilities have safe water, sanitation and hygiene
- Water, sanitation and hygiene are sustainable and inequalities in access have been progressively eliminated.

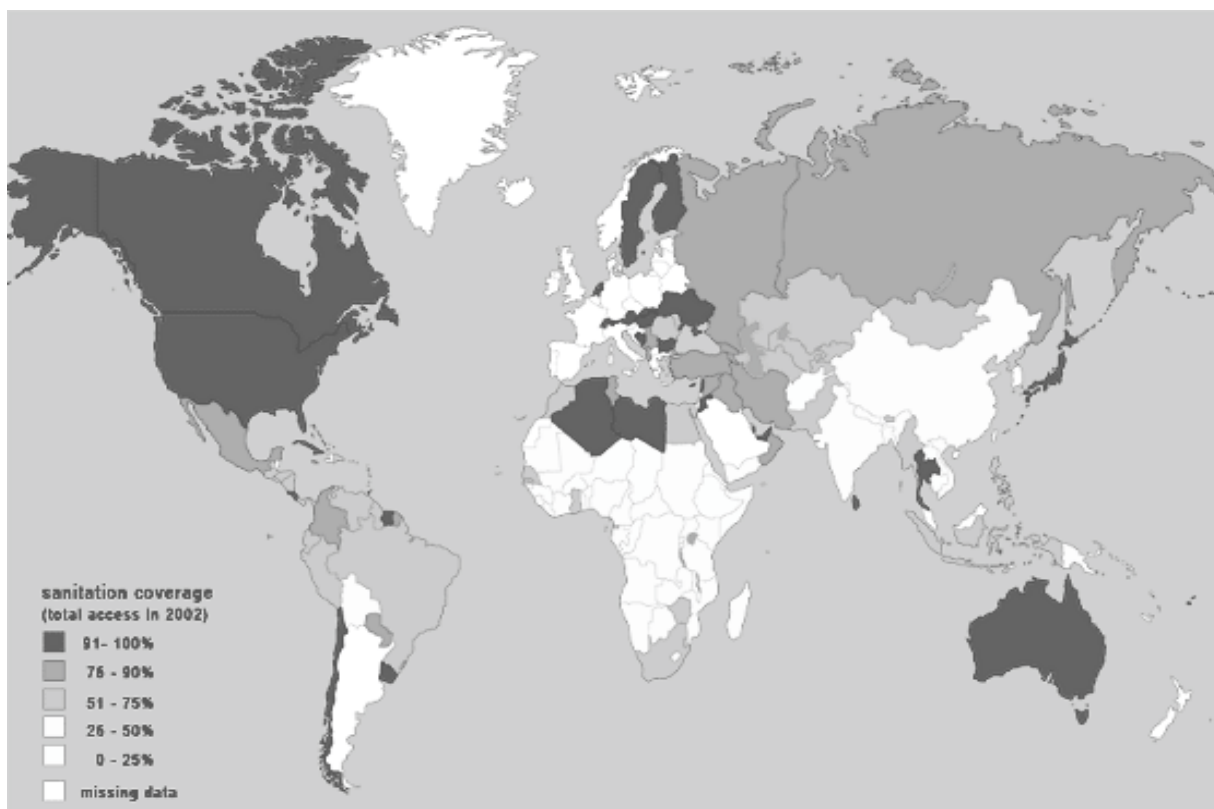
1.2 Health Implications of Knowledge, Access and Practice (KAP) of WASH Services : The World Health Organization (WHO) estimates that 50% of malnutrition is associated with repeated diarrhea or intestinal worm infections as a result of unsafe water, inadequate sanitation and insufficient hygiene². A lack of access to adequate water, sanitation and hygiene (WASH) services has a huge impact on human health including:

- Unsafe or inadequate water, sanitation and hygiene practices contribute to 700,000 child deaths from diarrhea each year. Chronic diarrhea can hinder physical and cognitive child development. Basic hygiene practices used by mothers and other caregivers and better access to safe water and adequate sanitation can greatly reduce under 5 deaths and improve child nutrition. According to the UNICEF, hand washing with soap, particularly after contact with excreta, can reduce diarrheal diseases by over 40 per cent and respiratory infections by 30 per cent. Hand washing by birth attendants before delivery has been shown to reduce mortality rates by 19 per cent while a 4 per cent reduction in risk of death was found if mothers washed their hands prior to handling their newborns. It is difficult to obtain reliable global estimates on hand washing with soap. However, in a recent systematic review of 42 studies of observed hand washing with soap in 19 countries, it was estimated that only 19% of people worldwide wash their hands after potential contact with excreta (freeman et al, 2014)³.
- Intestinal Parasitic infections, such as soil- transmitted helminthes infections- roundworm, whipworm and hookworm- caused by a lack of sanitation and hygiene, infect around two

billion people globally⁴, while an estimated four and a half billion people are at risk of infection⁵. Such infections can lead to anemia, reduced physical development and inhibited cognitive development. Forty percent of the world's population- 2.5 billion people- practice open defecation and the consequences are devastating for environment and human health.

- Approximately a third of all child deaths are attributed to nutrition- related factors such as low birth weight, stunting and severe wasting, all of which are closely linked to a lack of access to water and particularly sanitation and hygiene. Many children in developing countries suffer stunting, which reflects chronic nutritional deficiencies, and repeated ingestion of animal and human feces due to poor waste management and a lack of sanitation.
- A lack of sufficient safe water close to home has many indirect effects. The time wasted collecting water or suffering from water- related illnesses prevents young people from getting education, which has a significant impact on their health, wellbeing and economic status. An estimated 663 million people worldwide do not have access to an improved drinking water source (UNICEF/ WHO, 2015)⁶ and an estimated 1.9 billion people rely on drinking water that is faecally contaminated (Bain et al, 2014)⁷. Improved water sources that are not operated or maintained properly may deliver water that is microbial recontamination often occurs during collection of water at the source, transport and storage within home (Wright, Gundry & Conroy, 2004)⁸.

Map 1: Global Sanitation Coverage



Source 10 : *Sanitation in India: A Status Study*, Centre of Science & Environment, New Delhi

India having total sanitation coverage in 2002 between 26 to 50%

1.3 WASH Situation and its impact on Health in India : India houses about one- sixth of the world's population. Around 68% of the country's population lives in the rural areas. It is the seventh largest economy in the world. It is one of the fastest growing economies and service sector in the world. There are significant challenges to the provision of environmental services such as water, sanitation, solid waste management, and drainage¹¹.

Access to safe water is a basic human right and is critical to survival. Absence of safe water impacts health, food security and livelihoods of families. There is only 4% of average global runoff in rivers in India. Nearly 330 million people are effected by drought in India. Access to improved water sources in Indian households has increased from 68% in 1992- 93 to 90.6% in 2011-12¹².

The sanitation coverage increased from 1% in 1981 to 9% in 1991 to 22% in 2001. In 2011 also, the Census reported to be around 31% which was lower than the expected coverage as per the programmatic data¹¹. Almost 600 million people in India defecate in the open – the highest number in the world.

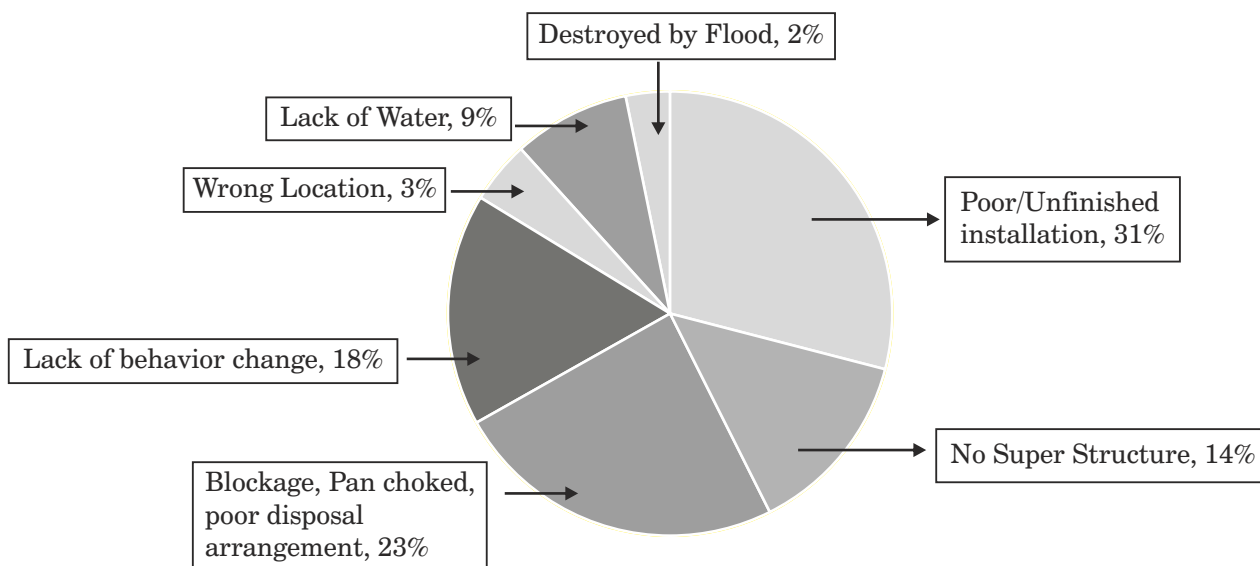
Table 1: Current Status of Sanitation in India

India	Sanitation Coverage					
	Urban (%)		Rural (%)		Total (%)	
	1990	2015	1990	2015	1990	2015
Access to sanitation	71	90	9	39	25	56
a. Improved facilities	49	63	6	28	17	40
b. Shared facilities	16	21	1	5	5	10
c. Other unimproved	6	6	2	6	3	6
Open defecation	29	10	91	61	75	44

Source¹³: Joint Monitoring Program (JMP) of the WHO and UNICEF (JMP 2015)

Unfortunately, the toilets that have been built have many a times gone unused due to various reasons (Diagram 1). There is a need of helping the population in understanding the benefits of toilets and making efforts for changing social norms and behaviors.

Diagram 2: Reasons for disuse of Household Toilets



Source¹⁰: Sanitation in India: A Status Study, Centre of Science & Environment, New Delhi

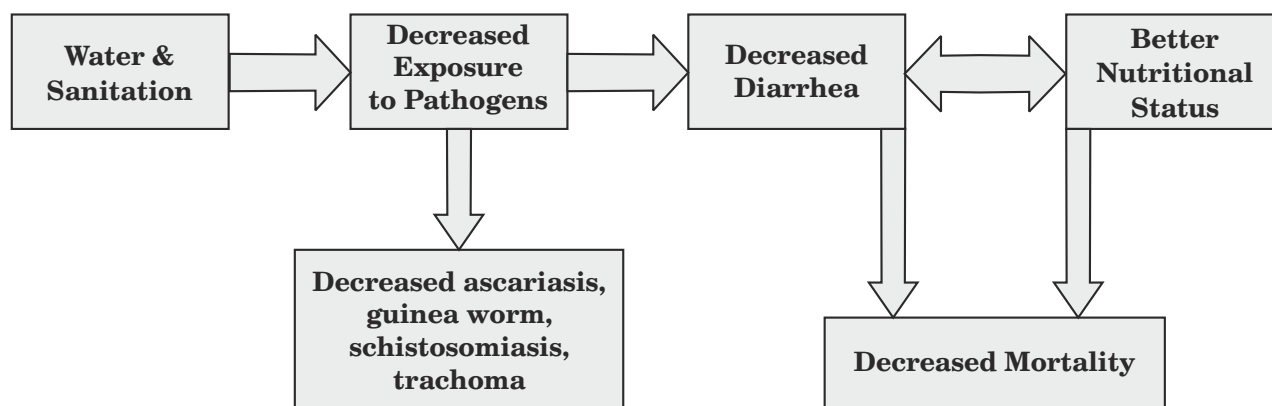


Diagram1: Flow Chart on WASH and Health Interlink ages

Source¹⁵: Susan E. Burger and Steven A. Esrey: Water and Sanitation: Health and Nutrition Benefits to Children

Poor sanitation impairs the health leading to high rates of malnutrition and productivity losses. India's sanitation deficit leads to losses worth roughly 6% of its Gross Domestic Product (GDP) according to World Bank estimates by raising the disease burden in the country. Every year nearly 2 Lakh children die due to severe diarrhea. Hand washing with soap is among the most effective and inexpensive ways to prevent diarrheal diseases and pneumonia. Diarrhea prevalence drops substantially only if open defecation is completely eliminated.

1.4 WASH Strategies in Rajasthan and Thar Desert: Rajasthan, the largest state by area in India, is situated in the north west of the country and comprises 33 districts with 248 blocks, 9177 Gram Panchayats and 41353 habitations. The geography of the state varies, from Thar desert (two- third of its

area) in western Rajasthan to hilly area in southern part with a largely scattered population. Scarcity of water has affected the sanitation situation of *Thar* desert.

The Total Sanitation Campaign was initially launched in 4 districts in 1999 and scaled up in all the 32 districts in 2004- 2005 in Rajasthan. Although significant progress has been made in terms of Individual Household Latrines Coverage increased from 19.3% to 67.10% from 2005 to 2011 whereas actual functionality and usage rate is only 12.9% (DLHS 2007- 2008). Solid and Liquid Waste Management (SLWM) is still in its infancy stages in rural Rajasthan. In Rajasthan, 57.8% of rural households have no drainage facilities and only 19.4% have garbage disposal arrangements¹⁶.

Partial achievement of sanitation outputs is not effective in bringing desired health outcomes. The initial priority is 100% Open Defecation Free (ODF) communities as it is the most difficult to tackle and carries the highest risk in terms of health impact. Once ODF is achieved, this can be used as a foundation to bring behavior change in hygiene practices, solid and liquid waste management and other components of total sanitation.

Table 2: Demographic & Health Indices Comparison of India and Rajasthan

State/UT (*Source)	INDIA	Rajasthan
Population Census 2011(Final) (*Census 2011)	1,210,854,977	68,548,437
Female Literacy Rate, (*Census 2011)	64.6	52.1
Infant Mortality Rate (IMR.) 2015 (*SRS estimates)	37	43
Under 5 Mortality Rate 2014 (*SRS estimates)	45	51
Maternal Mortality Ratio (MMR) 2011-13 (*SRS estimates)	167	244

Bar Chart 1 : Percentage Coverage and Usage for IHHL in Rajasthan & Thar Desert

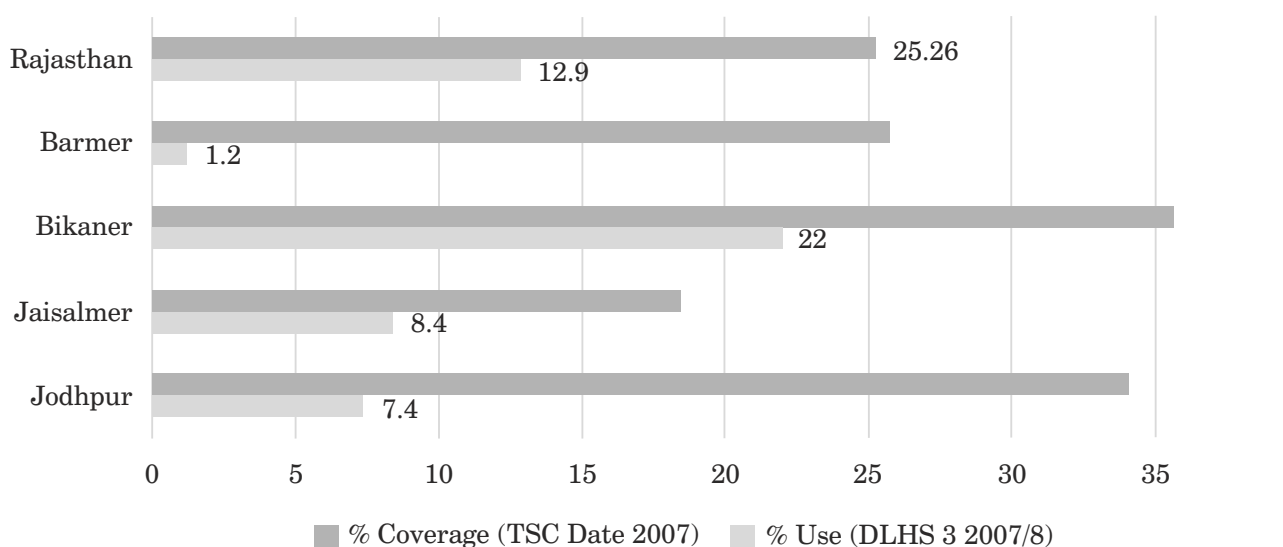


Table 2 shows that Rajasthan is having higher values of Infant Mortality Rate and Under 5 Mortality Rate, Maternal Mortality Rate when compared with India. This shows that Rajasthan is already a poor performing state on health indices. Bar Chart 1 shows that Rajasthan had sanitation coverage of 25.26 %

whereas usage was only 12.9% in 2007- 08. In case of Jodhpur coverage and usage data shows wider gap as sanitation coverage is 34.4% and usage is 7.4 only. Similarly Jaisalmer has sanitation usage 8.4% and Barmer 1.2% only. There is a need to work on reasons (may vary in percentages) mentioned in diagram 1. There are many water borne diseases, diseases due to unsafe disposal of solid and liquid waste and diseases due poor hygiene practices that affect the whole generation.

Table 3 : WASH Status in rural Thar Desert

S.No.	Indicator	Barmer	Bikaner	Jaisalmer	Jodhpur
1.	Households with an improved drinking water sources (%)	68.6	78.9	34.3	64
2.	Households using improved sanitation facility (%)	17.0	54.4	31.9	33.6

Source^{17,18,19 &20}: District Fact Sheet Barmer, Bikaner, Jaisalmer & Jodhpur, National Family Health Survey- 4 (2015- 16)

National Family Household Survey (2015- 16) data on Households with an improved drinking water sources depicts that Jaisalmer has only 34.3% availability showing the area more prone to water borne diseases. Similar trend can be seen for Households using improved sanitation facility in Jaisalmer & Jodhpur. Either lack of sanitation facility or its poor utilization have direct implications on public health and especially child health. Overall water and sanitation situation of rural Thar Desert shows that there is lot more to be done for improving the public health status.

1.5 Status of Women and Sanitation in Thar Desert: There is a direct relationship between the KAP of WASH services and Health indices. There is a wide gap in WASH services to be filled for enhancing women status. Education play a key role in awareness generation on the issues of day to day relevance like maintaining drinking water safe, adequate sanitation and safe hygienic practices. Women's improved health is the backbone of family's, community's and society's health and education has a role to play in it. Education, Health and Sanitation are intermingled with each other for improving quality of life.

Table 4: Social determinants of sanitation affecting Women Health in rural Thar Desert

S.No.	Indicator	Barmer	Bikaner	Jaisalmer	Jodhpur
1.	Women who are literate (%)	35	48.5	33.1	44.3
2.	Women with 10 or more years of schooling (%)	8.2	13.3	5.8	12.2
3.	Women age 20- 24 years married before age 18 years (%)	48.4	41.9	48.6	44.3
4.	Women age 15- 19 years who were already mothers or pregnant at the time of the survey (%)	7.7	8.2	9.1	9.7
5.	Mothers who had at least 4 ANC visits	14.5	26.7	17.5	32.6
6.	All women age 15- 49 years who are anemic (%)	42.9	42.7	34.3	46.1
7.	All women age 15- 49 years who have undergone examination of Cervix (%)	10.9	26.0	26.5	17.6

Source^{17,18,19 &20}: District Fact Sheet Barmer, Bikaner, Jaisalmer & Jodhpur, National Family Health Survey- 4 (2015- 16)

National Family Household Survey (2015- 16) in Table 4 shows that there are only 33.1% women are literate in Jaisalmer whereas only 5.8 % Women with 10 or more years of schooling in rural Jaisalmer. School dropout is a major challenge in female education and availability and use of sanitation services has a great role to play. Number of years spent in school is a strategic move for enhancing women's health as it delays early marriage and early pregnancy. Thar desert still have more than 40% Women age 20- 24 years married before age 18 years and 8% Women age 15- 19 years who were already mothers or pregnant at the time of the survey. How can we assume these girls to take care of themselves and their families in their childhoods? Education is the base for providing knowledge and achieving desired behavior change for improving hygiene practices and health. Poor percentages of “Mothers who had at least 4 ANC visits”, higher percentages of “All women age 15- 49 years who are anemic” and increasing percentages of “All women age 15- 49 years who have undergone examination of Cervix” clearly shows that Government is missing the Behavior Change Opportunities for improved nutrition, sanitation and hygienic practices and finally improved women and child health in Thar Desert. Present social dynamics shows that awareness generation on sanitation & hygienic practices is essential for improving quality of life.



Village health worker meeting villagers

1.6 Sanitation and Child Health in Thar Desert: Sanitation and hygiene practices has important role in reducing IMR and U5MR as stated by various studies and reports. Children are the most affected from unsafe water, poor sanitation and unhygienic practices. Risks increases when they are taken care by those who have poor knowledge and practices of sanitation and hygiene. Table 5 shows that Prevalence of diarrhea (reported) in the last 2 weeks preceding the survey is up to 8 % in Thar Desert. Data depicts that

Prevalence of symptoms of Acute Respiratory Infection (ARI) in the last 2 weeks preceding the survey is up to 2.7 % in Thar Desert. Cleanliness in surrounding, clean fuel, safe drinking water, good hygiene practices can reduce prevalence of disease to a greater extent.

Table 5 : Disease Prevalence among Children in rural Thar Desert

S.No.	Indicator	Barmer	Bikaner	Jaisalmer	Jodhpur
1.	Prevalence of diarrhea (reported) in the last 2 weeks preceding the survey (%)	4.8	8.0	7.6	6.1
2.	Prevalence of symptoms of Acute Respiratory Infection (ARI) in the last 2 weeks preceding the survey (%)	1.8	2.2	2.7	0.6

Source^{17,18,19 &20}: District Fact Sheet Barmer, Bikaner, Jaisalmer & Jodhpur, National Family Health Survey- 4 (2015- 16)

1.7 Purpose of the Study : The study seeks to establish linkages between sanitation and health in Rajasthan. It is about understanding the community's knowledge, access and practice related to water, sanitation, hygiene and its impact on their health. The study followed detailed interviews with stakeholders and service providers like Village Health Worker (VHW), doctors and beneficiaries who received the toilet and water filters under project IHNS in the Thar Desert. Focused Group Discussions (FGD) were done with community based structures like Self-Help Group (SHG) and beneficiaries who were benefited with medical camp, training on hygienic practices under TAMY project in Jodhpur District. Three FGDs were planned. One was planned for exclusively of females having the topic hygienic practices, second was planned for exclusively of males with the topic of toilet access and utility and last one was planned for mixed of males and females on the topic of safe drinking water.



CHAPTER 2

GRAVIS contribution in improving health and WASH Services

The inter linkages of sanitation and health are well documented in the literature and are evidenced by the latest data. The situation in Thar desert requires initiatives on sanitation and health for improving women and child health. Government, organizations and public- private collaborations are working to improve access to toilets, improving drainage facilities and creating awareness through education campaigns on the importance of preventive tools such as hand washing. Non-Government Organizations has an active role to play for improving the scenario.

GRAVIS : Gramin Vikas Vigyan Samiti or the Peoples' Centre for the Science of Rural Development is a Non- Government Organization working in rural western Rajasthan to empower the rural communities for the last 32 years. GRAVIS covers over 1200 villages with its activities and interventions and benefits 1.2 million people living in Thar Desert. The Thar Desert has poor social, health and sanitation indicators in India. A large number of poor people, especially women, lower castes, and communities living in remote areas do not have proper access to government services. GRAVIS integrates the essential components of livelihood securities encompassing food & nutrition, water, education, health and sanitation. Gender mainstreaming has always been the key component of every activity conducted by GRAVIS for rural development.

Community health care has been a major concern of GRAVIS. Health facility established by GRAVIS in a village of Thar Desert has been catering the need of about 50 villages and is a major source of medical help for about 40,000 women for the last 15 years. This 70 bedded rural hospital is fully equipped and is manned with a team of well qualified doctors and nurses.

About the Project : GRAVIS and TAMY have been partners for nearly 20 years. Over this period, both organizations have jointly implemented many developmental projects in the Thar Desert focusing on food security, water security and healthcare. Improving Health through addressing Nutrition and Sanitation (IHNS) was jointly discussed and developed by TAMY and GRAVIS and was then launched in mid-2015. The project is currently being implemented by GRAVIS and TAMY in 20 remote villages of Balesar block of Jodhpur District, India. The project period is 2015 to 2017. Special focuses of the project IHNS is on addressing nutrition and sanitation, which are two crucial gaps in the Thar Desert in improving the health levels of rural communities.

Major concerns in the project is on Awareness Generation, Providing Medical Services, Capacity building of rural communities, enhancing nutritional status, improving sanitation situation, research and advocacy with Government on proven strategies. Some of the activities carried out in the direction of set objectives are as follows :

- » Formation and orientation meeting of the project team
- » Formation of Village Health Communities (VHCs) and training
- » Selection and training of Village Health Workers (VHWs)
- » Conducting Awareness Camps
- » Organizing Community based trainings on nutrition and sanitation
- » Outreach Medical Camps

- » Developing Horticulture Units
- » Low Water use Toilets
- » Availability of Water Filters
- » Organizing District Level Workshop

Stakeholders' Interviews & Discussions:



Medical Camp

Medical Camps in Thar Desert : Diarrhea, vomiting, fever, jaundice, fluorosis silicosis, etc. were the commonly found diseases during the health camps in villages due to improper water and sanitation services as told by GRAVIS team during the interview. Pregnant women get support from VHW for immunisation, counselling for regular ANC Checkup and maintaining hygienic practices. Counselling on nutrition, sanitation and good hygiene practices has been the integrated part of medical camps.

Linkages with Government Health Services : ANM and village women acknowledged the learnings from the trainings given by GRAVIS on hygiene practices. They told about the benefit of medical camp and proactive involvement of doctors with community for improving health through teaching of nutritional value of local foods and good hygienic practices.



ANC Check up



Meeting with Anganwadi workers

Linkages with Government Nutrition Services: Anganwadi worker and villagers recognised the efforts made by GRAVIS on improving understanding of nutritional importance of green vegetables. They also discussed about food hygiene. Hand Washing procedure and occurrence was also discussed during training at GRAVIS field office in local dialect.

Beyond Health, Nutrition and Waste Management



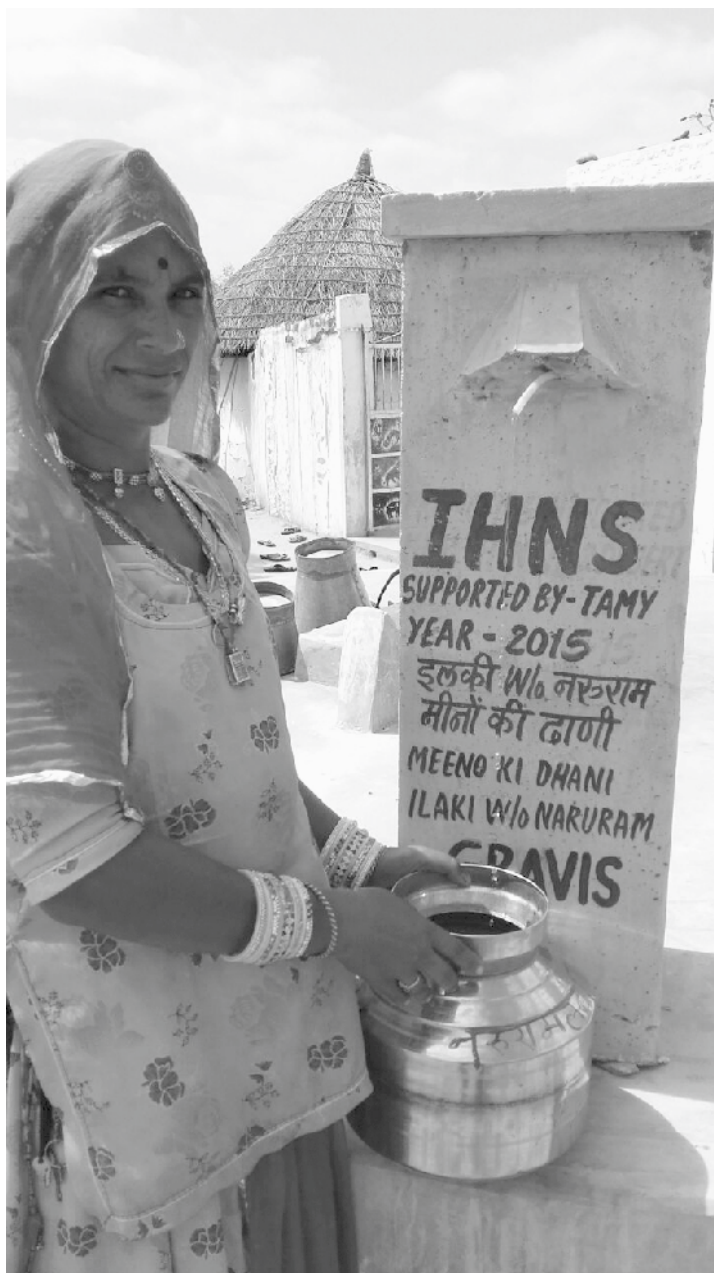
Nutrition Garden

GRAVIS vision and practical and sustainable approach has developed greenery in Thar Desert. GRAVIS works with the communities to develop fruit orchards, vegetable gardens and horticulture units for improving nutrition and health. These horticulture units are grown with use of waste water and organic waste is used as manure. Short term benefits are improving nutritional value of family food and use of solid and liquid waste. These benefits in turn improve the immunity and health dynamics of the family, community and village.

Long term benefit is that now people are encouraged to have shady trees also like Neem in their courtyards that help them in peak dry summer to survive without electricity, fans, coolers and air conditioners.

Another long term benefit of plantation practice is ecological transformation of soil as it can make the soil fertile and help in maintaining moisture into it. This is how, this intervention will prove Sustainable Environmental Intervention too.

Access and Practice Water Filtration for Safe Drinking Water



Water filter for safe drinking water

As we stepped into Bhanwari Devi house at village Chirai. She was busy doing her household work, so we asked her to carry on at leisure and waited for her to finish the task. While sitting there, we closely watched her doing her job. She was transferring water in the pitcher from another vessel. The vessel was filled with water from the bio filter provided by GRAVIS. It seemed that she had inculcated sanitation in her regular practices. The filter was placed about three feet above the ground. Water from the filter was collected in a spotless glittering vessel which was placed on a trivet.

This water was decanted in the pitcher. She was decanting this water in the pitcher. Before this she washed her hands and rinsed the pitcher and placed it on a clean slab nearby. After filling in water, she covered the pitcher with a plate. A ladle was seen hanging from a nail embedded in the side wall. Each of her activity revealed her sense of cleanliness. We need not ask her about her activities in daily life.

When Bhanwari Devi was asked about changes she observed after the water filter was installed, she said that now her expenses on water procurement and medicines have reduced. She does not have to visit the doctor or look out for medicines as frequently as it used to be prior to this, as incidences of stomachache and indigestion have reduced to a great extent.

Access and Practice of Household Toilet



House hold Toilet

While visiting the village Charai we met Ganga Devi. This woman from scheduled caste owns a kutcha house in the village. Her husband is a mine worker and she is a mother of three young daughters. GRAVIS got toilets constructed in the village in the year 2015 and she was one of the beneficiaries.

When asked about the benefits of the toilet facilities, she exclaimed with a great sign of relief that this activity has relieved her of stress regarding the security of her daughters. Prior to this, they had to wake up early in the morning and move out in the fields until darkness prevailed. This too was fine while crops were blooming. After harvesting it became very difficult as the fields were bare and hardly any secured place was left. Besides this, the fields remained filthy and foul smell prevailed in the air. People often urinated almost anywhere in the vicinity of their residences and the place used to stink.

After construction of toilets, people have developed the habit of using them and keeping their premises neat and tidy. The environment around their dwellings and in the fields has become free of dirt and smell, and the most significant thing is that she now leads a secured and dignified life with her daughters.

Focused Group Discussions (FGDs)

Three FGDs were done. One was the mixed group of males and females whereas second was exclusively of females and last one was exclusively of males for discussion on safe drinking water, good hygiene practices and access and utility of toilets and the contribution in improving knowledge, access and practices of WASH services of GRAVIS in Thar Desert.



A FGD

Safe Drinking Water : FGD in village on safe drinking water was done. It was a mixed group of males and females. Demonstration of use and benefits of water filter were also discussed. They also told that safe guards for maintain drinking water safe by the use of *Dandi Wala Lota*, covering the utensil and keeping out of the reach of small children and animals like dog, cat, goat, etc.

Safe Hygienic Practices : FGD in village on good hygienic practices was done. It was a group of females. They were able to recall the hygienic practices of how & when to wash hands and demonstrated. They also discussed about menstrual hygiene. They told the benefits of maintenance of cleanliness among children.

Toilet Access and Utility : FGD in village on toilet access and utility was done. It was a group of males. They told that initially they were reluctant but now feel very convenient. It is safe for females and provides freedom to her. People were able to acknowledge the use of toilets and its benefits.

CHAPTER 3

Conclusions and Way Forward

Conclusions : Sanitation and health interventions and related activities conducted by GRAVIS at grass root level are having positive impact on the lives of rural communities in Thar Desert. There is a need of expanding the program so that it can have wider impact in the area.

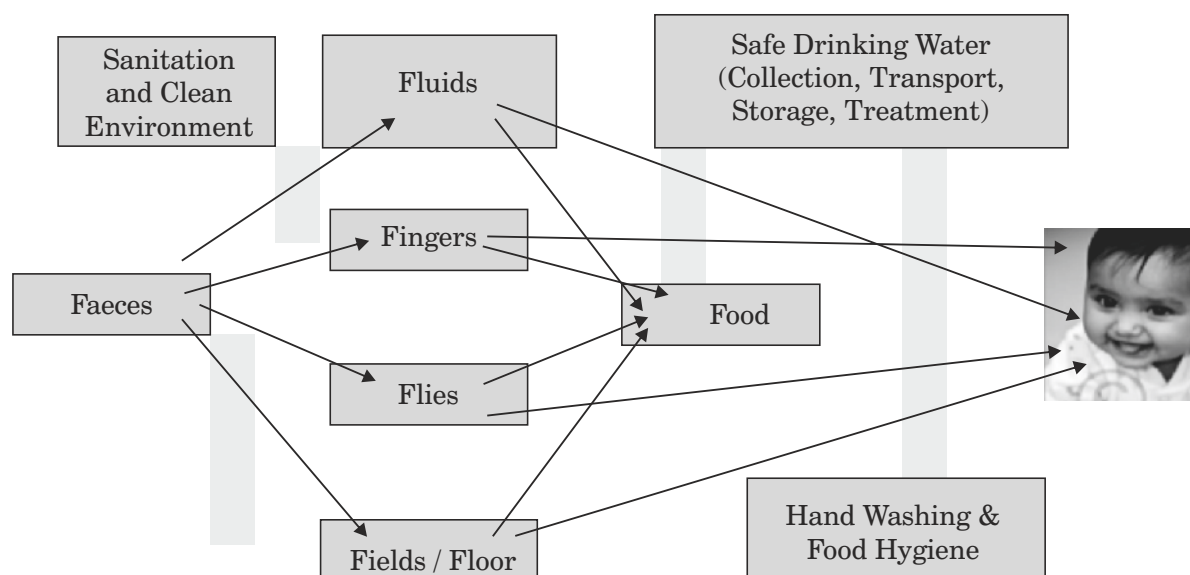


Diagram 3 ²¹: F Diagram adopted from Perez et al, 2012

Way Forward: Beyond the existing activities, following activities can be planned

- (i) **Awareness Generation on Hand Washing With Soap (HWWS):** Hand washing with soap is among the most effective and inexpensive ways to prevent diarrheal diseases and pneumonia. HWWS can reduce incidence of diarrhea by up to 44%, which is the second biggest cause of death in children under five years. HWWS needs to be prioritized as cost effective public health intervention.
 - » Awareness campaigns for mothers and care givers are required on Hand washing with soap at critical times is important for protecting the health of the whole family
 - » Awareness campaigns can be extended to schools and anganwadis as an excellent opportunity for children to develop the habit of HWWS.
- (ii) **Awareness Generation on Hygiene Practices:** Awareness generation on many hygienic practices that needs to be followed to remain healthy.
 - » Adolescent girls can be empowered through improved menstrual hygiene management. Knowledge and facilities necessary for good menstrual hygiene is the key to their dignity, privacy, educational achievement and their health.
 - » Food hygiene practices needs to be disseminated strategically for having healthy family.

- » Water hygiene practices should be extended to each and every person in society as water borne diseases are very common to affect human's health.
- (iii) **Awareness Generation and Capacity Building Trainings/ Camps:** Rural Volunteers, PRIs, VHW, staff conducting outreach activities needs to be oriented for active communication with villagers on water and sanitation services. Capacity building of such people should be done for proper knowledge and effective communication.
- » Scientific and “non- colored” socially and/ or culturally knowledge needs to be conveyed through sanitation messages and processes linking with health- related risks and desired impact on the issues of malnutrition, diarrhea, infant and child mortality and water borne health epidemics.
- (i) **Community Collective Consciousness for Managing Liquid and Solid Waste:** Intense collective efforts are required both in rural and urban settings for managing liquid and solid waste. The problem has saturated metro cities and is heavily load other cities, towns and villages. Ground water pollution is one of the dangerous signal for the survival of future generations. Improper solid & liquid waste management has exploited natural resources, reservoirs and polluted air, water and land.
- (ii) **Role of Non-Governmental Organizations:** The quantum of water and sanitation problem needs Non- Government organization to be in proactive role.
- » The dream of Open Defecation Free India cannot be achieved by Government efforts. Non- Government Organizations need to play their active role like GRAVIS for improving access and utilization of toilets in rural India.
- » Awareness Trainings, Medical Camps, Regular contacts of field staff, dissemination of information in simple pictorial formats, etc. can improve the situation to a greater extend.
- » Horticulture Units needs to be replicated as it is the mile stone action for sustainable development.
- » Water filters can help people to have safe drinking water. People needs to replicate the model.
- » The network of Village Health Workers and active role of Self-help Groups can be instrumental in attain the goals of safe water, adequate sanitation and good hygienic practices.



ACRONYMS

AHS	Annual Health Survey
ANC	Ante Natal Checkup
ANM	Auxiliary Midwifery Nurse
ARI	Acute Respiratory Infection
AWW	Anganwadi Worker
BPL	Below Poverty Line
CBR	Crude Birth Rate
CDR	Crude Death Rate
DLHS	District Level Household Survey
FGD	Focused Group Discussion
GP	Gram Panchayats
GDP	Gross Domestic Product
GRAVIS	Gramin Vikas Vigyan Samiti
HWWS	Hand washing With Soap
IHHL	Individual Household Latrines
IMR	Infant Mortality Rate
JMP	Joint Monitoring Program
KAP	Knowledge, Access and Practice
MMR	Maternal Mortality Ratio
MGNREGS	Mahatma Gandhi National Rural Employment Guarantee Scheme
NFHS	National Family Health Survey
NGP	Nirmal Gram Puruskar
ODF	Open Defecation Free
PRI	Panchayati Raj Institution
RTI	Reproductive Tract Infection
SBA	Swach Bharat Abhiyan
SC	Scheduled Castes
SHG	Self-Help Group
SRS	Sample Registration system
ST	Scheduled Tribes
TAMY	Tampere University Students Union
UN	United Nations
UNICEF	United Nations Children Fund
U5MR	Under 5 Mortality Rate
VHW	Village Health Worker
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization

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