

Fostering Innovation, Integration and Inclusion Through  
Interdisciplinary Practices in Management

An analytical study of Hygiene Practices and its  
Impact of Health status of the household

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Prevailing High Infant Mortality Rate is also largely attributed to poor sanitation Programme (CRSP) was launched in 1986 primarily with the objective of improving the quality of life of the rural people and to provide privacy and dignity to women.

The concept of sanitation was earlier limited to disposal of human excreta by cess pools, open ditches, pit latrines, bucket system etc. today it connotes a comprehensive concept, which includes liquid and solid waste disposal, food hygiene, personal, domestic as well as environmental hygiene.

LITERATURE REVIEW

1. (Sah, Khadgi, & Jha, 2017)Haveassessed the knowledge and practice regarding hygienic conditions among residents of Rangeli Municipality of Morang District. They have measured the association between socio-demographic characteristics and disease pattern with

ABSTRACT

Individual health and hygiene is largely dependent on adequate availability of drinking water and proper sanitation. Therefore, a direct relationship between water, sanitation and health. Consumption of unsafe drinking water, improper disposal of human excreta, improper environmental sanitation and lack of personal and food hygiene have been major causes of many diseases in developing countries and India is no exception to this. Sanitation is one of the basic determinants of quality of life and human development index. Good sanitary practices prevent contamination of water and soil and thereby prevent diseases. The concept of sanitation was, therefore, expanded to include personal hygiene, home sanitation, safe water, garbage disposal, excreta disposal and waste water disposal. The present research aim to study sanitation practices followed by the household in the PanhalaTaluka. For the study hygiene index was prepared and household sanitation practices were assessing. The study result reveals that households are following the hygiene practices in terms of defecation and hand washing habits, however the score is less in terms of water related hygiene practices and domestic waste management.

KEYWORDS: Sanitation, Hygiene Index

INTRODUCTION

Individual health and hygiene is largely dependent on adequate availability of drinking water and proper sanitation. Therefore, a direct relationship between water, sanitation and health. Consumption of unsafe drinking water, improper disposal of human excreta, improper environmental sanitation and lack of personal and food hygiene have been major causes of many diseases in developing countries and India is no exception to this.

hygienic practices of the study population. Their study reveals that majority of samples had good knowledge and practice regarding hygiene.Overall prevalence of hygienic practices of this study was 77.7%. Higher economic condition and those did not suffer from diarrhea in previous one year was significantly associated with hygienic practices.

2. (Rayamajhi, et al., 2014)have done a research on A Study On Sanitary And Hygiene Practices In ChungwangVdc Of Dhankuta District, Eastern Nepal through their extensive research they found that Only 97.4% of the respondents washed hands with soap and water though in reality though 99.3% of them had soaps in their households. Similarly, 81.2% of the respondents had provision of toilet at their home but 79.2 % used it regularly. This showed the importance of behavioral change and communication among the participants rather than health awareness alone. Basic hand washing

was practiced by everyone during/after defecation and before meal but the importance of it after cleaning the bottom and nose of children and before preparing the meal was known to few of the participants.

3. (Tearfund, February 2007) Tear fund is an evangelical Christian relief and development agency working with local partners to bring help and hope to communities in over 70 countries around the world. They had done investigation in Madagascar about development of policies on sanitation and hygiene at national level and implementation of sanitation and hygiene programmes and found positive factors relating to sanitation and hygiene are sanitation and hygiene policy, stakeholder dialogue in Madagascar, led by the national WASH platform strong leadership shown by certain individuals also have some barriers like low budgetary priority, education ministry is a secondary player in sanitation and hygiene policy-making and issue of choice and sequencing of different types of development intervention.
4. (Tan, Cheng, Soon, Ghazali, & Mahyudin, 2013) in their research article "A Qualitative Study On Personal Hygiene Knowledge And Practices Among Food" have done a study to determine personal hygiene knowledge among 25 food handlers at 12 selected primary schools in Klang Valley area, Selangor, Malaysia. A qualitative approach using in-depth interviews was employed and respondents were selected by a convenience sampling. The results showed that the respondents had basic knowledge on personal hygiene practices, mainly on hand washing (30.7%) and glove use (18.7%). The food handlers (<11%) also demonstrated their knowledge on other good personal hygiene practices that were related to the use of hair restrain/cap/apron, keeping tidy hair/clean nails/ clean hand, no bare hand contact with food, not wearing ring/jewelry, no smoking, tidy/clean attire and typhoid injection. Most respondents (>70%) practiced glove use, however more than 50% did not wash hands with every glove change, change gloves when change type of products and after preparing raw material. The study showed that the food handlers have basic knowledge one good personal hygiene practices. However, some discrepancies were revealed in the proper hand washing procedure. This study recommended good hand washing procedure to be reiterated among the food handlers. There is also an immediate need for continuous training among food handlers regarding good personal hygiene practices.
5. (Islam, July, 2012) Focused on personal hygiene but also discuss about street-vended food. This study was attempted to find out knowledge, attitude and practices about personal hygiene among East West University students. Their study examined for other risk factors of poor personal hygiene practices. Results of the study were showed that those students are very alert about their personal hygiene. Their hand washing habit is very good. But students (98%) take street-vended food which is very harmful for their health. Students who are coming from outside of Dhaka have some poor personal hygiene practices habit comparing who live permanently in Dhaka city with their family.

**Most of the study are focusing on defecation habits as a hygiene practices.** Hygiene practice is a multidimensional concept it includes-

- A. Drinking water practices,
- B. Hand washing practices
- C. Defecation practices and
- D. Domestic waste management practices.

**Present study has assessed the impact of all these hygiene practices on household health status.**

**Objectives of the Study**

- > To understand the hygiene practices followed by the people in Panhala Taluka.
- > To analyse the relationship between health status and hygiene practices followed by the people.

**Hypotheses**

**Hypothesis No.1**

- > H<sub>0</sub>: Hospital and medical expenditures of the family are independent to hygiene practices followed by the household.

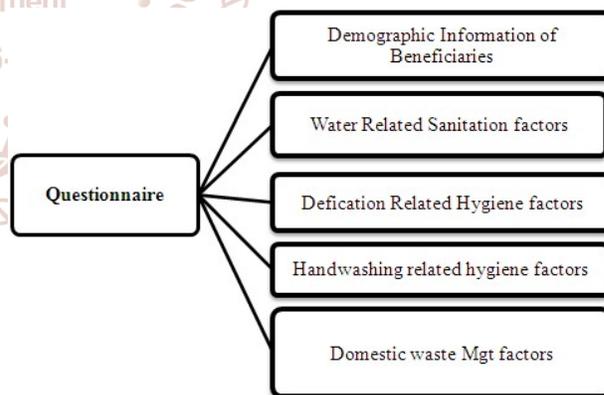
**Hypothesis No.2**

- > H<sub>0</sub>: Hygiene practices followed by the respondents are independent to their income.

**Research Methodology**

**Data Collection:** In the view of the given objectives, the present research work is carried out with the help of both secondary data and primary data was collected.

- A. Primary Source** - To collect the Primary data Survey method was adopted. Through conducting extensive literature survey researcher prepared questionnaire. The components of the questionnaire are as follows:



- B. Secondary Source:** in order to study the problem different secondary data sources were taped, such as:

- > Already published research papers.
- > Bulletin, Magazine, Reports of Central Government and State Government & Journals
- > Shivaji University's Library and Library of other educational institute and Universities, etc.

**1.6.2 Sample Design:** To contact the study Stratified Multistage Random sampling method was used.

**Procedure for collecting the samples was as follows:**

1. Total geographical area of Panhala Taluka was divided as per Jilaha Parishad constituencies. There are four constituencies in the Taluka.

2. Three villages from each Taluka were selected randomly.
3. From these villages, beneficiary households and Gram Panchayat members were contacted for collecting information.
4. Final respondent under the study was contacted using simple random sampling method.

Procedure for sampling the respondents:

- A. Number of respondents to be contacted from each village was estimated using proportion to population sample size estimation method.
- B. List of household from each village was procured. Each household was given one unique number in M.S. office excel.
- C. By using random number generator programming for each village numbers were generated. To avoid no response error for each village five extra random numbers were generated.
- D. Respective numbered household was contacted for collecting the data.

**1.6.3 Sample Size: Total households of the villages selected for the study was calculated. It is the total population under the study.**

**Calculation of the Sample Size is as follows.**

**Population Size:** 4644 is the total household in the selected villages

**Confidence level:** 95 %

**Confidence interval:**  $\pm 5\%$

**Sample size estimating method:** Percentage or Proportion sample size estimating method.

**Formula:**

$$n = \frac{z^2 \cdot p \cdot q \cdot N}{e^2 (N - 1) + z^2 \cdot p \cdot q}$$

**Where:**

n = Size of Sample.

N = Size of Population (46444)

z = 1.96 (as per table of area under normal curve for the given confidence level of 95%)

p = Sample proportion (0.5)

q = 1 - p (1 - 0.5 = 0.5)

e = Confidence interval  $\pm 5\%$  (0.05)

By calculating the above equation **sample size of the study was 379 households** from the selected villages. (Kothari, 2006)

**Primary Data Source:**

The research instrument used for collecting primary data was a questionnaire, which are most widely used data collection methods in evaluation research. The structured questionnaire is used for the data collection. The questions from the questionnaire were close ended question. Researcher has collected primary data from the respondents in the scope of sample size. Questionnaires were circulated and get filled by the respondents from the research area. Researcher helps respondents to understand and filling of the questionnaire. It helped to gather information on opinions, views, relations, facts, and other information.

**5.3 The Analysis Has Done In Three Parts**

A hygiene practice is a multidimensional concept. This study has adopted a holistic perspective towards assessing the

level of hygiene practices following in the study area. It studied the composite impact of hygiene practices followed and its impact on health condition in the given study area.

The researcher has prepared an index to assess the level of hygiene practices followed in the study area. The components of the index are as follows.

**Water Related Hygiene practices:**

Water is one of the important medium of spreading health diseases. Many a times drinking water provided in the rural area is contaminated. As there is no access for clean drinking water people have to drink unhealthy water. Besides, unhealthy drinking water supplied from its source, unhealthy water handling practices also cause contamination of drinking water. In rural area there is no daily supply of drinking water; household members have to walk long distance for fetch the water. Hence they fetch more amount of water in their free time and store it for more days. There are chances of water contamination if it is stored for more days. Using clean utensil for drinking water storage is important. Improper cleaning of drinking water storing utensils also leads to water contamination. Spread of water related diseases can be controlled by effective sterilizing the drinking water. Here is assessed what extent rural people do drinking water sterilization.

**Defecation Related Hygiene:**

Open defecation is the most unhygienic practices followed in India. It is route cause of spreading the health diseases like Malaria, dehydration and other viral diseases. There are various socio-economic factors influencing on peoples preferences to follow open defecation practices. Indian Government has made huge effort to change peoples attitude and convince them to use toilet for defecation. It is not only for defecation but urinate also Indians goes in open space. It is checked what extent Indians use toilets for urinate and defecation.

**Hand washing habits:**

Transmitting of viral diseases can be control effectively by following daily hand watching practices. Infection can be control through using soap for watching hands. It is checked what extent hand watching practices are followed in the rural area. It is checked whether respondents watch their hands daily after doing various tasks. Such as defecation, returning from work etc.

**Domestic Waste Management:**

Proper disposal of domestic waste ensures the hygiene and clean environment. Disposal of waste ensures timely decomposition of the waste. It also helps to avoid dirty smell. Mosquitos' birth can be control by proper domestic waste management. The score is given to the respondents who follow the healthy domestic waste management practices.

To prepare the index in detail review of index preparation methods is done. The procedure of preparation of Human development index 2017 is studied. To prepare the Hygiene index, Women's empowerment in agriculture index prepared by International Food Policy Research Institute (IFPRI) is referred and same methodology is followed for construction of Hygiene index.

Below table depicts the questions in each domain used for the construction and evaluation of the Hygiene Index.

**Table No. Hygiene index with questions in each domain.**

Domain	Questions	Response	Value assigned for index	Max Score for the domain
Water Related Hygiene	For how many days you store drinking water	1 day (No Store)	5	
		2 days	4	
		3 days	3	
		4 days	2	
		5 days	1	
		6 days	0	
	Within how many days you clean the utensils	1 day	5	
		2 days	4	
		3 days	3	
		4 days	2	
		5 days	1	
		6 days	0	
	Whether you sterilized your drinking water	Through out year	2	
		Only in Rainy season	1	
		Never	0	
	Grade the quality of your drinking water.	Very Good	4	
		Good	3	
		Neither Good Not Bad	2	
Bad		1		
Very Bad		0		
Defecation Related Hygiene Habits 13	Whether toilet is available at your home q14	Yes	5	
		No	0	
	where generally Male members urinates	Private Toilet	2	
		Public Toilet	1	
		Open Space	0	
	where generally Female members urinate	Private Toilet	2	
		Public Toilet	1	
		Open Space	0	
	where generally Male members defecate	Private Toilet	2	
		Public Toilet	1	
		Open Space	0	
	where generally Female members defecate	Private Toilet	2	
		Public Toilet	1	
Open Space		0		
Hand Washing Habits	Returning from work.	Always 1	3	
		Many a times 2	2	
		Some Time	1	
		Never	0	
	After defecation	Always	3	
		Many a times	2	
		Some Time	1	
		Never	0	
	After cleaning small kids defecation	Always	3	
		Many a times	2	
		Some Time	1	
	Animal Husbandry	Never	0	
		Always	3	
		Many a times	2	
	Before Cooking Food	Some Time	1	
		Never	0	
		Always	3	
	Before having food	Many a times	2	
		Some Time	1	
		Never	0	

Domestic Waste Management 17	where you through your domestic waste	Through it on the road or Through it on open space	0	
		Dispose it properly	5	
	Whether there is dustbin near by your village	Yes	2	
		No	0	
	Whether there is garbage collection van	Yes	2	
		No	0	
	Whether dustbin is cleaned regularly	Always	2	
		Some time	1	
		Never	0	
	How often garbage collection van comes	Every day	3	
		Alternative day	2	
		Twice in a week	1	
		Never	0	
	How you grade the cleanness of your area.	Very Good	3	
		Good	2	
		Bad	1	
		Very Bad	0	

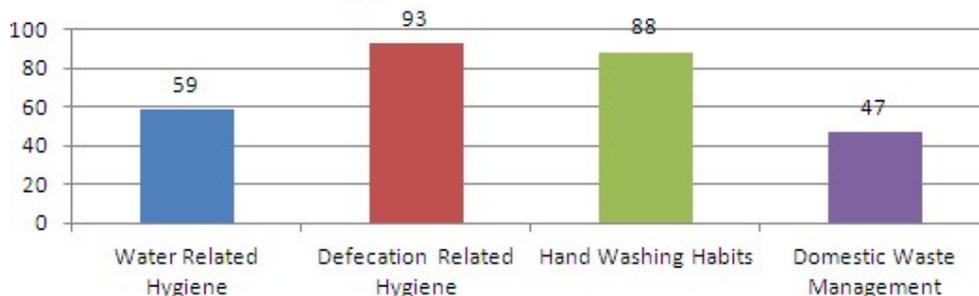
The answers to each question included in the Hygiene Index are converted into the score by multiplying values assigned for index. These values are added up within each domain and then divided by the number of items under each domain and score of each domain is ascertained.

Results:

Following table shows the descriptive statistics of Mean score Hygiene practices followed by the respondents in the Panhala Taluka.

Domain	N	Mean	Std. Deviation
Water Related Hygiene	379	58.5917	13.38160
Defecation Related Hygiene	379	92.6324	16.87586
Hand Washing Habits	379	88.4638	20.31575
Domestic Waste Management	379	47.1364	16.32380

### Hygiene Index Result



Interpretation:

Above graph reveals that Defecation related hygiene practices score is maximum at 93 percent. It is encouraging to state that people defecation habits have been changing. People have almost shifted from the open defecation to use of toilet. The governments have done huge efforts to generate awareness among the population to use toilets. The findings reveal that the results are fruitful. People are using toilets not only for defecation but also for urinate. The study findings also supports the Maharashtra Government sanitation report which has stated that Kolhapur district has become open defecation free district.

### Hypotheses Testing

Here researcher has tested the stated hypothesis with appropriate statistical tools. The result of hypothesis is presented below.

#### Hypothesis No.1: Hygiene Practices and Family Health.

One of the important objectives of this research is to assess the relationship between hygiene practices and family health

status of the respondent. Hygiene practices of the respondents were measured by Hygiene Index prepared by the researcher. Health status of the family is assessed on the basis of the proportion of income they spend on the hospital and medical charges. Respondents were asked to state the proportion of the income of their family they send on the hospital and medical charges. The response is between 1 percent to 5percent 6percent to 10percent, 11percent to

15percent 16percent to 20percent, 20 percent to 25percent and more than 25 percent.

**The statement of the hypothesis is as follows.**

H<sub>0</sub>: Hospital and medical expenditures of the family are independent to hygiene practices followed by the household.

Here dependent variable is the proportion of the income family spends on hospital and medical charges. It is categorical variable and one out of given six response is possible. Predictor variable, family hygiene practices are measured using hygiene index score of the each family. It is continuous variable.

**Hypothesis test used:**

To Multinomial logistic regression (often just called 'multinomial regression') is used to predict a nominal dependent variable given one or more independent variables. It is sometimes considered an extension of binomial logistic regression to allow for a dependent variable with more than two categories. As with other types of regression, multinomial logistic regression can have nominal and/or continuous independent variables and can have interactions between independent variables to predict the dependent variable.

**The test results are presented as follows:**

**Model Fitting Information:** table is used to test the overall model fit. The Model Fitting Information table, as shown below:

Model	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	497.039	106.063	12	.000
Final	390.976			

Here the "Final" row presents information on whether all the coefficients of the model are zero (i.e., whether any of the coefficients are statistically significant). It state whether the variables added statistically significantly improve the model compared to the intercept alone (i.e., with no variables added). The results from the "Sig." column that *p* = .000, which means that the full model statistically significantly predicts the dependent variable better than the intercept-only model alone.

In multinomial logistic regression you can also consider measures that are similar to R<sup>2</sup> in ordinary least-squares linear regression, which is the proportion of variance that can be explained by the model. In multinomial logistic regression, however, these are pseudo R<sup>2</sup> measures and there is more than one, although none are easily interpretable. Nonetheless, they are calculated and shown below in the

**Pseudo R-Square table:**

Cox and Snell	.244
Nagelkerke	.300
McFadden	.166

SPSS Statistics calculates the Cox and Snell, Nagelkerke and McFadden pseudo R<sup>2</sup> measures. Of much greater importance are the results presented in the **Likelihood Ratio Tests** table, as shown below:

Effect	Model Fitting Criteria	Likelihood Ratio Tests		
	-2 Log Likelihood of Reduced Model	Chi-Square	df	Sig.
Intercept	416.730	25.754	3	.000
Water Related Hygiene	432.718	41.741	3	.000
Defecation Related Hygiene	391.222	.246	3	.970
Hand Washing Habits	407.288	16.311	3	.001
Domestic Waste Management	395.442	4.465	3	.215

This table shows which of your independent variables are statistically significant. It is seen that water related Hygiene factor is statistically significant (P-value=0.000) at 5 percent level of significant, Defecation related hygiene factors is not statistically significant (P-value=0.970). Hand washing habits hygiene factors is statistically significant (P-value = 0.000) is significant at 5 percent level of significant and domestic waste management related hygiene factors is not statistically significant (P-value=.215)

**Hypothesis No.2. Hygiene Practices and Income.**

Further researcher has studied whether there is any relationship between hygiene practices followed by the respondents and their Income.

**Statement of Hypothesis:**

H<sub>0</sub>: Hygiene practices followed by the respondents are independent to their income.

Hypothesis test used: The one-way analysis of variance (ANOVA) is used to determine whether there are any statistically significant differences between the means of two or more independent (unrelated) groups (although you tend to only see it used when there are a minimum of three, rather than two groups).

Following table shows the income wise descriptive statistics of hygiene practices followed by the respondents.

Descriptive									
		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Defecation Related Hygiene	Up to 1 Lakh	265	93.85	15.75	0.97	91.94	95.75	38.46	100
	Up to 2 lakh	43	90.88	15.95	2.43	85.97	95.78	38.46	100
	Up to 3 Lakh	40	85.38	22.43	3.55	78.21	92.56	30.77	100
	Up to 4 Lakh	10	86.92	27.63	8.74	67.16	106.69	30.77	100
	More than 5 Lakh	21	97.44	8.88	1.94	93.39	101.48	61.54	100
	Total	379	92.63	16.88	0.87	90.93	94.34	30.77	100
Hand Washing Habits	Up to 1 Lakh	265	92.91	18.77	1.15	90.64	95.18	0.00	100
	Up to 2 lakh	43	74.81	20.19	3.08	68.59	81.02	38.89	100
	Up to 3 Lakh	40	70.42	18.20	2.88	64.59	76.24	38.89	100
	Up to 4 Lakh	10	77.22	17.06	5.40	65.02	89.43	50.00	100
	More than 5 Lakh	21	100.00	0.00	0.00	100.00	100.00	100.00	100
	Total	379	88.46	20.32	1.04	86.41	90.52	0.00	100
Domestic Waste Management	Up to 1 Lakh	265	43.20	10.39	0.64	41.94	44.45	0.00	100
	Up to 2 lakh	43	53.49	26.55	4.05	45.32	61.66	0.00	100
	Up to 3 Lakh	40	63.68	21.88	3.46	56.68	70.68	11.76	100
	Up to 4 Lakh	10	70.59	10.00	3.16	63.44	77.74	58.82	88.24
	More than 5 Lakh	21	41.18	0.00	0.00	41.18	41.18	41.18	41.18
	Total	379	47.14	16.32	0.84	45.49	48.79	0.00	100
Water Related Hygiene	Up to 1 Lakh	265	54.55	9.78	0.60	53.37	55.73	31.25	87.5
	Up to 2 lakh	43	66.28	16.26	2.48	61.27	71.28	25.00	106.25
	Up to 3 Lakh	40	76.09	13.57	2.15	71.75	80.43	37.50	106.25
	Up to 4 Lakh	10	73.75	5.74	1.82	69.64	77.86	62.50	81.25
	More than 5 Lakh	21	53.27	9.61	2.10	48.90	57.65	43.75	68.75
	Total	379	58.59	13.38	0.69	57.24	59.94	25.00	106.25

ANOVA						
		Sum of Squares	df	Mean Square	F	Sig.
Defecation Related Hygiene	Between Groups	3434.689	4	858.672	3.081	.016
	Within Groups	104217.651	374	278.657		
	Total	107652.340	378			
Hand Washing Habits	Between Groups	30355.486	4	7588.872	22.587	.000
	Within Groups	125656.273	374	335.979		
	Total	156011.759	378			
Domestic Waste Management	Between Groups	23037.377	4	5759.344	27.727	.000
	Within Groups	77686.984	374	207.719		
	Total	100724.361	378			
Water Related Hygiene	Between Groups	22010.427	4	5502.607	45.055	.000
	Within Groups	45676.949	374	122.131		
	Total	67687.376	378			

Above table reveals all score on all four hygiene index is significant at 5 % level. Defecation Related Hygiene (P-value is .016), Hand Washing Habits (P-value is 0.00), Domestic Waste Management (P-value is 0.00) and Water Related Hygiene (P-value is 0.00). Hence the null hypothesis is rejected and it is concluded that hygiene practices followed by the respondents depends on income on the household. From descriptive statistics it is revealed that as income improves the hygiene score of the respondents also improve.

**Conclusion**

Individual health and hygiene is largely dependent on adequate availability of drinking water and proper sanitation. Therefore, a direct relationship between water, sanitation and health. Consumption of unsafe drinking water, improper disposal of human excreta, improper environmental sanitation and lack of personal and food hygiene have been major causes of many diseases in developing countries and India is no exception to this. The Central Rural Sanitation Programme (CRSP) was launched the scheme Total Sanitation Campaign in 1968. The main aim

of the scheme is improving the quality of life of the rural people and provides privacy and dignity to women. "Total Sanitation Campaign (TSC)" emphasizes more on Information, Education and Communication (IEC), Human Resource Development, Capacity Development activates to increase awareness among the rural people and generation of demand for sanitary facilities. The present study is an assessment of awareness and impact of Total sanitation practices in rural Panhala Taluka of Kolhapur district. For the study household from the Taluka were contacted and information was collected using simple random sampling

method. On the basis of data collected household hygiene practices index is prepared. The index score reveals that the household are comparatively following good hygiene practices for defecation and hand washing habits. Whereas there are score of water storage hygiene practices. It is discouraging to state here that the score of domestic waste relating practices are worst. It is because in most of the villages there are not provisions for dustbin and waste collection vans. To improve this situation researcher has suggested that people awareness, education and action is the solution. Expected objectives of sanitation programs can be achieved through people participation. Role of rural leaders are of paramount important, Universities, schools colleges shall get involved in awareness generation of sanitation program and practices. Rural youth organization and play significant role in this direction. Besides relying on mass media campaign personalized door to door contact and street plays demonstrations will helps to achieve desired objectives.

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