SUSTAINABILITY OF CHANGES IN HYGIENE BEHAVIOUR

Kerala
India

Socio Economic Unit
Foundation

Sustaining Changes in Hygiene Behaviour

a multi country research
findings from Kerala study
2001-2004

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Socio Economic Unit Foundation

Sustaining Changes in Hygiene Behaviour
KERALA, INDIA

Mrs. Suma Mathews, Programme officer, SEUF
Mrs. Beena Kumari G, Programme officer, SEUF

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- Ms. Eveline Bolt, Ms. Kathleen Shordt, Ms. Caridad Camacho from IRC Netherlands
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P.B. No. 507, Thycad P.O., Thiruvananthapuram-14
Kerala, India
Phone : +91 - 471 - 2325907
Fax : +91 - 471 - 2325914
E-mail : seufhq@sify.com, seuf@md2-vsnl.net.in
Website : www.seuf.org

Foreword

Mr. James Varghese I.A.S.

The first Millennium Development Goal (MDG) is about eradication of extreme poverty and hunger. The fourth MDG is about reduction in child mortality. The seventh goal concerns environmental sustainability. Safe water supply can facilitate the achievements of these goals to a great extent. The benefits of safe water supply would be possible only if sound sanitation and hygiene practices are there. Thus progress towards the key Millennium Development Goals (MDGs) will be accelerated through improved environmental health conditions in particular the MDGs for child health, access to water and sanitation and environmental sustainability. Environmental risk factors account for 21% of overall burden of diseases worldwide, and more in developing countries.

It is well established that mere provision of water and sanitation facilities are not enough to bring down morbidity and mortality rates. This has to be accompanied by hygiene behaviour practices associated with water and sanitation facilities. Achieving behavioural change should not be undertaken lightly as it is very difficult to change behaviour one has developed over a life time.

Research has shown that hygiene behaviour do change as a result of investments in hygiene education and interventions with community participation. Whether the new behaviours developed are sustained after the project interventions or do people go back to their old behaviour has not been investigated so far. The Research on Sustaining changes in hygiene behaviour is to fill in this gap. IRC International Water and Sanitation Centre, The Netherland and London school of Hygiene and Tropical Medicine, UK together with 3 African and 3 Asian Countries undertook the multi country Research on Sustaining changes in Hygiene Behaviour with the support of European commission and Dutch government (DGIS). Socio Economic Unit Foundation is privileged to be one of the Asian partners to carry out this study in 12 grama Panchayaths (village level local self government bodies) in Kerala which had hygiene education interventions by SEUF and Total sanitation in people's campaign programmes.

Socio Economic Unit Foundation, an organization quite unique in its approaches and initiatives has contributed valuable inputs in Water and Sanitation sector in Kerala through community participation and hygiene promotion since 1987. The facilitation of implementation of almost 0.2 million house hold double pit latrines with health education programmes which addressed the basic necessity of thousands of villagers and protected the self esteem of hundreds of women, numerous individual as well as community water supply schemes that quenched the thirst of thousands of people and reduced the burden of hundreds of women, numerous empowerment programmes that build up the capacity of several community groups and increased the quality of intervention at various levels are the thriving force behind the growth of SEUF from an implementing agency to a resource centre today.

This study Sustaining changes in hygiene behaviors helped SEUF to revisit many of its projects and approaches. In some panchayaths it was complemented by interventions of people's plan campaigns. This booklet is the outcome of the study in Kerala. In Kerala few research studies were conducted in the field of hygiene behaviour. During the last decade, huge amounts have been invested in IEC activities. The impact of IEC on hygiene behaviour has not been investigated or assessed. This study results show strong evidence that intensity and quality of hygiene promotion interventions contributed to the Sustaining changes in hygiene behaviour. A number of findings exemplified in this small book might help the inquiries of sector professionals, researchers, practitioners who have a genuine interest in this field of water and sanitation.

Often research results remain in shelves and not accessible or used. This book is intended to share and disseminate the research findings and make available so that it will be useful to the community, local self government institutions and sector professionals.

James Varghese I.A.S.
Executive Director
Socio Economic Unit Foundation

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1. INTRODUCTION

People in many countries around the world have achieved better access to water and sanitation facilities in the past few decades. However, the intended health benefits have not always followed. In many water and sanitation programmes, the challenge remains of integrating an effective hygiene promotion component. The Research project on Sustaining Changes in Hygiene behaviour is an effort to investigate a range of projects and the conditions in which the changes in hygiene behaviour be sustained.

The study also was designed to enhance the knowledge level of researchers and practitioners on factors influencing the sustainability of changes in hygiene behaviours by sharing existing knowledge and developing new knowledge through multi-country research. The network will also identify knowledge gaps and develop a research methodology for further knowledge development through field research to which the project partners have committed themselves.

1.1. The *Objectives:*

The general objectives of the study are as follows:

1. To assess the level of sustainability of behavioural change One to three years after a hygiene promotion intervention.

2. To develop a methodology for simple/cost effective longitudinal monitoring of behavioural changes.
3. To get insight in to relationships between project approaches and external conditions and sustainability of changes in hygiene behaviour.
4. To determine policy and programming indications and influence policy to increase the effectiveness of water and sanitation programmes
5. To develop an active network in the field of hygiene promotion.

The European Commission (EC) and the Netherlands's Directorate General International Co-operation (DGIS) have provided the necessary financial support for the study.

1.2 Study Partners:

- Network for Water and Sanitation (NETWAS) Kenya
- Water Aid Uganda (WAU)
- Volta Region Community Water Supply and Sanitation Agency (VRCWSA) Ghana.
- Nepal Water for Health Organisation (NEWAH)
- COSI-Foundation for Technical Cooperation (COSI) Sri Lanka
- Socio-Economic Unit Foundation(SEUF) Kerala, India
- London School of Hygiene and Tropical Medicine (LSHTM) United Kingdom
- German Agency for Technical Cooperation (GTZ) Germany
- IRC International Water and sanitation centre The Netherlands

2. BACKGROUND & STRATEGY

The study in India was carried out in Kerala, a State with about 31.83 million people(2001 Census) in the extreme south of India. The rural communities in Kerala are divided into local government areas called panchayats. These spread-out panchayats contain an average population ranging from about 5102 to about 68,205 people (2001 Census). In part because of the success of land reform in Kerala, most houses are built on their own land, along the roads and paths, in continuous rather than clustered settlements. Rural population density is high, ranging in the project panchayats from 952 to above 5363 people per square kilometre. Each Panchayat is divided for administrative purposes into about ten - twenty wards, each having an average 2500 people. Local government consists of an elected Panchayat president and a council of elected ward members (one member per ward).

2.1 Sanitation scenario in Kerala

Sanitation sector has gained considerable importance during the last five years in Kerala with the launching of People's Planning Program (PPP) followed by democratic decentralization. Other important programmes in sanitation are the Total Sanitation Campaign supported by the Central Government, the Kerala Rural Water Supply and Sanitation Project (implimented by KRWSA) supported by the World Bank etc. Thus, the present study "Sustaining Changes in Hygiene Behavior" is of high relevance.

2.2 About the water and sanitation project

The study was undertaken by the Socio-Economic Unit Foundation (SEUF). It focused on areas in where the SEUF had completed its programme from two up to nine years earlier. Socio-Economic Unit was conceptualized and set up as an organization to integrate social inputs in Dutch and Danish-supported rural water supply and sanitation programs in 1988 in 73 Panchayats having nearly 1.8 million people.

The objective of the ***sanitation with education program*** *was to provide good quality permanent latrines to 50% of the poor households (Below Poverty Line). This included promotion of good hygiene practices through awareness campaigns and monitoring of these behaviours . The implementation strategy focussed on enabling the local governments and community groups to plan and implement sanitation programmes.*

Almost 150,000 latrines hadbeen constructed in the programme with community participation and health education. Only one technology was used: double-pit, pour-flush latrines, with a squatting pan and complete superstructures. The latrines were subsidized, with the householders paying 20% of the costs initially. This changed later to the householders paying 25% of the cost of a latrine and the local panchayat government paying 15% to 40%.

It should be noted that the SEUF worked on many programmes including design of water distribution systems, community organization for piped water supply, drainage, institutional water supply and sanitation. Thus its sanitation and hygiene programmes were one among other activities.

The main groups involved were:

The **ward water committee (WWC) :** Seven volunteers, men and women, usually representing local voluntary groups in the panchayat, such as youth clubs, women's organisations etc. The water committee helped the panchayath in the implimentation of water supply and sanitation programmes. The ward water committee was in charge of general implementation in each ward and is responsible for all health education activities.

Local government Local government helped design the programme, provided staff time and accounting services, collected funds, purchased materials and monitored the entire activities as a partner in the programme.

SEUF field staff: For every one or two Panchayats, SEUF employed a field staff organizer. He or she was responsible for community work related to health education, piped water schemes, environmental sanitation and the latrine-with-education programme. The field organizer covered a population of 25,000 to 50,000 people and was the primary link between the SEUF and the ward water committees and Panchayat. Field staff worked anywhere from 2 up to as much as 5 years in one or two panchayats.

Sanitation supervisors: Sanitation supervisor was employed to supervise the technical aspects of sanitation.

The strategy:
Reaching one-half of the Below Poverty Line(BPL) families

The objectives of the sanitation programme were for

- 50 percent latrine coverage and use by *poor* households who have no sanitary facilities;
- promotion of improved sanitation facilities and habits in all households

The length of intervention was not fixed. Depending on the local circumstances the duration and the programme goals were decided. Usually this means how long it took to organize and mobilize with local groups to achieve the agreed programme goals negotiated with that panchayat.

The sanitation implementation strategy contained thirteen steps, as shown below. Of the thirteen steps, construction comes as the tenth step. Each element was important. The exact timing and duration of each step varied from one location to another in response to local needs and opportunities.

Thirteen steps in the SEUF sanitation programme

Beginning in a panchayat

1 Identify/select Panchayat

2 Panchayat meeting

3 Data collection

4 Masons' training, Model latrine construction and cost estimation.

5 Panchayat agreement, Work plan, Contribution collection

Working in Ttwo to four wards at a time

6 Mobilization & health education

7 Household selection & contribution

8 Education (technical & health)

9 Pit marking/pit digging

10 Purchase, distribution of materials & construction

11 Technical verification

12 Use & maintenance, follow-up monitoring

13 Documentation

Education and Mobilization (Steps 6 and 8)

In the programmes two types of education and communication activities occured at set intervals:

- There was three month to one year period of general mobilization, with a range of activities such as group meetings, exhibitions, health camps, films, and street drama. This was meant to inform people on the health aspects of latrines and increase demand.
- Three 'Health education classes' were organised for the beneficiary families on specific topics. Health education class one focused on need of latrine, HE class two on technical aspects and HE class three on use and maintenance of latrines. Men usually attended the technical class.

The first promotion activity the programme workers undertake is to create an awareness among people about the dangers of open air defecation and environmental pollution and the implications of these habits with respect to commonly occurring waterborne diseases. Other messages emphasized in the general mobilization and the classes for families are the following:

- All family members, including children and men, should use latrines
- Washing both hands with soap or ash after defecation
- Keeping home premises and latrine clean
- Other special issues for that family, ward or Panchayat
- Technical aspects:
  - maintaining the water seal
  - using minimum quantity of water to flush latrine
  - preventing blockage
  - function of junction box and changing or desludging the two pits
  - how to clean the latrine, trap and pan.

Health staff, Integrated Child Development Scheme (ICDS) workers, Panchayat departments, water committee members and SEU were

mainly involved in the education activities. Picture cards, instruction booklets and leaflets were distributed. Health and ICDS personnel impart health education and information in the context of their ongoing activities, with support, training and materials from SEUs. Local youth clubs, Mahila Samajams (women's clubs) and voluntary agencies and ward members were trained to carry out educational programmes. The trained masons also promoted hygiene behaviours.

3. THE RESEARCH STUDY

Specific Objectives of the study:

- To assess the sustainability of changes in hygiene behaviour developed through different intervention strategies.
- To sensitise the Local Self Governments to integrate Hygiene Promotion initiatives in their sanitation programmes to bring about sustained behaviours.
- To contribute to the formulation of a state Hygiene Promotion Policy.

The study focussed research attention on the following key behaviours:

- Latrine use
- Cleanliness of latrine
- Functionality
- Hand washing practices of people
- Environmental hygiene of the households

To guide the research a number of hypotheses were developed around each hygiene behaviours. These are shown in Appendix 1.

4. FIRST ROUND SURVEY

The study was undertaken in 2001 (called the first round survey) and then in 2002 (second round survey). The results of the first round study led to some additional questions being asked, and some design changes for the second round survey. Therefore the two rounds of the study are reported separately.

4.1 Sample:

For the study in 2001, three Panchayats were selected:

1. Thrikkunnapuzha, a very poor panchayat where an intensive intervention had taken place in 1990 - 97. Duration of the intervention was about 7 years.
2. Alappad, a poor panchayat where the SEUF started the intervention as a pilot project working with the Government-supported People's Planning Programme. This intensive intervention lasted about 4 years in all and was completed in 2000.
3. Panmana a control Panchayat somewhat richer that had a sanitation programme but without a hygiene promotion intervention.

S.no	Panchayats	Intervention	Intervention ended	Length of hygiene intervention in programme
1.	Thrikkunnap-puzha	SEUF	Prior to 1998	7 years
2.	Alappad	SEUF (first year) followed by total sanitation programme under the Peoples' Planning Programme	2000	4 years
3.	Panmana (Control)	Peoples' Planning Programme- Sanitation-without hygiene promotion	2000	

The sample for the study, 120 households was randomly selected from the beneficiaries of the sanitation program. **All these beneficiaries belong to the Below Poverty Line families.**

4.2 Methodology and tools:

Six Local assistants were selected and trained for the survey. The tools used were:

1. Survey questionnaire
2. Observation (physical environment, latrines, etc)
3. Pocket voting (for all members present in the household, for handwashing practice and latrine use)
4. Demonstration (of handwashing skills)

5. Key informants interview (panchayat presidents and water committees that were active at the time of the intervention)
6. Focus group discussion (selected householders)

The units for 1-4 methods were men, women, boys and girls in the household and the household environment. Key informants were the project staffs, Panchayat Presidents and the Ward Water Committees. Secondary data were collected from the records of Panchayats, SEUF and Kerala Total Health and Sanitation Mission (KTHSM).

4.3 Analysis

In general, our expectation was that the sustainability of hygiene behaviours would be greatest in the panchayat that had the more intensive intervention (Thrikkunnapuzha) and would be worst in the panchayat that did not have a specific hygiene promotion component (Panmana).

Latrine use

Latrine use was defined as "always using a good latrine when they are around the household?" This was tested using a household pocket voting protocol with all members of the household who were present at the time of the survey.

	Good	Good
Panmana (control)	97%	92%
Allapad	93%	61%
Thrikkunnapuzha	98%	89%

Findings:

- For women and girls the use of latrines was not significantly different in the 3 panchayats

- Overall, however, Thrikkunnapuzha is significantly better than Alapad in latrine use $p<0.0001$ Panmana is significantly better than Allapad in latrine use $p<0.000001$
- Less than two out of three men in Alapad reported consistent use of latrines compared to about 9 out of 10 men in the other 2 panchayats
- Women have significantly greater use of latrines than men according to the pocket voting. $p<0.0001$ This was cross-checked by asking the key informants who also said that women/ girls used latrines more before the intervention than men/boys.

Overall, it was not demonstrated that the panchayats with longer and more intense interventions showed better use of latrines.

Latrine maintenance, functioning and cleanliness of the household environment

	Latrine maintenance	Latrine functioning	Environment of Household
Panmana (control)	92%	12%	35%
Alapad	95%	52%	70%
Thrikkunna-puzha	97%	81%	97%
		T>>A>>P p<0.0001	T>>A>>P p<0.00001

Latrine cleanliness is good in all the study Panchayats.

Latrine functioning was defined as clear trap and pan, usable pits, doors intact. The significant difference in latrine functioning in control area is related to the fact that only plinth level construction was usually carried out.

Environment of the household was observed using four indicators.

1. Home premises free from faecal matter of humans
2. Home premises free from faecal matter of animals
3. No waste piled
4. Waste is burned or composted

Only when the four criteria mentioned above are fulfilled, the house hold falls under the definition of a clean environment. Communities with longer and more intense hygiene interventions did significantly better.

Water for hand washing & soap available near latrine

This variable was selected because it was assumed that having soap and water available very near the latrine would be an indicator of handwashing after using the latrine.

	Good
Panmana (control)	0
Alapad	80%
Thrikkunnapuzha	93%
	T>>A>> P p<0.00001

Panmana shows a very low percentage. This is because in Panmana latrine is situated at a distant place and people do not store water but carry when they go to latrine. Here the site of latrine is located by beneficiary themselves which is different from Thrikkunnappuzha and Alappad where site is located by Ward Water Committee and SEUF staff.

Handwashing

Three dimensions of handwashing were investigated: knowledge, skills and practice.

Knowledge of hand washing at critical times

People in the household were asked: Thinking about good health, when are the most important times to wash hands for health reasons? They were not prompted, but were encouraged to speak freely. Correct responses were coded: before eating and after defecation.

	Before eating	After defecation
Panmana (control)	100%	77%
Alapad	100%	100%
Thrikkunnapuzha	100%	100%

Knowledge was very good in the two intervention panchayats. Knowledge, as the following tables show, was better than either skills or practice.

Skills: Hand washing (demonstration)

It can not be assumed that people know how to wash hands correctly. To test this, one person in each household was asked to demonstrate washing hands in the normal place. The interviewer observed if the person rubbed both hands using soap and water ("good" demonstration).

	Good
Panmana	10%
Alapad	87%
Thrikkunnapuzha	97%

T>A p<0.007
A>>P p<0.0001

The community with longer and more intensive hygiene interventions did significantly better.

Practice: Hand washing Practice (Pocket voting)

The question for the pocket voting was: Do you always wash both hands with soap? As expected, the actual practice was lower than the demonstration. This also helped confirm the validity of the household pocket voting procedures.

	Good	
	Men and Boys	**Women and Girls**
Panmana	3%	7%
Alapad	35%	68%
Thrikkunnapuzha	79%	91%

Women >> Men hand washing pocket voting $p < 0.00001$
T>>A>>P p<o.000001

As expected, practice was less than knowledge and skills in handwashing. Furthermore, the communities with longer interventions did better.

During the analysis of first round survey several hypotheses were <u>not</u> proven. These are related to:

- Latrine use: sustained latrine use was not related to the length or intensity of the hygiene intervention.
- Location of water and soap in the household and handwashing practice: In the only community where it could be tested (Alapad), the location of soap and water near the latrine was not clearly related to whether people said they washed hand regularly as reported by pocket voting. .
- Location of water source: Only a small number of households had a water source that was more than 100 steps away. Therefore the location of the water source could not be tested as a variable.

- Starting point: The proportion of latrines in a community before the intervention was not related to sustained latrine use after the intervention.
- Outside influences: If people work outside the community, then practise is better. This could not be tested as the numbers were too few.

The study results showed:

- Women have significantly greater use of latrines than men in all the study areas.
- Women show a significantly higher percentage of hand washing practice than men.
- In communities where men also participated in the hygiene education programs latrine use of men is better.
- Latrine maintenance and functioning are better in intervention Panchayats.
- The environmental hygiene of the household is better in long intervention Panchayats.
- Knowledge of hand washing at critical times (before eating and after defecation) is higher in long intervention Panchayats.
- Pocket voting shows higher percentage of hand washing practice by men and boys in longer intervention Panchayats.
- Hand washing practice is very low in no hygiene intervention Panchayat.

Some patterns appeared in the data. Thrikkunnapuzha panchayat had the longest intervention. Alapad came next. Panmana had a sanitation/latrine intervention but without hygiene promotion. Reflecting this, in the following, Thrikkunnapuza households were significantly better than Alapad which were significantly better than Panmana. (T>>A>>P)

- Latrine maintenance and functioning
- The environmental hygiene of the household
- Knowledge of hand washing at critical times (before eating and after defecation)
- Hand washing practice by men and boys (Pocket voting)

Hand washing practice is very low in no hygiene intervention Panchayat.

The results of the interviews with panchayat presidents and ward water committees indicated the following:

S.no	Hypothesis	Thrik	Alap
1.	If relevant Departments cooperate and promote sanitation, the latrine use and hand washing practices will be higher	yes	yes
2.	If mass activities were present, latrine use and hand washing practices will be higher	yes	yes
3.	If community groups trained, latrine use and hand washing practices will be higher	yes	yes
4.	If there were participatory activities like house visits, latrine use and hand washing practices will be higher	yes	yes
5.	If women in committees were active, latrine use and hand washing practices will be higher.	yes	yes
6.	If benefits of sanitation and hygiene are perceived higher, latrine use and hand washing practices will be higher	yes	yes
7.	If masons give health messages during construction, latrine use and hand washing practices will be higher	some	yes
8.	If lady masons were active, latrine use and hand washing practices will be higher	no	yes

From the study it is found that **the key factors influencing hygiene behaviours** are:

1. **The quality of intervention (The range of methods and content)**
2. **The length of intervention (Number and different types of contact)**

5. SECOND ROUND SURVEY

The key findings were further tested in the second round survey in different communities with different periods of intervention. For this some changes were made in the first round survey.

5.1 Changes

The intervention at Thrikkunapuzha Panchayat finished in 1997, so no change likely since 2001. Panmana also produced little change in hygiene behaviour and no possibility for a big difference in hygiene behaviour in the second year. So these two Panchayats were removed from the second year study.

After analysis of the 2001 data, the study design for the second round of surveys was changed to investigate two new hypotheses. This was that the key factors influencing hygiene behaviour are:

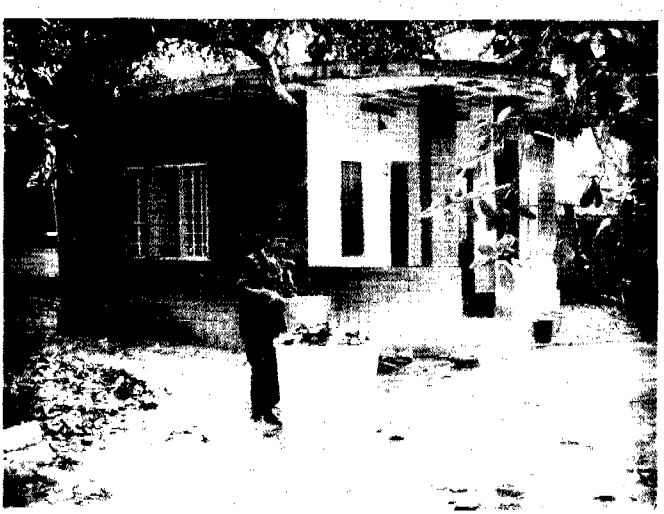
The quality of interventions, i.e. the range of methods and contents

The length of interventions, i.e. the number and different types of contacts.

In the second year(2002) survey it was decided to select 225 households from nine Panchayats where SEUF implemented the sanitation programme directly or indirectly with different periods of intervention (one year, three year, and five year). In each of the nine Panchayats, 25 households in two wards were randomly selected from the beneficiary list of the project provided by the Panchayat. 120 households from one first year panchayat –Alappad also visited a second time to see the sustainability of behavioral changes. This meant that a random sample of the households who had participated in the original project were selected for the survey. Thus the total sample had 345 households.

HYGIENE BEHAVIOURS

Environment of the house hold



Latrin use

Handwashing
with soap

4.2 Study Panchayats

The ten study communities (called panchayats in the table below) were:

Panchayats	Anjuthengu	Kadappuram	Puthanchira	Kadakkavoor	Kaipamangalam	Neendakara	Mararikkulam	Alappad	Koippuram	East Kallada
NOTES	very poor			poor wards near Anjethengu	1st SEU 100% coverage			PPP with SEUF gov. Priority		
SE status* Panchayat	Low-	Low	Low+	Med-	Med-	Low+	Med	Low+	Med+	Med+
SE status* ranked	0	1	2	3	3	2	4	2	5	5
Interv. end date	1993	1996	1995	1995	1993	1998	2000	2000	1995	1998
Duration SEU Intervention (Yrs)	5	1	3	3	5	1	1	1	3	2
Duration PPP Intervention (Yrs)						1	4	3		
PPP Intervention alone					2					2
Total Duration all Intervention	5	1	3	3	7	2	5	4	3	4

Socio Economic status*

The sanitation interventions ended 2 up to 9 years before this study was undertaken.

There were some differences among the panchayats and in the project strategy. In three communities, the People's Planning Programme (PPP) was carried out after one - year SEUF intervention, using the basic SEUF strategy. The PPP is a major element of the government decentralization programme, devolving resources and authority to local communities, as mandated in new Indian constitutional reform. The PPP involves, among other things, mobilizing all government departments and involving community groups.

Some differences among the panchayats:

Anjuthengu is a very poor and crowded panchayath along the seacoast. The initial project work did not follow the usual strategy as this was one of the first communities in the project, where the strategy was still being developed.

Kadakkavoor the study wards were poorer than other wards in the panchayat and were located next to Anjuthengu panchayat. The accuracy of the pocket voting about latrine use from this community may be doubtful because it differed so much from all the other communities. This was the only community where all 25 households stated that the cost of latrines higher than the benefits, apparently due to construction problems with the pits in sandy soil. It was also the only community where more men reported consistent use of latrines than women (99% vs. 72%) and where men's latrine use was significantly greater than boys (88% vs 33%).

Kaipamangalam is the first large community where the SEUF worked for 100% latrine coverage.

Alappad. This was the first panchayat where the SEUF led this programme in its first year, establishing the strategy. After this the local and state governments took it over as high-visibility pilot of the high priority People's Planning Programme. The households in this sample were surveyed in 2001 and again in 2002. The data improved between the 2 surveys. For example self-reported male latrine use increased form 61% to 76%, self reported handwashing for women increased from 70% to 82%. The researchers believe there was a "survey effect". The changes in the data were just below the level of statistical significance, however.

Methodology:

Methodology followed for the second year survey was the same as that of the first year with some revisions in the questionnaire. The tools used were: household observations, the questionnaire, a household handwashing demonstration and household pocket voting.

Key informants interviews were held. The key informants were the present and past Presidents of the Panchayat and the Ward Water Committee members. Focus group discussion on costs and perceived benefits were not included, instead these questions were asked at household level.

4.3 Analysis of Household data- key hygiene behaviours

Panchayats	Anjuthengu	Kadappuram	Kadakkavoor	Puthanchira	Neendakara	Mararikkulam	Alappad	Kaipamangalam	Koippuram	East Kallada
SE Status Panch	Low-	Low	Med-	Low+	Low+	Med	Low+	Med-	Med+	Med+
SE Status*	0	1	3	2	2	4	2	3	5	5
Interv. end date	1993	1996	1995	1995	1998	2000	-	1993	1995	1998
Total duration SEUF and PPP interventions (years)	5	1	3	3	2	5	4	7	3	4
Panch. initial sanit'n coverage (%)	15	18	39	32	41	43	24	38	55	52
Panch. final sanit'n coverage (%)	41	55	72	87	87	75	71	100	85	72
Latrine use men(%)	48	59	88	60	69	85	76	96	100	100
Latrine use women (%)	68	81	72	85	97	92	99	100	100	100
Latrine use prevalence total %	52	68	75	76	83	91	92	95	100	100
Handwashing men%	16	32	10	40	38	42	58	77	44	56
Handwashing women%	22	45	13	48	38	68	82	84	69	75
Handwashing prevalence total %	19	40	12	44	38	57	75	81	61	68

NOTES: *latrine use prevalence total and handwashing prevalence total show the % of men and boys, women and girls performing the behaviour. There was no significant difference between men and boys or women and girls.*

Socio Economic status*

The prevalence of latrine use was measured by self-reporting in pocket voting answering the question: *When you are around the house, do you always use the latrine?* For 8 of the 10 communities, more than 70% of the people answered "YES". Latrine use in these communities appears to be an established behaviour. This was also confirmed by the inspections of the household latrines. In only one panchayat (Kadakavoor) were the men reportedly using the latrine more than women.

The question (*Do you always wash both hands with soap?)* was also answered by pocket voting. Those answering "YES" ranged from a low of 12% up to 81% in each community. In five of the 10 communities less than half the people reported consistently washing both hands with soap. Handwashing (both hands with soap) seems to be less well-established than latrine use.

830 men and women answered these questions in the 10 communities.

End date

The data cannot answer the question of whether the years elapsed since the end of the intervention has influenced the indicators, whether of sanitation or of handwashing. This is because in all the Panchayat except Mararikkulam and Alapad, the intervention ended at least 5 years ago. In Mararikkulam and Alapad, the figures are not exceptionally higher, which tends to confirm the impression drawn after the first round of survey, that time elapsed since intervention does not lead to a significant fall in the indicators.

Duration

There is no sign that the Panchayats where the intervention lasted longer had higher indicators, as shown in the following table. The indicators have been calculated by taking the average of the panchayat with the duration shown, from the table above.

Duration of intervention	Increase in panchayat sanitation coverage (%)	Male latrine usage (%)	Prevalence rate of handwashing (%)
5 years	40	77	52
3 years	39	82	39
1 year	33	74	48
None	-	76	78

However, the duration of the intervention is not completely an independent variable here. The number years of an intervention was decided by what was necessary in the context of each panchayat. For example, five years was needed in Anjuthengu. Seven years was needed in Kaipamanagalam because 100% coverage was being attempted for the first time. In East Kallada, one year of the SEUF intervention followed by 3 years of the PPP was led to behavioural changes. Put in another way, it would mean that the duration is a *consequence* of the characteristics of the panchayat. It did not *cause* of differences in the results.

Socio-economic status

There is a very close association between the overall socio-economic status of the panchayat and initial sanitation coverage. It is not surprising that the initial sanitation coverage rate should depend on socio-economic status; building latrines costs money, and prior to a promotional intervention many people consider them a luxury.

Panchayats	Anjuthengu	Kadappuram	Kadakkavoor	Puthanchira	Neendakara	Mararikkulam	Alappad	Kaipamangalam	Koippuram	East Kallada
SES Status Panch.	Low-	Low	Med-	Low+	Low+	Med	Low+	Med-	Med+	Med+
SES Status Panch.	0	1	3	2	2	4	2	3	5	5
Latrine use men(%)	48	59	88	60	69	85	76	96	100	100
Latrine use women (%)	68	81	72	85	97	92	99	100	100	100

There appears to be a strong relation between the overall socio-economic status of the panchayat and consistent latrine use as reported by men. Statistical tests show that the Chi square for trend is 17 and the probability p<.00003, meaning that men living in higher SES panchcyats tended to use latrine more consistently.However, it is striking that the male usage rate should also be affected so strongly by this factor, more than any other factor in the study.

The self-reporting of consistent latrine use by women is also related to the socio-economic status of the communities, but not as strongly as for men ($p<.01$ and Chi square for trend=17). Women's consistent use of latrines was also related to other project variables, as shown in the next section.

Panchayats	Anjuthengu	Kadappuram	Kadakkavoor	Puthanchira	Neendakara	Mararikkulam	Alappad	Kaipamangalam	Koippuram	East Kallada
Ward support	0	1	0	1	1	1	2	2	2	2
WWC involvement	1	1	1	1	1	1	2	2	2	2
subtotal ward support	1	2	1	2	2	2	4	4	4	4
Latrine use by women (%)	68	81	72	85	97	92	99	100	100	100

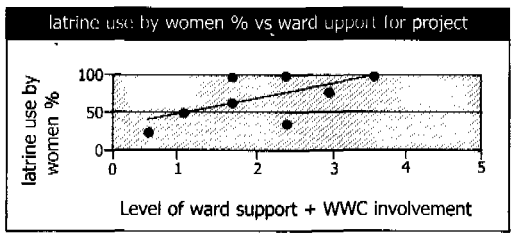
Unlike latrine use, handwashing practice by men and women was very weakly related to socio-economic status of the panchayat.

Type of intervention

Latrine use

Latrine use by women seems to be effected by to two other things:

- Participation in hygiene education classes during the intervention ($p<.031$, stratified by community), and
- Support within the ward and involvement of the ward water committee (WWC) during the intervention. The strength of the ward interventions were rated by project staff. This is shown below.



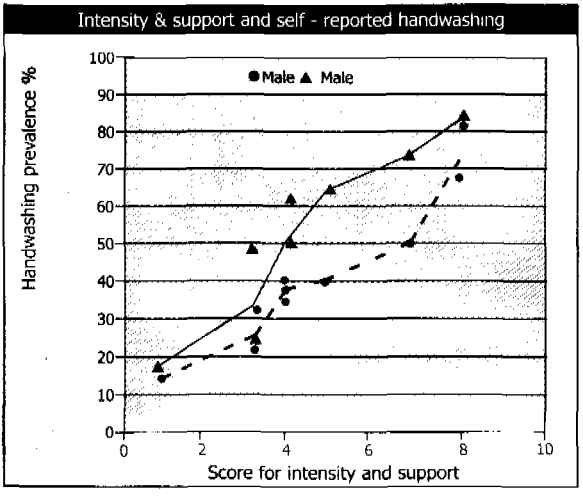
Thus, this rich data set shows that consistent latrine use by women may be determined by the strength of the ward intervention, attending hygiene classes as well as the socio-economic level of the intervention. However latrine use by men did not, in this study, seem to be related to project variables.

Handwashing practice

There are wide differences in project outcomes between the study Panchayats, such as the proportion of people reporting, that they wash

their hands with soap. Some of this can be explained by variations between Panchayats in the intensity of the project interventions (how many groups were trained, home visits made, etc.) and the degree to which they had local support from the Ward Water Committee and other key figures.

There is a close correlation between the intensity of intervention and the prevalence of handwashing (chart 1).



This finding is confirmed by crosschecking with the attendance in hygiene classes and by the kinds of training and hygiene promotion inputs in a panchayat, as shown in the table (Page34)

Hygiene classes

A high proportion (between 60% and 100%) of the households in each community reported participating in hygiene classes. Those participated were usually women. Among these project variables, the handwashing practice by women was strongly affected by participation in the hygiene classes during the intervention ($p<.007$, stratified by community). This means that women who participated in the classes had significantly better handwashing practice.

	Kadakkavoor	Anjuthengu	Neendakara	Kadappuram	Puthencira	Mararikkulam	Koippuram	East Kallada
kinds of groups trained	2	4	4	4	4	4	4	4
Types of hygiene cativities	1	3	3	4	4	5	5	5
Consistent handwashing women(%)	13	22	38	45	48	68	69	75
Consistent handwashing men (%)	10	16	38	32	40	42	44	56

Panchayat training and hygiene activities

The strength of the project intervention effected handwashing practice is shown in this graph.

Kinds of groups trained and range of hygiene activities

There were many home visits in the project intervention undertaken mainly by community members and project personnel. The home visits dealt with a wide range of issues such as beneficiary selection for latrines, site selection, material distribution, construction of latrines, monitoring use and maintenance etc. Thus, hygiene was only one among many issues. For the nine communities where 25 households were visited in each, overall, handwashing women was related to the number of home visits ($p<.04$ and $p<.012$). However this relation did not appear when the data was stratified. Thus the

Handwashing knowledge and demonstration of skills (% of households by community)

Panchayats	Anjuthengu	Kadappuram	Kadakkavoor	Puthancira	Neendakara	Mararikkulam	Alappad	Kaipamangalam	Koippuram	East Kallada
Handwashing knowledge										
Before food %	56	64	68	88	24	20	82	20	28	28
After defecation %	64	68	92	84	84	100	99	100	100	92
After handling childrens faeces %	20	16	12	36	16	36	20	80	20	0
Handwashing Demonstration										
both hands with soap %	88	60	96	96	68	68	86	80	80	78

overall number of home visits is weakly related to handwashing behaviours of women. Home visits gradually increased during the project period.

6. KNOWLEDGE, SKILLS AND PRACTICE

In testing knowledge of handwashing times, people were asked to mention the times that handwashing was most important for good health. Interestingly, knowledge of the health importance of handwashing before eating was usually lower than knowledge about handwashing after defecation. Hygiene education has emphasized the "after defecation" information. Almost everyone in Kerala washes hands (though not always both hands with soap) before eating, perhaps without considering this as an important health measure. In the survey households children were not found in many houses. This may explain the very low proportion of people who answerd this question.

How to wash hands correctly (both hands with soap and water) was tested by asking a child or a woman, in the household to demonstrate good handwashing.

Between 60% and 96% of the people in each community showed good skills. In all, 280 out of 345 people demonstrated correctly.

In this study:

Knowledge is related to skills. Hand washing knowledge of critical times was related to skills in showing washing of both hands with soap and water. ($p<.0002$, stratified by community). This means that people who knew about critical handwashing times before eating and after defecation tended to demonstrate correct handwashing skills.

Skills are related to practice (always wash both hands with soap) for women. Where demonstrations of handwashing were better, the reported handwashing practice by women was better ($P<.014$, stratified by community). This was not true for men; in households where the demonstration was better (usually done by women or girls), the men did not necessarily have better handwashing practice.

7. HOUSEHOLD VARIABLES

Latrine cleanliness

The average percentage of latrine cleanliness in the study Panchayats is 88. The cleanliness (traps, pans, walls and floors free from waste, urine and faecal matter) was quite good. Cleanliness was not related to use. In other words, people seem to use the cleaner or dirtier latrines equally.

Latrine cleanliness

Name of Panchayat	Percentage
Anjuthengu	64
Mararikkulam	100
Kaipamangalam	100
Kadakkavoor	92
Koippuram	100
Puthanchira	84
East Kallada	100
Neendakara	76
Kadappuram	64
Alappad	96

Latrine Functioning

Latrine functioning refers to conditions of traps, pits and doors. The difference in the number of years after the intervention this study has taken place and certain geographical conditions had affected the conditions of the doors.

Overall latrine functioning

Name of Panchayat	Percentage
Anjuthengu	28
Mararikkulam	100
Kaipamangalam	84
Kadakkavoor	68
Koippuram	84
Puthanchira	84
East Kallada	92
Neendakara	92
Kadappuram	16
Alappad	51

Interestingly, functioning of latrine pits was above 96% in 8 panchayats. In two others it was lower: 28% for Anjuthengu which has a very high water table and 68% for Kadakkavoor. However, since all the latrines in the sample were built more than 3 years, and as many as 9 years before the survey, this indicates that the technology using two alternating fairly shallow pits is, indeed, sustainable.

Environment of the household:

The parameters for checking the environment are (1) No faecal matter in the whole premises (2) No waste piled. The results show good cleanliness around the household and there is no marked difference in the different intervention Panchayats.

Name of Panchayat	Good Percentage
Anjuthengu	88
Mararikkulam	100
Kaipamangalam	84
Kadakkavoor	96
Koippuram	84
Puthanchira	92
East Kallada	84
Neendakara	84
Kadappuram	88
Alappad	90

Soap and water near the latrine

In many programmes it is assumed that one indicator of handwashing practice after defecation is having soap and water located near the latrine. For women, this was the case in this study. Location of soap and water near the latrine was significantly related to reported handwashing practice (stratified, $p<.009$). There was no relationship for men, however. Thus, this indirect indicator does not hold true for all members of the family (men and women).

Distance to water source

Water sources are located near the households in most cases. 84% of the water sources are within 100 meters of the home. Distance to water source did not determine handwashing practice or household cleanliness.

Stratified analysis of 10 Panchayats in household variables

The table 2 given below gives probability or p values calculated in ten study Panchayats using EPI 6 software. Certain variables show significant relationship between each other.

Stratified analysis of 10 Panchayats in household variables

INDIA - KERALA 2003 analysis (statified for 10 panchayats in household variables)	Latrine maintennance (water seal floor/wall clean)	Latrine functioning (trap, pit, door)	Soap+water for HW are near latrine and reachable	Clean home environment (excreta, waste)	Knowledg HW befor eating
	MAINtot	Functot	LATNRtot	ENVtot	HWBEFO:
	Q5	Q6	Q7	Q8	Q23
Women answered questions					
Man answered question		ns	ns		
Latrine functioning (trap, pit, door)				0.02	
Water source within 100 steps of home	ns				
Knowledge HW before eating					
Knowledge HW after defecation	ns	ns	ns		
Demo : rubs 2 hands with soap / water		ns			.00005 stratified
		.04 stratified			
Man partic in awareness campaign	ns	ns		ns	tendency
Women partic in awareness campaign	ns	ns	ns	.03 stratified	
participated in hygiene education classes	ns	ns		0.03 stratified	0.005 stratified
Saw hygiene video					
Women helped organize these activities		ns		ns	

Knowledge of HW after defecation	Demo: rubs 2 hands with soap / water	Men always wash both hands with soap (pocket voting)	Women always wash both hands with soap (pocket voting)	Men always use latrine when home (pocket voting)	Women always use latrine when home (pocket voting)
HWAFTER	HWTWO				
Q24	Q26				
	ns				
		ns	ns	ns	ns
	ns	ns	ns		
		ns	.03 stratified		
		ns	.05 stratified	ns	0.002
0.0002 stratified		0.000004 stratified	0.00000001 stratified	ns	ns
				ns	ns
	ns	ns	ns	ns	ns
0.0004 stratified	ns	ns	ns	ns	ns
0.013 stratified	ns	ns	.007 stratified	ns	.031 stratified
		ns	0.06		
		ns	ns	ns	0.004

8. IMPORTANT FINDINGS

1. Many hygiene behaviours are sustained long beyond the end of the project.

2. Length of intervention and its end date are not related to sustaining hygiene behaviours.

3. Project variables determine hygiene behaviours. This includes: intensity of the programmes, support of the local groups in the community, attendance in hygiene classes, training a wide range of groups in hygiene, having a range of activities that may reach more groups of people. In this project, the focus of hygiene promotion was more on women than men. And the hygiene behaviours of women were more directly related to participation in the project even years later.

4. The high level of hygiene intervention organised by community groups have contributed to:
   - Latrine maintenance
   - Knowledge of hand washing
   - Women latrine use and hand washing practice

5. Men's latrine use is related to socio-economic level of the community and not associated to the intensity and support of the project activities.

8.1 Lessons learned

The length of intervention is not the determining factor of hygiene behaviour in communities. So pre-determined period of intervention is not relevant, to bring out desired hygiene behaviours.

There is a considerable difference in latrine use and hand washing behaviours of men and women in all study Panchayats. Men and Women should be addressed with equal importance but with different strategies.

Hygiene Promotion strategy focussed directly on men is essential.

Face to face communication is more effective.

Non health reasons are equally important to health reasons.

It appears that the project has had little impact on the habit of latrine use by males.

Conclusion

The three year study had two rounds of surveys. A direct comparison of the two surveys is not possible as shift in the focus of the study has taken place after the first year survey. In the first round survey it was found that hygiene behaviours are sustained in long intervention and intense intervention areas.

Further testing of this provided evidence that intensity of hygiene interventions contribute to the sustainability of behaviour changes. The participation of capacitated community groups, participation of women in hygiene education and participatory activities are conditions that facilitate sustainability of behaviour changes. Health and hygiene promotion programmes carried out with community involvement is the most effective intervention for sustainable hygiene behaviours.

APPENDIX 1

Research Hypotheses formulated at the beginning of the Kerala Study:

Sustained latrine use in the household, after the intervention ends, is related to the following:

- The proportion of community households had latrines before the intervention,
- Degree of community cohesion at the beginning of the intervention, then.....
- People work outside the community, then....
- Water source (well) is in or very near the household compound
- Relevant local departments co-operate and all promote hygiene, then ...
- Mass activities such as campaigns, street dramas, etc. are carried out, then...
- Community members are trained
- Degree to which community members are involved in participatory activities such as joint mapping, house visits,
- Degree to which women take part in decision making such as beneficiary selection, tap site selection
- If the benefits of sanitation and hygiene interventions are perceived as higher than the costs

Sustained latrine cleanliness and maintenance (No faecal matter in water seal, walls and floor free from urine splash and faecal matter) **is related to**

- The location of the water source/well in or near the household compound.

Sustained latrine functioning is related to: (latrine function, clear trap and pan, usable pits, doors intact)

- Proportion of the people having latrines before the intervention in a community,
- The location of the water source/well in or near the household compound.

Sustained knowledge and practice of handwashing is related to (Rubs both hands using soap and water. Knows critical times for washing hands, before eating and after defecation)

- Availability of soap and water near the latrine
- Degree of cooperation of relevant departments in the promotion of hygiene behaviour

Sustained **Environmental hygiene after the intervention is related to** (Home premises free from human/animal faecal matter, waste and waste is burned)

- If the intervention strategy includes :

  Mass activities such as campaigns, street dramas, and so on, carried out intensively together with personal contact

  Community organisers/field worker together trained local groups then environmental hygiene continues to be better after the intervention ends

- Degree to which community members are involved in participatory activities such as joint mapping, house visits, If WWC women are involved, then.....

APPENDIX 2

The overall research findings from 6 countries

The information from the six study sites is presented in two tables. The first table gives scores for a small number of key variables that were investigated in the study. : *How effective are the programmes?* The second table summarizes key relationships among the variables in the study·

- Where are the linkages between inputs and results that give hints about what causes continuing hygienic behaviours?
- Were hygiene behaviours sustained after the end of the interventions?

These tables deal with household, community and intervention data. The tables show some overall trends.

Table 1: Percent (%) of high scores household data

Outputs(%)	Ghana 2002	India 2002	Kenya 2002	Nepal 2002	Sri Lanka 2002	Uganda 2002##
HW Knowledge of 2 critical times	85%	57%BF 91%AB	58%	99%		87%
HW Skills (Demo.)	65%	81%	34%	56%	56%	35%
HW Reported		62%	41%			53%
Soap + Water available for HW	48%	82%	39%	80%	13%	8%
Latrine in use (observation)			97%	89%	96%	D1 40% D2 70% D3 25%
People use Latrine		85%	74%			Girl 49% Boy 53% Male 65% F/M 55%
Latrine Maintained (observation)		90%	63%	59%	66%	D1 35% D2 64% D3 22%
Latrine functions (observation)		59%				D1 61% D2 75% D3 36%
Food Covered				74%	95%	
Water Covered	50%			31%	54%	
Environment clean		90%		80%		

BE = before eating, AD = after defecation, D=district

For **handwashing**, table 1 shows that: Knowledge is fairly high, Knowledge is higher than skills and practice and skills vary. In all countries, the weakest skill was using soap. Having soap and water available (near each other) for handwashing was taken as an indicator of good handwashing

practice. In three countries (India, Kenya, Nepal) this was more or less at the same level as knowledge and skills.

For **latrine use and maintenance** the table shows that:

- In 3 of 4 countries, a high proportion of the latrines showed signs of use.
- In the three countries where it was tested, three-fourths or more of the people were consistently using the latrines.
- Latrine maintenance tended to be lower than use.
- Latrine coverage (not shown above) was highly variable. It ranged from around 6% in one study community up to 100% in another.

Table 2: Summary of relationships within the data.

	Handwashing	Latrine Use	Home Hygiene
Sustainability	Strong	Strong	Mixed
PROJECT VARIABLES			
Participation in hygiene Promotion	Strong	Strong	Mixed
Project Activities (Training, Home visits, Activecommunity committees)	Strong	Strong	Evidence
INDEPENDENT VARIABLES			
Availability of Water	Weak		Evidence
Women perform better than children	Mixed		
Difference women & men	Evidence	Evidence	
Education of women	Mixed	Mixed	
SELECTED VARIABLES			
Knowledge of HW times	Strong		
Latrien maintained		Strong	
Design of Latrien		Evidence	

Strong = strong in most studies
Weak = few relationships among the variables in the studies
Mixed = some studies showed relationship between variables, others did not
Evidence = only tested in one or two countries but showed an association

Conclusions and recommendations

Once behaviours have been adopted, they are sustained! We did not find much difference in levels of behaviour in communities where the hygiene intervention stopped in 1998 and in communities where the hygiene

intervention stopped in 2000. Also surveys done in 2001 and those done i 2002 did not show major differences. This makes us conclude that **ove time, behaviours are sustained and that it is therefore justified t invest in hygiene promotion!**

Levels of adoption of hygiene behaviour seem to be related to the type o project intervention. In particular, households that were visited, and visited several times, did significantly better than those that were not. **This has to guide the development of the hygiene interventions. They have t be made specific for local conditions.** This is also valid for deciding on the duration of the intervention.

Where community management structures are in place in some form (active WATSAN or ward committees), the impact of hygiene promotion activities is bigger. These structures seem to act as a local engine. This calls for **em phasis on capacity building of such local structures, also for hy giene promotion.**

Maintenance and use of latrines at household level is related. The bette they are maintained, the better they are used. The only limit to sustainabili we found was the decline in the state of repair of latrines over the years. This implies that **hygiene or sanitation promotion programmes need to put due emphasis on maintenance and not stop when latrines are constructed.**

It was proven that for example for handwashing 'knowledge' is usually higher than 'skills' and 'skills' is usually higher than 'practice'. This implies that **hygiene promotion should go beyond transforming messages on 'why and how', but also include skills training**.

The teams in Ghana and Kenya also looked at the hygiene behaviours in schools. The situation in schools, in spite of hygiene interventions, is disappointing. **A lot of work needs to be done here, but we need to find the right entry point, which is probably the Ministry of Education and not the water sector..**

Availability of water was not related to good hygiene behaviour. This means that **construction and good site selection alone are not enough to give sustained hygiene behaviour. Provision of hardware is not enough**.

In some study countries a strong link was found between the level of education of women and performance of hygiene behaviour. This looks good, but is at the same time worrying, since it may indicate that non-educated women are left out of hygiene promotion programmes. ***Projects have to do more to* get non-educated women involved.**