VOLUNTEERS INITIATIVE NEPAL

EVALUATION OF VIN'S HYGIENE AND SANITATION EFFORTS

IN JITPUR PHEDI, NEPAL

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ACKNOWLEDGEMENTS

The authors are very grateful for Volunteers Initiative Nepal and their assistance and direction in this evaluation, specifically Dr. Laxmi Prasad Ghimire, BAMS, MPH and Bhupendra Ghimire, who have provided much guidance. The authors would also like to acknowledge the Global Institute of Public Health for their financial and managerial assistance in ensuring that this project occurred, specifically Amy Joyce and Dr. Victoria Raveis. In addition, the authors would like to thank the Jitpur Phedi community members who participated in the study.

ABSTRACT

This evaluation examined the efforts of Volunteers Initiative Nepal (VIN)'s health and hygiene program in Jitpur Phedi, Nepal. Objectives: to measure the program's impact on health behaviors, knowledge, and outcomes, to evaluate the challenges and successes of the program, and to provide recommendations for improvement. Methods: data was gathered using purposive & convenience sampling: 1) interview-assisted household surveys, 75 from the intervention village and 42 from a comparison village, 2) two focus groups of community members, 3) five in-depth stakeholder interviews, and 4) observations of the individuals surveyed and their environments. Using grounded theory, qualitative data was coded and examined through thematic analysis. Descriptive statistics were run to analyze quantitative data. Findings: toilet construction and awareness campaigns have helped to reduce open defecation in Jitpur Phedi. Further, there were improvements in health awareness, behavior, and outcomes in the community, due in part to VIN's involvement, but continued effort is warranted.

I. Introduction

A. Problem Statement

Inadequate access to proper sanitation facilities and clean water are large public health problems in Nepal, as they cause many preventable communicable diseases. Volunteers Initiative Nepal (VIN) has been working in Jitpur Phedi, Nepal for four years to improve the health, hygiene and sanitation of the community. Although VIN has accomplished many of its program tasks, the success and role in achieving its mission has yet to be assessed. The Nepal Capstone Group was established to evaluate the hygiene and sanitation efforts of VIN's community health program and examine whether its activities and outcomes were in line with the community's needs and the objectives were successfully met.

B. Background Information

Annually in Nepal, 12,700 children under the age of five die from acute respiratory infection or diarrhea due to poor sanitation or hygiene, and 90% of the total population have worms at any given time (Government of Nepal, 2011). Lack of sanitation has been correlated with an increase in child mortality and diarrheal disease and disproportionately affects women and children (UNDP, 2013). Illness due to poor sanitation and unsafe drinking water has affected 72% of the population, leading to high health expenditures and economic loss due to decreased worker productivity (Government of Nepal, 2011).

Open defecation is still widely practiced throughout Nepal. According to the Government of Nepal (2011), only 43% of the population has access to sanitation facilities and 80% of the population has access to clean water. These statistics differ between rural and urban areas, as 78% of the city population has access to toilets versus 37% of the rural population (Government of Nepal, 2011; Karn, Bhandari, & Jha, 2012). Further, 65% of Nepal's population lives below the poverty level with a wide gap in sanitation coverage occurring between the rich (80%) and poor (12%) (Government of Nepal, 2011). High illiteracy rates and lack of education have also lead to widespread unawareness of the connection between many communicable diseases and unsanitary and improper hygiene practices (Government of Nepal, 2011).

Jitpur Phedi is a rural community that lies 11 kilometers outside of Kathmandu, Nepal. Jitpur Phedi is comprised of 5,254 residents in 917 homes (VIN, 2012). Similar to other rural communities in Nepal, a survey conducted in 2009 of the Jitpur Phedi community revealed a

high illiteracy rate, low levels of knowledge relating to basic hygiene, and insufficient access to proper sanitation and health facilities (Ghimire, 2009). It was estimated that 40-50% of the Jitpur Phedi households did not have access to a permanent toilet, that open defecation occurred commonly as a result, and that the majority of the community did not purify their water (Ghimire, 2009). The often-inaccessible toilet facilities coupled with a lack of basic hygiene and sanitation awareness has contributed to high rates of gastrointestinal and other hygiene related illnesses in the Jitpur Phedi population.

i. Literature review

For the literature review, a search was conducted from September 15th-October 31st, 2013. The databases used to search for background information included: Pubmed, CINAHL Plus, EMBASE: Excerpta Medical, Google Scholar, and Nepal Journals online. Search terms included: "Nepal + health and hygiene," "Nepal + diarrhea" "Nepal + hand washing," "Nepal + sanitation," "Nepal + hygiene." Specific Nepali journal archives were also searched, including the Journal of Nepal Health Research Council, the Journal of Nobel Medical College, and the Kathmandu University Medical Journal. Search terms included: hand washing, sanitation, toilet, hygiene, water, and diarrhea. Articles over five years old were excluded from the literature review.

ii. Health Implications of Poor Hygiene and Sanitation

Sanitation and hygiene have an impact on the health and well being of communities, families, and individuals. In Nepal, poor sanitary conditions, such as the improper disposal of waste and lack of water treatment, are major risks for bacterial and parasitic infections, leading to diarrhea and gastrointestinal illness (Sherchand, Yokoo, Sherchand, Pant, & Nakagomi, 2009). Young children are especially vulnerable to these infections as they are the biggest cause of diarrhea for children in Nepal and can lead to disability and, in some cases, death (Sherchand et al., 2009).

Consuming unclean or contaminated drinking water is related to infection and diarrhea (Gyawali et al., 2009). In Nepal, tap water is observed to be the least contaminated, followed by well and finally spring water, with spring water being the most related to occurrences of diarrhea (Aryal, J., Gautam, & Sapkota, 2012). As of the latest MDG Progress Report in Nepal, 44.5% of families have access to a tap, 38.5% to a covered well, 7% open wells, and 10% other sources such as springs (UNDP, 2013). The majority of Nepalese families do not treat their water regardless of the source (Aryal, J. et al., 2012). Lack of treatment is a major health concern

because of the presence of fecal contamination (Sherchand et al., 2009) that has lead to total coliform in 55% of natural water sources, 100% of reservoirs, and 92% of taps (Aryal, J. et al., 2012). Further, broken down and neglected sewage systems have increased the rates of infection, as leaks from the sewage pipes or pits have merged with drinking water sources causing contamination of water supplies (Mukhiya, Rai, Karki, & Prajapati, 2012). During the rainy season in June and July, the extra water causes overflows and increases the likelihood of drinking water contamination, which is why there are spikes in cases of diarrhea during this time every year (Karki, Bhatta, Malla, & Dumre, 2010; Sherchand et al., 2009).

The presence, availability, and type of toilet can also increase the risk of parasitic infection and diarrheal diseases. Individuals and families without toilet facilities are between 1.5 and 4 times as likely to become ill, depending on their source of drinking water (Aryal, K.K. et al., 2012). Having no sanitation facilities is the situation most associated with diarrhea; a pit latrine reduces diarrheal incidence and the use of a water-shield toilet is least associated with diarrhea (Gyawali, Amatya, & Nepal, 2009). Other personal hygiene behaviors are correlated with an increase of parasitic infection (Mukhiya et al., 2012), including the lack of soap during hand washing after defecation (Gyawali et al., 2009) and not trimming one's fingernails (Shrestha, Narayan, & Sharma, 2012).

iii. Governmental Approaches to Hygiene and Sanitation in Nepal

In Nepal, programs focused on health and hygiene began in the late 1990s. Since then, both sanitation and water supply projects have been launched by various agencies with differing approaches and modalities. Despite continued efforts of the government, donors, and other stakeholders, the sanitation coverage trends are slow. It could be said that this situation resulted due to stakeholders' diverse, uneven and fragmented efforts in the absence of inclusive institutional planning and implementation frameworks. Other identified barriers and challenges for increasing hygiene and sanitation in Nepal include (but are not limited to): lack of priority for sanitation sector activities, underinvestment in the water and sanitation sector in proportion to the requirement needed, lack of a consolidated target for stakeholders, lack of uniformity in approaches to financing hygiene and sanitation projects, and the lack of mainstreaming of local government bodies (Government of Nepal, 2011).

The government of Nepal has made firm commitments to develop the 2011 Sanitation and Hygiene Master Plan to address the above barriers. The purpose of the Master Plan is to

streamline the efforts of all stakeholders at varying levels to minimize scattered efforts, expedite the rate of sanitation promotion and ultimately achieve set targets in the given time frame. The Master Plan, led by the Steering Committee for National Sanitation Action (SCNSA), largely focuses on Nepal becoming Open Defecation Free (ODF) with universal access to toilets in both urban and rural areas. The goal of the Master Plan is to attain this nationwide access to improved sanitation by 2017, with ODF as the basic minimum and first criterion of sanitation (Government of Nepal, 2011). Other government sponsored plans, policies, and strategies also exist to meet millennium development goals and expand coverage of water and sanitation facilities to both urban and rural populations of Nepal (UNDP, 2011).

iv. Established Community-Based Programs in Nepal

There are many initiatives in Nepal and throughout Southeast Asia, which promote health, hygiene, and sanitation at the community level. Two well-known, large-scale examples are Community-Led Total Sanitation (CLTS) and UNICEF's Community Approaches To Sanitation (CATs), both created with the goal of eliminating open defecation. Efforts of these community programs focus on engaging the local community and leadership, changing hygiene behavior, and fostering innovative solutions from the community directly (UNICEF, 2009; Mehta & Movik, 2010). The success of these programs lies in their ability to empower the community and integrate hygiene promoting techniques with a bottom-up approach (UNICEF, 2009).

Specifically in Nepal, there is the School-Led Total Sanitation (SLTS) program developed under the umbrella of CATs. The cornerstone of SLTS is the increased ownership of hygiene and sanitation activities by schools and communities (UNICEF, 2009). Children are the vehicles of change, leading children's clubs and using participatory tools and techniques to raise community awareness of improved sanitation and hygiene. (UNICEF, 2009; Adhikari & Shrestha, 2008) As of 2008, 75 of the 200 schools that participate in SLTS have been declared Open Defecation Free (ODF), with the remaining 125 school catchments close in reaching the same goal (UNICEF, 2009). Encouragingly, health post records are indicating decreases in diarrhea and communicable diseases in ODF areas (Adhikari & Shrestha, 2008).

Health education programs in Nepal have also shown success in promoting health and hygiene. A study of 36 individuals in the Moran District of Nepal indicated that a health program intervention composed of exhibits, demonstrations, educational lectures, and dramas was beneficial to the community (Karn et al., 2013). The study found that after the program 78% of

the sample size demonstrated the proper hand washing technique, as compared to 33% prior to participating in the program (Karn et al., 2013). Knowledge about proper sanitation also increased from 58% to 78% after engaging in the program (Karn et al., 2013).

There are many challenges in the sustainability of health, hygiene, and sanitation programs. Community led programs may demonstrate benefits initially, but there are many questions surrounding the stability and durability of the behavior changes encouraged (Mehta & Movik, 2010). It is crucial that there is continuous monitoring and evaluation of programs to ensure that there is a genuine shift in attitudes towards proper hygiene and sanitation practices (Mehta & Movik, 2010). In addition, a lack of political structures providing financial and technical assistance or creating bureaucratic barriers for obtaining funding approval for local communities can lead to program failure (van Haren, 2011).

C. Agency Background

Volunteers Initiative Nepal (VIN) is a non-governmental, non-profit organization established in 2005. Its mission is "to empower marginalized communities with a focus on women and children through enhanced educational programs and community training to promote equality, economic well-being, and basic human rights" (VIN website). The organization manages various local and sustainable development projects led by volunteers and community members. VIN's largest community-based project is located in Jitpur Phedi, where VIN established the Integrated Community Health Project (ICHP) in 2010. There are three separate components of the ICHP: a Community Awareness Program, a School Health Program, and a Health Clinic Program. The goal of VIN's ICHP is to improve the basic health of the Jitpur Phedi community by 2014 by enhancing health post facilities, promoting sanitation facilities, and increasing community awareness of basic health, hygiene and sanitation principles.

VIN's ICHP focuses on improving the health of the residents of Jitpur Phedi by increasing knowledge of hygiene practices and their health implications and improving access to proper sanitation facilities. To increase hygiene knowledge, VIN conducted health awareness campaigns in the community and at local schools. These campaigns incorporated educational and practical components that taught community members about proper hand washing and teeth brushing techniques. VIN has also led health talks on water purification techniques, garbage management, and other general and menstrual hygiene practices. These health talks aimed to increase understanding regarding the link between communicable diseases and poor hygiene and

sanitation. VIN has made improvements to the health post, including facility and professional development. They have attempted to improve the provision of medical services by sponsoring a doctor at the health post, building a laboratory, and instituting a medical recording system. To address the need for improved sanitation facilities, as of 2013, VIN has supported the building of 144 toilets in the community and installed public waste disposal bins in ward 8 as well as at some of the schools (VIN, 2013).

D. Capstone Project Purpose and Rationale

As this literature review demonstrates, there has been much research conducted about sanitation, health, and hygiene in Nepal, as well as about the multitude of efforts to address these issues. VIN established its ICHP to meet the Jitpur Phedi community's needs for improved access to health and hygiene facilities and to increase awareness on health and hygiene practices. In order to understand their impact and the success of their program, an evaluation of their services was needed. Having an understanding of which efforts were effectual in mitigating the health impacts of poor sanitation and hygiene, can help improve future programming and to achieve national goals around water and sanitation. With this capstone project, Team Nepal hopes to share information with VIN and other organizations about the effectiveness, sustainability, and acceptance of its programs by the Jitpur Phedi community.

II. Methods

A. Project description

The evaluation team evaluated the ICHP interventions aimed at improving the health of Jitpur Phedi residents by increasing knowledge of hygiene practices and improving access to proper sanitation facilities. The team used both quantitative and qualitative methods to evaluate the impact of these interventions as well as examined the challenges, barriers, perceptions, and successes of the ICHP hygiene and sanitation efforts.

The aims and objectives of the project were as follows:

1. To evaluate how the ICHP program has impacted the health behaviors and health-related outcomes of the community members in regards to hygiene and sanitation in Jitpur Phedi, Nepal.
2. To identify the challenges, barriers, and successes of the ICHP hygiene and sanitation efforts.

3. To provide recommendations for improvement of the current ICHP design related to continuing community health and hygiene needs.

4. To create a standardized template evaluation method for VIN to have access to during future program assessments.

B. Project, data collection sites, and samples

The evaluation project was funded from a grant through New York University. Graduate students of the Global Institute of Public Health in the Global Health Leadership track were responsible for the design and execution of this project. They worked in collaboration with VIN.

The project was carried out in two sites. Planning, pre-work (including formulation of assessment tools), and final analysis were conducted in New York, NY. On-site assessments and evaluations were conducted in Jitpur Phedi, Nepal.

The participants were residents of Jitpur Phedi and Okharpauwa, Nepal. VIN has operated their ICHP program in Jitpur Phedi since 2009 and requested assessment of their efforts there. Okharpauwa is a nearby village with similar demographics that is interested in receiving services from VIN in the future. Because of these features, Okharpauwa was used as a comparison village. Seventy-five households were surveyed in Jitpur Phedi and 42 in Okharpauwa. In addition, five in-depth interviews and two focus groups were conducted in Jitpur Phedi.

Participants were included in the study if they were residents of the aforementioned villages and if they were 18 years of age or older and able to provide informed consent for participation.

C. Project/study design

A program evaluation was conducted utilizing a mixed methods approach. Methods applied included household surveys, focus groups, in-depth interviews and observational data collection. Surveys and interview guides were created and adapted from previously validated health and sanitation evaluation tools. Data collection was conducted during two weeks in January 2014 by five graduate students.

D. Data collection

There were 75 household surveys conducted in Jitpur Phedi and 42 in Okharpauwa. Additionally, a household observation was conducted at each home surveyed (Jitpur Phedi: n=75, Okharpauwa, n=42). Five key stakeholder in-depth interviews and two focus groups were conducted in Jitpur Phedi. The key stakeholders interviewed were as follows:

1. Political representative: member of a political party within the Jitpur Phedi Village Development Committee (VDC); government worker reporting to the district health office; part time teacher in Jitpur Phedi.
2. VDC Assistant Secretary: assists the VDC in making recommendations to the government for services and facilities on the behalf of the people of Jitpur Phedi; has a role in preparing the annual Village Development Plan; has worked for the VDC for 13 years.
3. Teacher: teaches grades K-7 (ages 6-12+) at a Jitpur Phedi government funded school; has been teaching for 20+ years
4. President of the Women's Co-operative: works with VIN to address the needs of women in Jitpur Phedi; co-operative was established by VIN in 2010 and has 520 members from all nine wards
5. Community Medical Assistant (CMA): a government employee who works at the Health Post for the last one-and-a-half years; oversees daily management; treats patients; prescribes basic medications.

The two focus groups consisted of a male-only and female-only focus group. All participants were community members of Jitpur Phedi. There were eleven participants in the men's focus group and nine in the women's group. The participants were recruited by VIN volunteers to attend the focus groups.

Jitpur Phedi is comprised of nine wards. A lottery system was used to randomly select five wards to include in the evaluation. Wards 2, 3, 4, 5, & 8 were selected. Fifteen participants from each ward (for a total of 75) were interviewed. Once in the village, convenience sampling was conducted to select households for interviews. The duration of the interviews varied, ranging from approximately thirty minutes to one hour and thirty minutes. Evaluators relied on VIN employees and volunteers for the recruitment of focus groups and key stakeholder interviews. Each focus group and key stakeholder interview lasted approximately one hour.

A consent form was provided and reviewed with all individuals who participated in study as a requirement for participating. The form was available in Nepali and English. The form was read to those who were illiterate by local Nepali translators and a thumbprint was used for acceptance of the terms when signatures could not be obtained.

All survey forms and interview tools used were translated into Nepali and were utilized by the local translators throughout the evaluation. Tape recorders were utilized while conducting focus groups and in-depth interviews. VIN volunteers transcribed this information into English.

Additional data used for comparison purposes for this evaluation included primary data collected by VIN in 2009 in Ward 8. An extensive literature review was also conducted to use as secondary data.

E. Measures

Indicators for hygiene improvement were assessed using previously validated and recommended tools (*see Appendix D*). Questions regarding these outcomes were assessed using both the quantitative and qualitative methods (*please refer to survey tools for specific questions: Appendix C*). Quantitative data was recorded primarily as categorical and binary data. Qualitative data was primarily recorded in open-ended responses. At the household level, the evaluation team assessed access to facilities through questions such as time to access water, distance to toilets, availability of water in the previous two weeks, and access to public or private toilet facilities. Hygiene behaviors were evaluated through observation of behaviors such as hand washing and through observation of households, identifying presence of soap, toothbrushes toilets and taps. Hygiene knowledge was assessed by asking the participants about their participation in hygiene awareness campaigns, their understanding of hygienic behaviors, and about their personal hygiene practices. Primary health outcomes assessed in the household surveys were the incidence of diarrhea over the last two weeks and health post visits. The surveys, interviews and focus groups classified areas of focus as water, sanitation, personal hygiene, waste disposal, and experiences with VIN. Participant demographic information such as gender, age, and number of family members living in each household was also collected.

F. Data management and analysis

All data was stored in both paper form and as audio files. During the data collection period in Nepal, this information was contained in locked suitcases. Upon returning to New York, the evaluators scanned the paper forms electronically and saved them onto password-protected computers. The original documents were shredded and the audio tapes erased.

All survey responses were recorded in separate notebooks and entered into a Microsoft Excel spreadsheet. Results were kept anonymous through assignment of participant ID numbers. The quantitative data (household surveys) were entered into Microsoft Excel and IBM SPSS

Statistics software (version 21). Quantitative data were then analyzed using basic statistical approaches (mean, median, and range, as appropriate). Averages were further analyzed using Pearson's Chi Square test to identify statistically significant differences among the baseline, intervention group, and comparison group data. This test was used to detect any significant differences between the two sets of categorical data. A p value of <.05 was seen as significant, while a p value between .05-.1 was seen as trending.

Data between Jitpur Phedi and Okharpauwa were compared to one another. In addition, data from Ward 8 collected in 2009 by VIN was compared to the data collected by the evaluation team in 2014.

Qualitative data analysis for focus groups and key stakeholder interviews was completed through an open coding process of the transcribed narratives from the interviews and focus groups using grounded theory as a guide. Grounded theory has become a gold standard for qualitative research and is often used for moderate sample sizes such as the ones conducted in this analysis. Thematic analysis led to the development of common themes in the data, which were then triangulated with other data sources.

III. Results

Seven major categories emerged from the primary data: (1) Functioning and Structure of Community Health, (2) Health Post (3) Hygiene and Sanitation Facilities, (4) Health Knowledge, (5) Health Behaviors, (6) Health Outcomes and (7) Social Determinants of Health. A thematic analysis was then conducted, the results of which were added to a table with observational findings, quantitative data, and secondary data in order to triangulate results (*see Appendix F*). The qualitative themes, quantitative findings, and observational data are presented below for each of the seven major categories. Direct quotations from the focus groups and in-depth interviews are also presented to support findings. As some of the interviews and both focus groups were conducted in Nepali, quotations marked with an asterisk (*) indicate that the quotation has been translated from Nepali to English. Further, in order to maintain confidentiality, the sources of the quotations are not identified.

A. Functioning and Structure of Community Health

i. VIN has provided multiple, helpful programs on health, hygiene, and sanitation

Throughout all facets of the evaluation, participants agreed that VIN has provided multiple helpful programs on health, hygiene, and sanitation within the Jitpur Phedi community and that VIN has had a positive impact on the community.

*"VIN has been effective with the health post and training the teachers and women's group. They have also been effective at educating the children and helping with toilet construction."**

Interviews revealed that participants were mostly pleased with the services of VIN, but were especially happy with the efforts at the health post and women's empowerment initiatives. VIN's work to empower the women of Jitpur Phedi was seen as a positive impact on the health of the community as the women's group and women's co-operative are seen as community advocates. Survey results revealed that 55% of the intervention group (Jitpur Phedi community) reported that they had attended a VIN event. Others reported that they had attended some health event but were unsure as to who sponsored it. It can be assumed that it was VIN who sponsored the event as all respondents reported that there are no other organizations in the community at this time. An additional 29% of interviewees stated that at least one child in the home participated in a VIN event at school. The women's group was the most frequent event attended (34%) of the VIN event participant subgroup. Of the respondents, 23% stated that they attended a health education event, 20% a health camp, and 23% "other". Thirteen percent of the intervention group cites VIN as the source of their hand washing knowledge. Only 8% of the intervention group cites VIN as the source of their knowledge around tooth brushing. The majority reported that the information taught was clear (69%) and useful (52%). Most attendees reported that they were pleased (28%) or very pleased (62%) with the event.

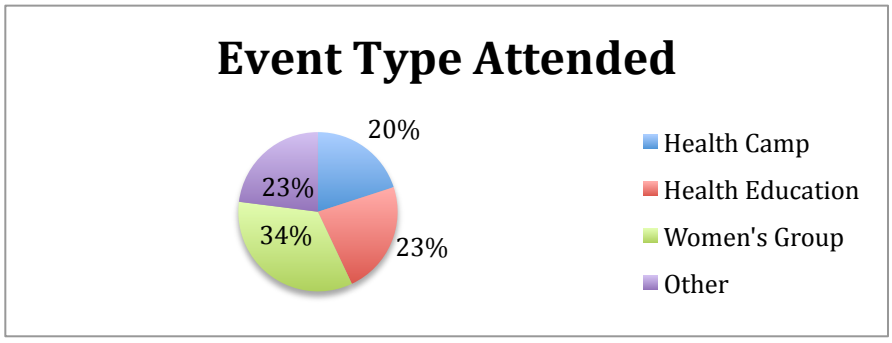

Figure 1

Interviewees and focus group participants also spoke about VIN's success in creating increased awareness and education on health and hygiene practices in Jitpur Phedi, stating they have seen progressive change in hygiene and sanitation practices since VIN began their ICHP in 2010. "The credit of increase hygiene, sanitation and education goes to VIN in conjunction with the VDC."* They further noted that VIN had a large involvement in constructing toilet facilities within Jitpur Phedi along with the VDC. The women's focus group stated that many families in Jitpur Phedi did not have toilet facilities prior to assistance from VIN. Survey results revealed that, of those with a household toilet, 16% stated that they received VIN assistance in procuring it. More specifically, 14% reported VIN's assistance with construction and 13% reported VIN assistance with funding. VIN additionally installed waste bins in one of the wards interviewed (Ward 8). Despite this being 20% of the intervention group surveyed, only 7% of those surveyed in Ward 8 acknowledged that the waste bins were present. Of those who knew about the waste bins, 100% stated that they are less than five minutes away from their home.

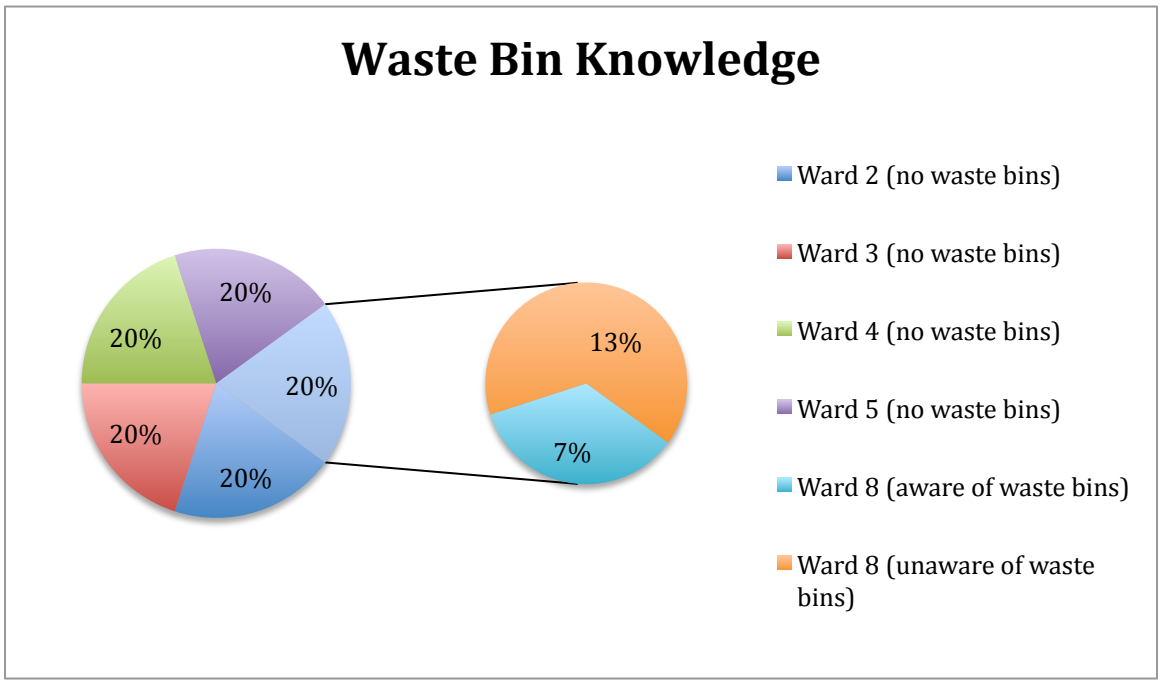

Figure 2

It was further noted that VIN focuses their efforts on the most marginalized families in the community being that they were the most in need of toilet facilities and hygiene education. One interviewee aptly summarized VIN's efforts in the community:

"VIN is working in different sectors in our community, especially empowering women, giving them funding, giving them knowledge about sanitation also. And providing good

support for the health post, providing doctor facilities and also providing so many equipment in the laboratory. So, and also creating awareness among the people and besides that, VIN is supporting for the ODF program, that is, stopping open defecation program. So, it is contributing a lot. And we are just happy."

Some interviewees also stated that though VIN has been a positive influence in the community, they feel VIN lacks an overall goal for their programs in Jitpur Phedi and has not followed through on a few of their promised projects such as construction of a community Multi-Purpose Center. Stated one interviewee:

*"VIN is working on a symbolic basis. They have no end target that they are working toward. They do not inform the VDC on their specific goals or targets for each year. This is a problem as they don't know what they are aiming for."**

ii. Concern regarding the departure of VIN and Jitpur Phedi's self-sustainability

Many participants voiced uneasiness regarding the lack of community self-sustainability to continue to improve health and hygiene in Jitpur Phedi if VIN leaves in 2014. Quotations from the interviews clearly demonstrated this concern:

*"Jitpur is not yet self-sustainable without the work of VIN, this make take a few years,"**

"If VIN left it would be very difficult. We would not have a doctor, no agency would be supporting or empowering the women. No one can do what VIN does."

"I am telling Dr. Laxmi and VIN president to stay Jitpur for next 5 years…I want to work with VIN."

Interviewees and focus group participants stated that they expect VIN to stay and work in Jitpur Phedi for a few more years until the community can lead these health efforts themselves. Further, they believe that VIN has focused their efforts on those from low social status and this group will benefit the most if VIN continues their work in Jitpur Phedi.

Along with the need of community sustainability, interviewees and focus group participants voiced their belief that the community as a whole, as well as individual members, needs to take responsibility to increase the health and sanitation of Jitpur Phedi. One participant of the women's focus group stated, "We should start from self so that whole society will do...we need to lead by example."* Many suggested that the VDC, health post and women's co-operative should take over the responsibility of promoting health and hygiene when VIN leaves Jitpur Phedi.

iii. Integrated efforts needed for success of health and sanitation initiatives

Throughout the interviews it became apparent that there is confusion within the community regarding what government sectors or organizations are responsible for different aspects of promoting health, hygiene and sanitation and who is responsible for implementing the various related programs. There is a District Health Office which coordinates efforts and information with the Village Development Committee (VDC). The VDC also appeared to coordinate with VIN and the health post on various initiatives. Though there appeared to be a hierarchy of services, the evaluation team was unable to deduce more information about the current hierarchy of health and sanitation services in Jitpur Phedi. One interviewee stated, "It is an integrated effort but the main are the VDC and health post."*.

The VDC is the entity in charge of allocating the budget and creating Master Plans (policies) for various health and sanitation initiatives in Jitpur Phedi. The VDC, in collaboration with VIN, is currently funding a Master Plan to make Jitpur Phedi open defecation free (ODF). Both political representatives and community members believe this initiative has been successful due to the collaboration between the VDC and VIN in organizing the toilet construction, resource mobilization, awareness campaigns and encouraged self-responsibility.

> *"There are defined rules (agreement) specifying what support should VDC and VIN provide (for toilet construction). They even make the individual household liable with some amount so that s/he becomes careful and is motivated to maintain the toilet."**

Interviewees and focus group participants also discussed barriers to successful community initiatives in Jitpur Phedi. Lack of coordinated and integrated efforts between the different stakeholders and lack of formal policies were two main barriers identified. It was reported that there are currently no policies or plans in place for waste disposal or a community water system in Jitpur Phedi. Though the community identified a desire for a waste disposal system and VIN has installed a few community waste bins, the lack of formal policy, funding, and community buy-in has prevented a coordinated effort to create a waste disposal system in Jitpur Phedi.

> *"The VDC and the community need to untie and collaborate in solid waste management. The VDC and community have collaborated on other issues in the community but they have yet to address solid waste management."**

Financial restraints, government "red tape" and lack of community buy-in were also identified as key barriers to successful program implementation.

"The first important thing is we have resources and we are not mobilizing it. That is because we are suffering from financial crisis. We do not have enough money to run all the programs, especially the programs for drinking water supply."

B. Health Post

i. Health services and health post infrastructure have improved since VINs arrival

All of the interviewees and focus group participants agreed that the health post and its services are a huge benefit to the community. They believed that VIN has helped improve the services and the overall infrastructure of the health post. They agreed that the most significant service VIN has provided to the health post is the physician, Dr. Laxmi.

"Mostly, many people come here for doctor. Dr. Laxmi is helping many people here. So, doctor service is most important."

Another interviewee similarly stated,

"VIN makes Dr. Laxmi available which is most important…VIN's support to health post has benefitted whole village including the children of school."

Survey results agreed with the above sentiments as, of those asked (N=52), 96% of the intervention group had visited the health post at least once since its establishment. In the month prior to being interviewed, 35% of the intervention group visited the health post with a range of 1 to 4 visits and an average of 0.6 times.

Interviewees and focus group participants also reported improvements in the health post facility. VIN and the VDC were noted as supporting the construction of the pathology lab, improved equipment, and curtains to increase patient privacy. Members of the women's focus group stated there has been "significant improvement" in the health post due to VIN. They stated they no longer have to go to the city for blood tests due to the new lab, they have privacy during doctor's visits and that minor health issues can now be easily treated at the health post.

ii. The health post is a huge benefit to the community but further needs remain

Though VIN's efforts have improved the health post services for the community, participants identified many needs that remain. Examples of these services identified by interviewees include free lab services, infrastructure for obstetric and gynecological services, free and more diverse medicines, health training for female health workers and health camps

provided outside of the health post. Survey results also indicated that 13% of the intervention group reported that they would like more services at the Health Post.

> *"I have seen many problems, like we have a no infrastructure for gynecological services. There is no delivery service; we have to refer all the pregnant women to the hospital…Lab, we are unable to run perfectly. Because we have many people go there and ask for fees. So people say 'I have not any money so I come tomorrow' and then don't come back."*

Further, many noted that should VIN leave Jitpur Phedi, they would again be without a physician at the health post. In order to address many of the above issues, one health post employee stated he would like the help of VIN in establishing the health post as a government identified Primary Health Care Center. This process would entail government provision of many needed services.

> *"We would like to establish the Health Post as a Primary Care Center. After this process, there will be many facilities. They will then have access to a government-supplied physician, lab tech, delivery services, and a staff nurse."*

Health post staff and community members discussed the need for continued health education of female health volunteers and the community. Both the men and women's focus groups identified the desire to have more health camps, on a weekly or monthly basis, to provide health check ups and medications outside of the health post facilities, as it is far from some of the wards. Other identified needs for the health post include dental care and a scale for weighing children.

C. Hygiene and Sanitation Facilities

i. The majority of households in Jitpur Phedi now have access to a private toilet

The exact number of households who remain without a private toilet facility in Jitpur Phedi varied slightly between interviewees, but it was estimated by an interviewee that out of 1000 homes in Jitpur, 150-200 are still in need of toilet facilities.

> *"I think now around 150 households do not have toilet, out of 1000 households. We also have a master plan and policy from VDC and by this year all the people will have access."*

Of the surveyed participants, 93% have toilet access. Of those with access to toilets, 86% have private (as opposed to public), 96% have pit latrines (as opposed to flush), and 94% have permanent (as opposed to temporary). In Ward 8, all of those surveyed had permanent toilets, compared to 2009 when only 69% of residents reported having such facilities, the difference between the two is trending ($p=.090$). Toilets were observed, whether public or private, to be

located close to the homes and mostly free of obstruction and damage, although a few were in need of repair.

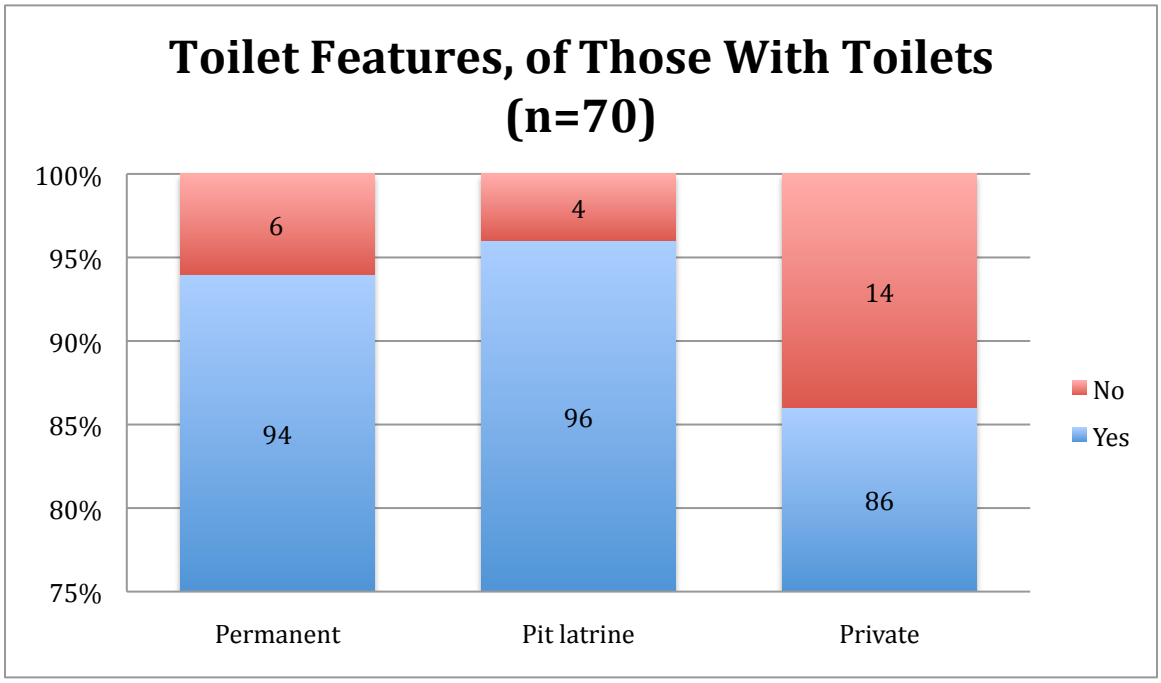

Figure 3

One interviewee stated that the success of increased toilet access in Jitpur Phedi is due to the implementation of the ODF master plan which created a formal policy and budget for toilet construction.

"The VDC is making its master plan for stopping open defecation. That is very much important. So it has allocated some certain amount to construct latrines."

Further, interviewees and focus group participants stated that the increased access to toilet facilities in Jitpur Phedi is due to coordinated efforts between VIN, the VDC and the community.

*"The VDC and VIN have collaborated together and provided awareness campaigns to make people understand why toilets are necessary."**

Though many homes now have a toilet, 24% of those surveyed requested additional services from VIN related to toilets. Common examples of such requests included help to install the toilets and monetary assistance. Furthermore, there is still no access to public toilet facilities. One interviewee suggested that if a public toilet was built in the village center, Tinpipple, a fee could be charged for use and that fee could be used to pay someone to clean the toilet and establish a new job in the village.

ii. *Lack of infrastructure, integrated/coordinated efforts and funding for community waste disposal and water system*

1. *Water System*

"We have so many sources of water but we don't have such a master plan to manage all the sources of water. That is a challenge. In terms of the proper safe supply of drinking water system, uh it is quite difficult here. Because, there is no such integrated plan or policy, that is very much important."

Interviewees and focus group participants stated that there are both public and private taps for water within Jitpur Phedi. Of those surveyed, 57% get water from a public tap, 39% from a private tap, and 4% from a river. This is statistically different (p=.000) from the comparison group where 95% get water from a public tap and 5% from a private tap. Most taps in the intervention group were near to the homes and the majority of respondents in the intervention group stated that it took less than five minutes to get water (81%). Most taps were relatively clean, although some had puddles noted around them, as well as, garbage, animal feces, or livestock in the area.

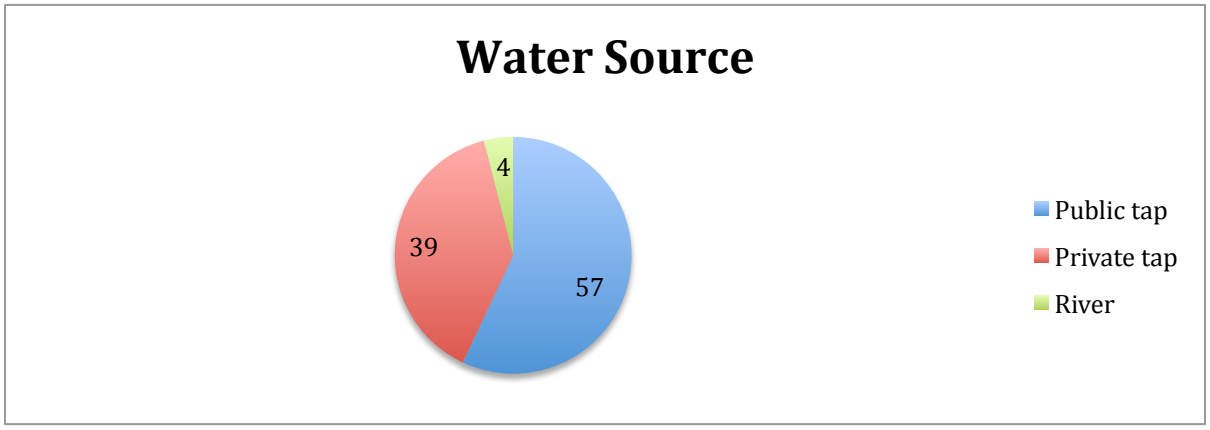

Figure 4

Some families did not have access to private taps due to topographical issues restricting the placements of taps. Further, it is unknown if the water from the previously mentioned taps is safe to drink as no formal testing of the water has been conducted.

"The water is not treated and there has been no government testing of the water. Therefore, we do not know how clean the water is or what chemicals or microorganisms are in the water."

Interviewees and focus group participants stated that the majority of the community believes that the water is safe to consume due to its pure spring source. One interviewee and a few focus group members also voiced their personal beliefs that the spring water is pure and safe to drink though they acknowledged that the water could be contaminated due to lack of proper storage of water in the community.

> *"There is a lack of coordination and funding for addressing treatment of the water supply. The topography also makes it difficult. People extract water privately, not through government efforts."**

There is no formal policy for water treatment or supply in Jitpur and therefore there is no government funding to test or improve the quality of the water. Interviewees discussed the lack of coordination between the VDC, higher government agencies, NGOs and the community itself as another reason why there is no community-wide management of a water system.

> *"Even today, most of the community people they are not getting proper supply of safe drinking water. So that is a very big challenge. Especially the Jitpur Phedi VDC, this office, should play a vital role to manage all these things. Besides that, we have some responsibility of consumers also. They are also not paying attention to us, to manage water resources."*

A lack of access to water is an additional, albeit lesser, concern. Water was unavailable in the last two weeks for 17% of those surveyed. Of those reporting unavailability, the average number of days was 2.92 with a range of 1-7. Year round, 53% of respondents stated that water is available. The most frequently reported seasons of unavailability were winter (80%), spring (86%) and autumn (91%). Of those surveyed, 37% requested additional services from VIN related to water capacity. Common requests included adding water tanks for the homes or community.

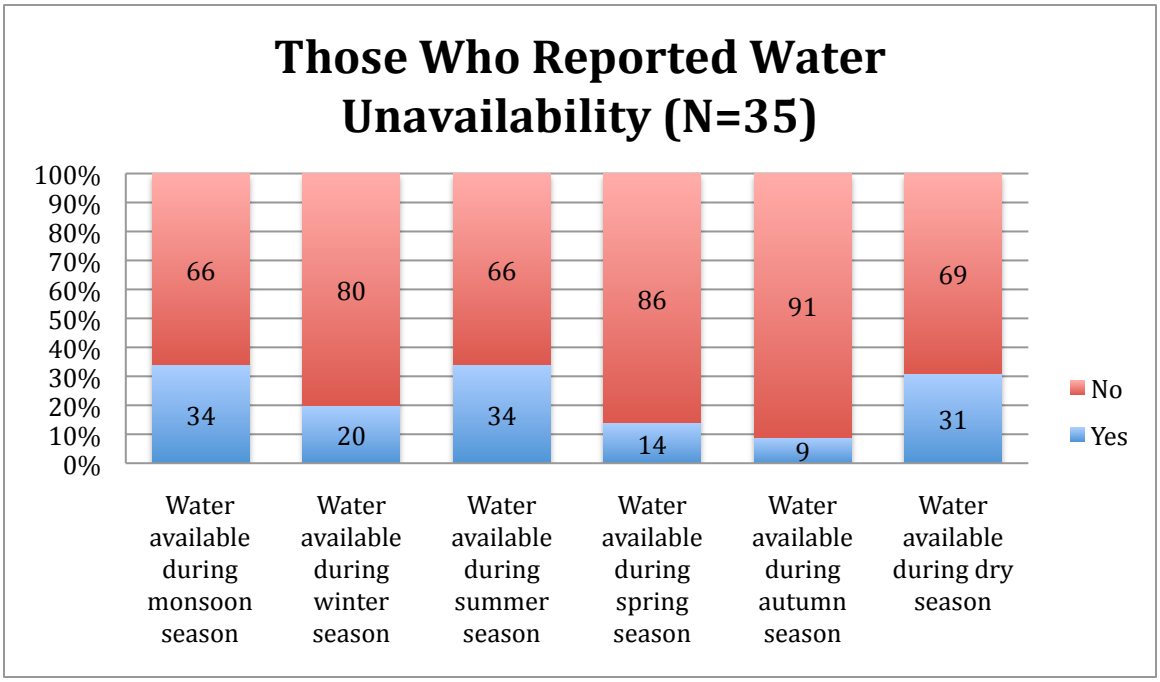

Figure 5

2. *Waste Disposal Management*

There is no community wide program for waste disposal and management in Jitpur Phedi. VIN has tried to encourage proper waste disposal by placing public waste bins in parts of the community. However, only interview and focus group participants living in Ward 8, or those involved with the VDC, were aware of VIN's efforts to provide waste bins in Ward 8. All others reported there were no public waste bins within their community. Despite 20% of those surveyed living in the ward with waste bins (Ward 8), only 7% acknowledged that the waste bins are present. All waste bins observed were at least half full of trash. Of those who know about the waste bins, 100% state that they are less than five minutes away from their home. Those homes closer to the waste bins were observed to have less garbage littered on their property.

Even those interviewed who acknowledged the presence of waste bins within Jitpur Phedi stated that the majority of community members do not use the waste bins.

> *"VIN has a few small bins in a few places but not in each ward and they are not effective. The bins by VIN are just symbolic. There are not enough for all of the wards, are too small and too far away. There is no collaboration with this program. Not effective and no one uses them."**

It was also apparent that many community members still do not see waste disposal as a community priority and therefore, no formal policies have been made to address the issue.

*"VDC has been planning to specify dumping site for solid waste. It is a long-term plan as solid waste management has not been seen as a pressing problem."**

Despite this, 19% of those surveyed requested additional services from VIN related to waste. Common requests include waste disposal pick-up and an expansion or establishment of community garbage bins. Those interviewed who expressed the need for proper waste disposal management in Jitpur Phedi stated that scarcity of public bins and the lack of responsibility to empty the bins when they are full as key reasons why the current waste bins are ineffective. The men's focus group reported they would like to see a public vehicle responsible for emptying the bins and thought that VIN would provide this when they installed the bins. They further stated they believed more community members would use the bins if someone were responsible for emptying the bins at the dumping site. One interviewee stated, "People should unite and collaborate with VDC especially for solid waste management", expressing the current lack of integrated efforts in Jitpur Phedi to address waste disposal in the community.

D. Health Knowledge

i. There is a strong basic understanding of health, hygiene and sanitation in Jitpur Phedi

Both focus groups and interviewees stated that most people in Jitpur Phedi now have a strong understanding of the relationship between proper hygiene, sanitation and their health. The men and women's focus group participants identified that lack of hygiene and sanitation can lead to many illnesses ranging from respiratory disease to diarrheal diseases and stated that proper personal hygienic practices as well as the keeping a clean environment are important to their health. Further, the men's focus group identified health education as the most important issue relating to hygiene and sanitation in their community while the women's focus group listed health education second in ranking just below access to clean water. All interviewees stated that VIN has educated community members on topics relating to hygiene such as hand washing, tooth brushing and environmental cleanliness.

*"VIN has been very effective in creating hygiene, health and sanitation awareness in the community. There is a vast difference in the awareness level from before VIN arrived till now."**

Those surveyed were asked at what point during the day they wash their hands. Responses were grouped into the following categories: before eating, before preparing a meal, after using the

toilet, before feeding a child (if applicable), and after changing a child's diaper (if applicable). Of the five categories, a majority of the intervention group stated that they washed their hands during three of them. Those times were after using the toilet, before eating, and before feeding a child (as applicable). Further, there was a statistically significant difference between the intervention and comparison group in those who knew to wash their hands after using the toilet and before feeding a child (p=.046, .034). Conversely, a majority of survey respondents did not state that they wash their hands before preparing food and after cleaning a child's refuse (as applicable).

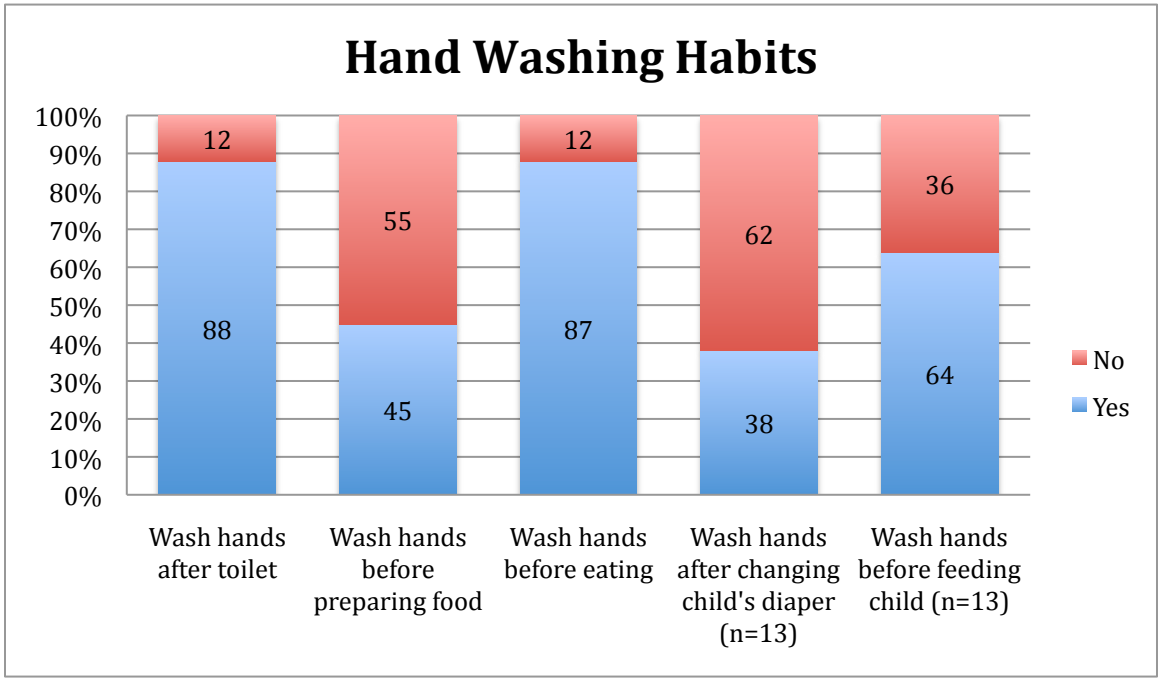

Figure 6

One interviewee stated that VIN has taught both the young and old in the village on personal hygiene, cleanliness of the home and is now teaching villagers on the importance of keeping the village surroundings clean. She also stated that the improved awareness on hygiene and sanitation in the village is due to VIN's efforts. Other participants reported that the educated and wealthier families of Jitpur Phedi already had a basic level of hygiene and sanitation awareness prior to VIN's arrival; however, VIN has helped educate those with low social status and those with low levels of education. In addition to VIN's health education practices, many interviewees and focus group participants discussed the importance of community members taking the responsibility to teach one another about health, hygiene and sanitation.

Focus group participants stated that although VIN has been a factor in the increased health awareness in the community, other sources of health knowledge exist including learning from their family, school, fellow community members and traditional practices. The greatest number of those surveyed stated that they learned how to wash their hands from a family member or that they taught themselves (49%), with the most common response being that they taught themselves. Often if a child in the household attended a VIN event the information was shared with the other household members. VIN was cited as the source of hand washing knowledge by 13%. In terms of tooth brushing, the greatest number of respondents stated that they learned how to brush their teeth from a family member or that they taught themselves (55%). VIN was cited as the source of knowledge around tooth brushing by 8%. In addition, 15% of those surveyed requested additional services from VIN related to health education. Common requests for types of knowledge include first aid and women's health issues.

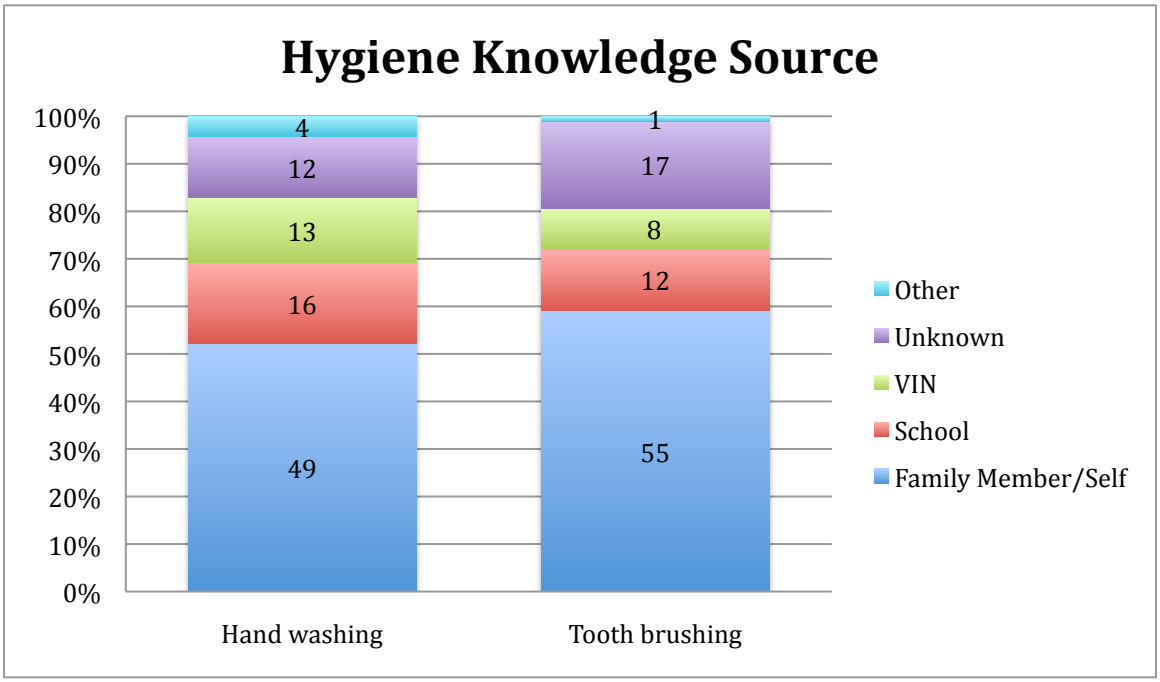

Figure 7

ii. Methods of dispersing health education can be improved

All interviewees and focus group participants stated that the methods of delivering health education messages by both VIN and the VDC in Jitpur Phedi could, and should be, improved. Many reported that because there is a vast difference in levels of education, literacy and cultural norms within the community, it is challenging to implement effective health education messages that speak to all members of the community.

"I do not think this [health education] is effective because it is only spoken. There is diversity in culture, language and education levels which makes this difficult to deliver effective messages. Diversity is the major challenge to effective education. The way to overcome this is to target specific groups at a time".*

Further, current health education messages are only conveyed verbally and many state awareness campaigns are not effective this way because of the wide range of education and literacy levels.

"Only speaking method is used. The method used is not effective because the people are at different stages of development. Some are well to do and some are extremely poor, some are educated and some illiterate".*

In order to address this, they suggested that more practical ways of teaching, such as using dramas and demonstrations in conjunction with health messages, should be implemented. They also emphasized the importance of practical education for the children. One interviewee stated:

"We are teaching in a very traditional way, giving lecture, that is the problem. And we are not, I think, giving good education to the children, that means practical education."

iii. Barriers to increasing health knowledge include culture, tradition and poverty

A common theme noted among interviewees and focus group participants was that community members who are not listening to health education messages are those who still have a traditional way of thinking.

"We suffer from so many traditional and conservative way of thinking, this is a barrier to effective health education and awareness, getting people to listen to the messages. It is hard to change people's way of thinking in the community. We have not been successful in changing the minds in terms of health and hygiene practice… We are trying to eliminate taboos and this way of thinking by the campaigns and providing education."

Cultural and traditional health knowledge and practices are still prevalent for many families in Jitpur Phedi. These practices create barriers in changing the behaviors of some of the community members.

"That is the problem. It is because we still believe, we are suffering from so many deep-rooted orthodoxies."

For example, one individual shared that many people mix mud with cow feces when cleaning the floors of their homes because they believe the feces is blessed. In order to change traditional

thinking in the community, many interviewees reiterated the importance of proper health education for the children who can then take the messages home to their parents.

> *"The very important thing is the school kids must be provided knowledge about sanitation and hygiene, because they can convey the message to their home, to their house. They can even teach their parents also. That is very much important."*

Others suggested that parents and children be taught together so that parents can then model behavior to the children.

> *"When children and their families are put together for awareness, the programs become effective. Involving parent in the programs along with children is thus required."**

Poverty was also cited as a major barrier to increasing health knowledge in the community. One interviewee stated:

> *"Children are of two categories. First, those from educated family and second, from poor and illiterate family. Low level of awareness of parents (family) creates problem. Thus poverty is a major challenge. Wealthy have knowledge, learn from family, are aware… The poor, there are problems making them aware of sanitation and hygiene."**

E. Health Behaviors

i. Increased health awareness has led to improved health behaviors in Jitpur Phedi, due in part to VIN

Overall, interviewees and focus group participants agreed that hygiene behaviors in Jitpur Phedi have improved over the past few years. The women's focus group stated that because people are now "more aware" of proper hygiene practices, such as hand washing and nail trimming, people try to take better care of themselves. An interviewee discussed that community members now realize the personal benefit of proper hygiene and therefore practice the learned behaviors. Many participants feel that VIN's educational efforts have led to increased health and hygiene awareness in the community and have led to the behavioral changes now seen in Jitpur Phedi. Not only are the adults changing their hygiene behaviors, but many report that they also believe that the children are now motivated to wash their hands and brush their teeth. Interviewees believe that VIN has made an impact on the children of the community by teaching hand washing and tooth brushing within the local schools. One interviewee stated,

> *"Especially the children sponsored by VIN are more alert with maintaining hygiene because they fear that VIN may withdraw the sponsorship if they do not maintain cleanliness."*

The quantitative data supports the above beliefs. A majority (85%) of those surveyed have a designated area for washing their hands. This might include a sink or, more frequently, an area where a water container and/or soap are located. Almost all areas were less than five minutes from the toilet. Most respondents stated that they always use soap when they wash their hands (65%), followed by sometimes (24%) using soap. This was consistent with observational data when those interviewed were asked to demonstrate how they wash their hands, most used soap. All observed were thorough in their hand washing techniques. Of those who reported not using soap when they washed their hands, mud or water only were the most popular alternative options. This is different from the comparison group where 52% responded that they always use soap when washing their hands and 36% said the sometimes do. The difference between the two groups is trending (p=.059). However, despite hand washing practices, most people who were interviewed and surveyed were observed to have dirty fingernails and hands.

In terms of bathing, most survey respondents wash their bodies two to three times per week (44%) followed by once per week (17%) and once per day (13%). In Ward 8, 47% of respondents reported washing both 2-3 times and once per week. This is a shift from 2009 when a majority of respondents from ward 8 reported bathing 2-3 times per week (65%) followed by once per week (34%). This difference is statistically significant (p=.044).

All survey respondents brush their teeth, with only 3% stating that they sometimes brush their teeth. Of those with children, a majority reports that the children also brush their teeth (86%). A majority of respondents brush their teeth once a day (65%) followed by more than once per day (25%).

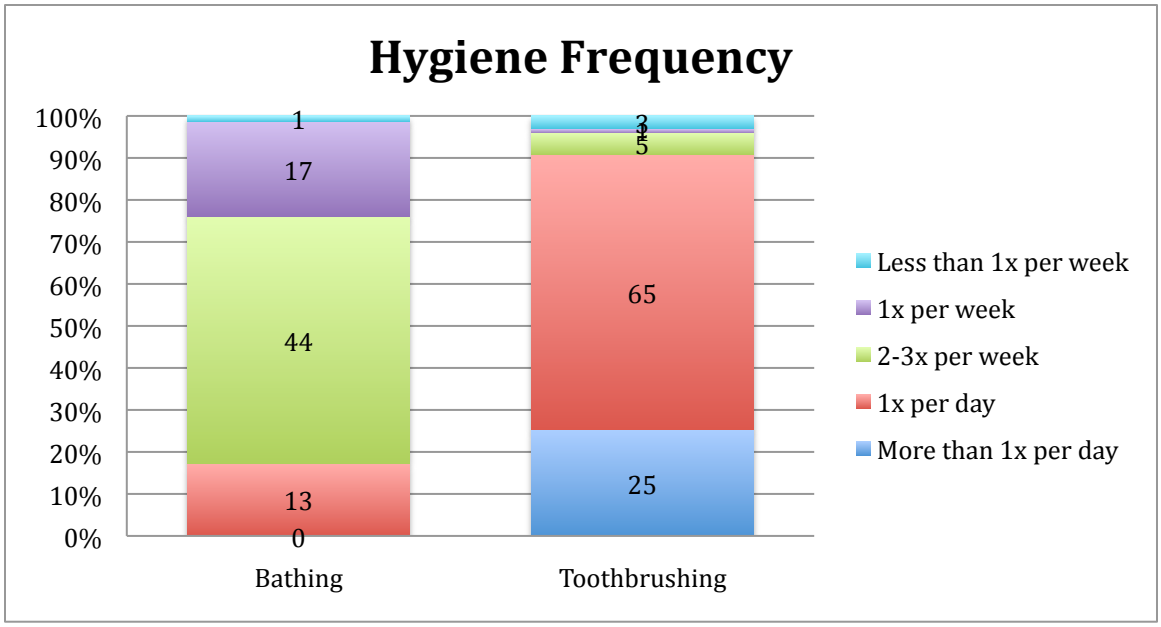

Figure 8

When brushing, a majority of survey respondents state that they use a toothbrush and toothpaste (73%). Tooth brushing materials were often kept in a basket inside the house. This is different from the comparison group, where a much larger percent (87.8%) use a toothbrush and toothpaste when brushing their teeth. Additionally, 7.4% in the comparison group use a toothbrush and an alternative for brushing their teeth. The difference between the two groups is trending (.056).

Though improvements in health behaviors have been observed, interviewees and focus group participants agreed that there are still community members who do not practice proper hygiene and sanitation. One interviewee stated that though he sees improvement in the children's hygiene practices, "10 to 15 percent of students have not yet internalized the basic hygiene practice."

ii. Open defecation (OD) has decreased in Jitpur Phedi due to improved toilet facilities

OD was a huge community health problem in Jitpur Phedi prior to the efforts of VIN. However, interviewees and focus group participants all agreed that OD is no longer a common occurrence in the community due to the increase in toilet facilities built by VIN in coordination with VDC. As one interviewee stated, "it has been seen that where toilet is constructed, it is used"*. The men's focus group stated that OD was a large problem in the past as only 2-4 families had toilets near their homes but this has now changed due to VIN. One interviewee stated that previously there would be stool everywhere in ward 8 but, after VIN provided

education and assisted in the building of toilets, there is no longer stool on the roads. This is supported by the quantitative data in which it was revealed that 93% of those surveyed have toilet access. No one who has toilet access reported practicing open defecation. However, of those with children under 5 years of age who do not use toilet, only half throw the child's stool in the toilet. The other half throws the stool in field, garbage, or other location.

In addition to providing assistance in toilet construction, many agreed VIN helped create a sense of ownership for one's toilet. This was accomplished by having the families contribute to the construction of their toilet with supplies, labor or finance. By creating ownership of the toilets by each household, VIN has motivated individuals to not only use the facilities, but also take personal responsibility for the upkeep of the toilet. Of those surveyed who had toilets, 97% reported that they clean it on a regular basis, with 68% cleaning their toilet daily. Of those who clean, 55% reported using household cleaner while the other 45% use only water. Observation revealed that most toilets were clean and, if dirty, very few had signs of feces. However, it was stated by many that those who still do not have a toilet, estimated around 200 households, still practice OD.

iii. Though hygiene and sanitation practices have generally improved, there is still a lack of change in behaviors regarding waste disposal and water purification

There is conflicting understanding of water quality and the necessity of purification of drinking water within Jiptur Phedi. Some interviewees and focus group participants stated that the water in Jitpur Phedi is clean and "pure" while others stated the water is not treated and needs to be purified prior to consumption. Many discussed the common belief in the community that because the Jitpur Phedi water supply comes directly from a natural spring, it is clean and does not need to be treated.

> *"We, let's say, we, the people of the Nepal do not believe that even this spring water is contaminated. We don't know that, that means lack of knowledge and suffering from ignorance… We use to teach people about just boiling water, filtering it and then drink. So they use to say us, 'this water is from spring and it does not need to boil. It is free from matter, it is safe so, why we need to boil?'"*

To date, only 28% of those surveyed purify their drinking water regularly. An additional 1% reported that they sometimes treat their water, usually during monsoon season. Despite the low numbers, this is significantly more than the comparison group where only 10% purified their

water (p=.022). The most popular method of treatment reported by the intervention group was boiling (73%), then filtering (38%).

The number of people in Ward 8 treating their water since 2009 has decreased with 7% of those surveyed reporting purifying their water as compared to the 27% of people in Ward 8 who reported that they treat their water in VIN's baseline data. The difference between the two percentages is trending (p=.087).

Despite the lack of purification behavior, many interviewees reiterated the need to purify the water and reported that both VIN and the school curriculums teach community members to purify their water. Though the women's focus group identified purifying water as a way to prevent illness and discussed different ways to filter their water, many stated that they believed the water in Jitpur Phedi to be safe as it comes directly from the spring source. The men's focus group also stated that most families in their community do not purify their drinking water. One interviewee stated,

"Most people do not purify their water because they believe the spring water is pure and therefor safe to drink…however, some people in the community do purify their water."

Further, there was disagreement between participants on whether or not there has been any government testing on the safety/quality of the Jitpur Phedi water supply.

Regarding the sanitation of water storage methods, almost all individuals surveyed reported having containers to store their water (99%). Of those with containers, 99% have a narrow mouth and 89% have lids. On occasion it was observed that those who reported having lids did not have lids for all their containers. This was often because the family covered the pots that contained drinking water only.

Interviewees and focus group participants also agreed that there is lack of proper waste disposal behaviors within Jitpur Phedi despite attempts to create awareness on the importance on the issue. Participants stated most families compost their biodegradable waste (79% of those surveyed reported that they compost), but either burn or throw the rest of their waste on the ground.

"People in Jitpur do not think waste is an issue. They just throw their trash wherever."

Among those surveyed, the most common form of waste disposal was burning, followed closely by throwing in a river or on the ground. A majority of respondents stated that they separated their waste before disposing of it (80%). The most commonly separated waste types

were plastic and organic waste with 79% of respondents reporting they separate both types of waste. A majority of respondents reported that they either burn their plastic (57%) or throw it in the river or on the ground (37%). This is different from the comparison group, where more respondents burn plastic (62%) and less throw in river or on the ground (31%). The difference between the two groups is trending (p=.091). In Ward 8, 53% of those surveyed stated that they burn their plastic. This is less than in 2009 when 81% reported to burn plastic. This difference is statistically significant (p=.017). Regardless of waste disposal method, there was often litter observed lying around the property of houses.

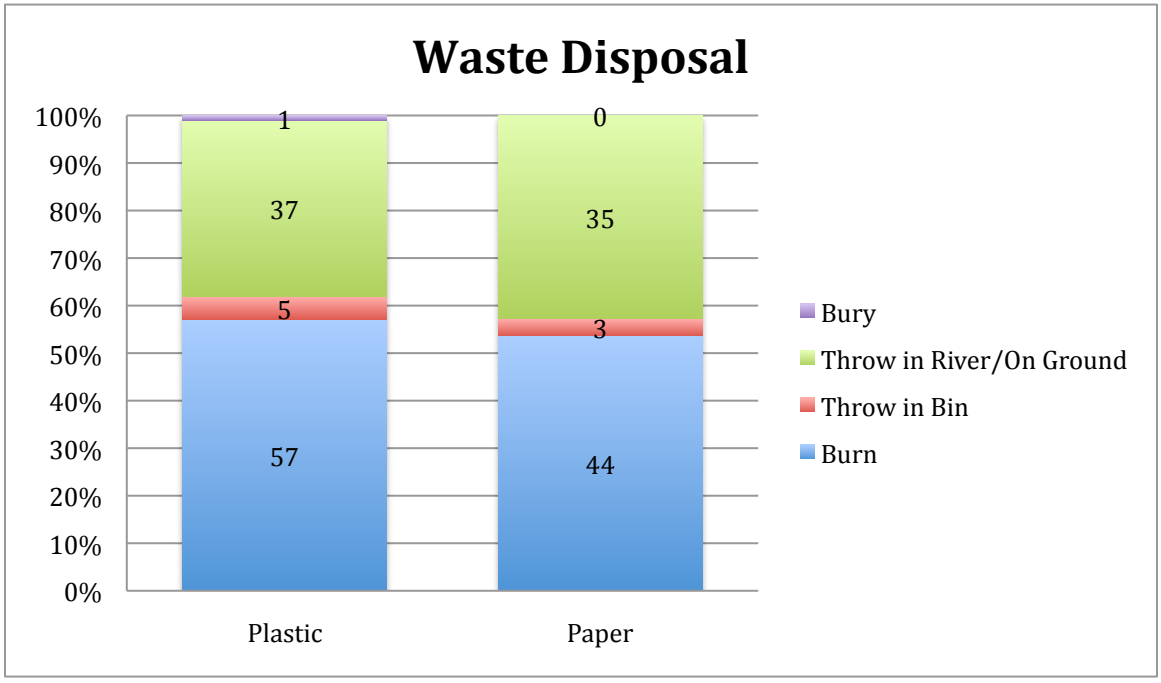

Figure 9

One interviewee stated that though the cleanliness of the community environment is improving, many individuals do not understand the importance of a clean environment and therefore are reluctant to practice waste management. Further, she stated, "Trash bins are only used by those who understand its importance."* The men's focus group agreed with this sentiment stating that many people in the community still do not realize that waste is harmful to their health. The women's focus group stated that they believe waste management is an issue in the community because most people simply throw their trash on the ground and that the community needs proper waste management to prevent disease in their community. One interviewee also stated that the children of the community are still reluctant to dispose of their trash in bins at the schools.

"There is no practice of throwing waste in trash bins in Jitpur. The adults don't use trash bins so the children do not. The school is trying to teach, but no role models for the students."

Even with the reported reluctance of many to dispose of trash in provided bins, participants from both focus groups stated that waste management should be performed on an individual level and that people are responsible for their own waste. The women's focus group stated that if they led by example and disposed of garbage in the bins, others would follow. One participant of the focus group stated, "We should start from self so that whole society will do." The men's focus group stated that VIN has provided education about waste management and therefore, people should now be responsible for their own waste.

Regarding household sanitation, **e**very survey respondent stated that they sweep their floors once a day, with a majority reporting they do so more than once a day (65%). A majority of respondents reported that they wash their floors once a day (71%). Washing the floor often means using mud and water for mud floors, while households with cement floors use a cleaning solution. A majority of houses observed looked clean and free of dirt. Only 8% of survey respondents keep their livestock inside their homes, with a majority keeping them either fenced or tethered outside of their living space (84%). Despite this, 32% of the respondents state that their livestock enter their homes. In Ward 8, no participants stated that livestock enter their homes. This is different from Ward 8 in 2009 when 33% of participants in the baseline survey reported that livestock entered their homes. This difference is statistically significant (p=.035). Additionally, 80% of those surveyed stated that pets or wild animals enter their homes. This is significantly greater than the comparison group where 59.5% states that pets or wild animals enter their homes (p=.003).

iv. Barriers to improved health behaviors included poverty, lack of facilities, lack of reinforcement at home and "carelessness"

Common reasons why community members do not practice proper hygiene or sanitation practices identified by interviewees and focus group participants included poverty, lack of facilities, lack of reinforcement in the homes and carelessness. Respondents stated that those who still do not have toilet facilities continue to practice OD and are usually families who are economically disadvantaged. Further, they reported that those of "low status" are disadvantaged and often do not understand the importance of using toilet facilities or waste bins. Others stated

that many more community members would dispose of waste in bins if they were available throughout the community and if they were properly managed. However, others disagreed and stated that it was lack of motivation and carelessness that lead people to throw trash on the ground even when they know they should not. They further believed that behavioral messages need to be reinforced at home, stating that parental involvement in awareness campaigns targeted towards children is needed to address the traditional thinking of parents and, thus, elicit behavioral change.

F. Health Outcomes

i. There has been a general downward trend in the rate of disease in Jitpur Phedi

Overall, interviewees and focus group participants agreed that they have seen a decrease in the rate of disease in Jitpur Phedi over the past few years due in part to VIN's work in the community.

> *"They (VIN) provided health awareness campaigns, taught cleanliness and provided a doctor at the health post. Previously diseases like diarrhea, dysentery, and typhoid were commonly seen which was due to lack of sanitation. But it has been decreasing now because of VIN."**

In agreement with the above statement, a health post staff member stated that only 5-10 cases of diarrhea are seen each month at the health post, equating to only 1% of cases seen at the health post every month. However, he did state that cases of typhoid and diarrhea increase in the summer months when monsoon season occurs. Data gathered from survey participants supported this claim. Overall, an average of 0.2 instances of diarrhea were reported in the last month with a range of 0-7 instances. Over a third (36%) of participants reported that they visited the health post at least once in the past month. The average number of visits was 0.6 with a range of 1-4 for those visiting the health post.

The men's focus group confirmed that the health and hygiene of the community have improved due to the work of VIN. Participants from the women's focus group stated there is no longer disease in the village related to lack of sanitation. However, they then stated that occasionally they hear of villagers becoming ill with diarrhea or typhoid due to a dirty water tap in the village, contradicting their prior statement.

G. Social Determinants of Health

i. Economically disadvantaged families have less access to resources and education

All interview and focus group participants discussed the issue of poverty as a barrier to both health education and change in health behaviors within the community.

> *"People are involved to generate income so, people I think, they are not more interested to listen to our things because we suffer from poverty and we have to eat. That is the problem."*

Wealthy families were identified as having high levels of health awareness within the family and therefore practiced proper health behaviors. Interviewees and focus group participants reported that those of low socioeconomic status (SES) often do not have time to listen to health education messages and further, do not have enough funds to assist in toilet construction with VIN and the VDC.

> *"VIN and VDC only provide some support. They do not make total construction. Some people are extremely poor, as such, there exists financial barrier"**.

Low SES of households also affects the education of the children.

> *"Children are absent (from class) due to illness. But rather than sickness, poverty is a cause of absenteeism and drop out. Especially during the harvest season."*

Along with poverty, low literacy levels were also reported as barriers to effective health education.

ii. VIN has helped reach the poorest and most marginalized community members

> *"VIN is focusing on the 'untouchables'. They have helped by focusing on this target group who are the lowest and most marginalized."**

All interview and focus group participants agreed that VIN has focused its interventions on those in the community who are illiterate and have less access to health education and proper medical care. One interviewee reported that VIN financially sponsors some children of low SES in the community so that they can attend school. In agreement with sponsorship, the children are taught how to maintain personal hygiene and sanitation of their community. Both focus groups stated that VIN has helped educate those who were illiterate or uneducated on health behaviors and practices. Further, it was reported that VIN's efforts to empower women and establish the women's' co-operative has improved the health of the community, especially the health of the children.

IV. Conclusions:

A. Discussion

It is apparent that VIN has contributed to the community by providing high, in demand health services at the health post. Repeatedly, having access to a doctor was referred to as one of the largest benefits VIN has brought to the community and most individuals demonstrated a high level of satisfaction with its operations. Many in the community access the health post for preventative care and treatment, though costs of lab services and distance from some wards are barriers. There is a high demand for increased capacity of obstetric and gynecological services, particularly in the areas of pre-natal, delivery, and post-partum. The development of the local women's group has also been a large success on the behalf of VIN, as many community members revered and appreciated being part of its work. Due to the groups' strong reputation and community presence, they may serve as a focal point for promotion of future community health initiatives.

As reported in the results, VIN has contributed to a downward trend in hygiene related illness in Jitpur Phedi due to their ability to increase health knowledge, change hygiene behaviors and the installation of toilets. The literature identifies the number of diarrheal cases as the best health indicator to show change in sanitation and hygiene behaviors within a community (USAID, 2004). This evaluation's results found that very few households reported cases of diarrhea in the past month (0.2 cases/month) and health post workers stated on average, they only treat 5-10 cases of diarrhea per month. Though difficult to compare, national statistics show the average number of cases of diarrheal disease per child under five is 4 cases per year. Due to insufficient baseline data collection, this team was unable to statistically identify if a downward trend in diarrheal cases has occurred in Jitpur Phedi since VIN implemented its efforts in 2010. However, many community members stated though it had been an issue in the past, they no longer recognized diarrheal disease as a community health issue. Further, they gave recognition and credit to VIN for these changes. One caveat is that the evaluation occurred during the dry season. Both community members and the health post worker reported an increase in diarrheal disease during the summer monsoon months.

VIN has played an important role in increasing access to toilet facilities by supporting the construction of toilets in Jitpur Phedi and their efforts have been deemed a success. As stated previously, of those surveyed, 93% had access to toilet facilities. This is a large increase from 2009 in which only 69% of those surveyed in Ward 8 had access to a toilet. Further, the results showed the surveyed population to have greater access to toilet facilities compared to the national rate (43%) of the Nepali population (Government of Nepal, 2011). It was made apparent that community members who had access to a toilet were readily using them. This has led to a decrease in OD in Jitpur Phedi, and although community members report those without a toilet still partake in OD, Jitpur Phedi is hoping to soon become an open defection free zone. VIN has clearly helped in these efforts.

It was noted that the community, VIN, and the VDC came together to address the issue of increasing toilet access in Jitpur Phedi. In addition to having a formal policy for toilet construction, there was collaboration between the VDC and VIN in organizing the construction, resource mobilization, and awareness campaigns. The cohesiveness and integrated efforts of these partners and the community seems to have contributed to the greater success of the program. The efforts around awareness and community mobilization helped to increase the sense of personal responsibility in household. This encouraged households to contribute to the construction of their toilets, make use of them, and make efforts to clean and maintain their property.

VIN has also increased health knowledge and promoted healthy behaviors in the community, and their efforts have been noted to contribute to the improved health status of Jitpur Phedi. Many community members have attended VIN events and found health education to be an important service, although not all community members were able to specifically identify VIN as the organization that supported the events. Most community members demonstrated strong understanding of health, disease transmission, and personal hygiene. For example, this team's observations confirmed that individuals have readily available access to soap and toothbrushes and community members reported daily use of these items. However, many voiced concerns that the community still lacks knowledge and motivation to invest in both personal and community waste management.

However, community members reported that health messages are not always being tailored to and appropriately reaching individuals of lower social economic status and

educational level. Suggestions were given to add drama and demonstrations to health education messages in order to reach a more diverse set of community members. Further, it is important to include parents in the health education of their children to help change traditional beliefs regarding hygiene and sanitation within the home itself.

The evaluation team also noted that there is still much work to be done in promoting health knowledge and behavior in respect to water purification and waste management. Many community members and leaders were unsure of the quality of water and proper purification techniques. It was found that most community members (72%) surveyed did not purify their water, even though VIN has provided health talks targeting this issue. This finding was consistent with the literature that reported low rates of water purification throughout Nepal (Government of Nepal, 2011). Much of this lack of behavior change may be a result of the community believing that water from the springs is safe to drink, even though studies have shown that spring water is the most contaminated (Aryal, J., Gautam, & Sapkota, 2012). Behavior change was linked to consequence, when focus group members reported that if a community member becomes ill from using a tap, the neighbors will stop using the tap. Others mentioned that they only purified water when someone was ill. Without this sense of risk and chance of illness, the community does not have motivation to start purifying water.

The development of a waste management system is still at the beginning stage and while some community members composted and separated their garbage, appropriate disposal of waste still needs to be addressed. The waste disposal program did not succeed in affecting behavior or changing the environment. The community did not adopt practices of using the public bins and although some expressed interest in the program, most thought there were several barriers to implementing this program. There is no collaboration with the VDC and the community to manage waste disposal, which means that the bins may be used, but not emptied, resulting in waste still existing in the community. Many community members also fail to see the personal benefit in proper waste disposal and continue to practice burning and composting as their main means of disposal.

Financial issues were also noted as a constraint. Although the VDC received funding for toilets, there was not money for additional programs. This is a major barrier to implementing future programs and health services in the community. Financial constraints were a barrier on the individual level as well, as some families were still not able to afford health services with fees,

such as labs, or the financial contribution for toilet construction. Economic status and caste were mentioned as areas of concern by focus group participants who regarded this as a challenge to obtaining an OD free community. The economic status together with social class created difficulties in service provision, specifically with regard to delivering health and hygiene messages to community members who are illiterate or less educated. VIN has made efforts to target this population, but there are still some hurdles.

Culture was another topic that was found to be affecting changes in behavior around personal hygiene. Most of the community members who used ash for cleaning their hands or teeth were older, while their younger family members used toothpaste and soap. Traditional thinking also had an impact on the adoption of water storing and purifying. As many community members reported that they learned their hygiene behaviors from family and neighbors, this is a major barrier for shifting attitudes. This was clearly illustrated in an interview, when one of the interviewees reported that the students did not use the waste bins because they did not see that same behavior by adults at home. Suggestions to overcome this barrier were to include parents in the education of their children regarding hygiene and sanitation practices so that the whole family can change their behavior together.

Overall, VIN's various projects since 2010 have been embraced by the community and appear to have made a positive impact on the community. However, there was a genuine concern among the community over what will happen if VIN withdraws their programs and support in Jitpur Phedi. The clearest example of this was concern that they will again be without the presence of a doctor at the health post. The participants believed that the community was not yet ready to take control of the current programs and services, but were improving. Many encouraged VIN to work with established community entities, such as the health post, VDC and women's co-operative, to create sustainability within Jitpur Phedi after their departure, so that the community would be capable of managing these health and hygiene programs. As found in the literature review, community involvement creates more effective programming (UNICEF, 2009). This team has further found that the health of the community would also benefit from open communication and collaboration between VIN, the VDC, and the government of Nepal in constructing and implementing community health initiatives. Programs that have a clear vision shared by all invested stakeholders, such as the toilet construction program, have proved to be the most successful in the community.

B. Limitations

Time was a serious constraint on this evaluation in terms of both the period of time in which the evaluation team was in Nepal and the amount of time in which the evaluation was conducted. The evaluation team was only in Jitpur Phedi for ten days, which created many challenges. This short period limited the amount of time to meet with local staff and volunteers, who acted as translators, to review the data collection tools and purpose of the survey. This may have introduced some bias and error into the data collection, thereby decreasing the reliability of the findings. Daily team check-ins helped to reduce inter-observer reliability on observation and survey questioning techniques.

The limited time in country also impacted the sample size of the evaluation and the sampling process as a whole. To expedite the data collection, convenience sampling was used to facilitate the survey. The lack of random sampling limits the ability to generalize the findings to the rest of the community, as there may have been bias in the sample. To counter this potential bias, the study team used multiple methods to triangulate the data and extricate consistent findings. The evaluation team also relied on VIN for the recruitment of the interview and focus group participants, which meant that many of the attendees had previous connections to VIN. This may have caused some bias in the findings, as the members had all experienced some form of support from VIN and their level of knowledge around health and hygiene may not have been typical of other community members.

The data was gathered in January 2014, which is the winter/dry season in Nepal. During this period, the incidence of diarrheal disease is generally reduced, which may account for the low number of cases found in the survey. As well, the schools were not in session while the evaluation was being conducted, which meant that the school-based program component was not able to be included in the evaluation. Two research methods, a teacher and a student survey, were unable to be facilitated and the evaluation was unable to assess the success of the school component of VIN's efforts.

To evaluate the program, there were two counterfactuals used to measure success. The household survey was conducted in a neighboring village to create comparison data and 2009 baseline data, which had been previously collected, was also used. Unfortunately, the validity

and reliability of this data is in question. The data was collected by another team and lacked details about the specific measures utilized. While the data results were available, the survey that was used was not. Therefore, the reliability of the tool and its measures may have impacted some of the noted differences between the baseline and current data. Further, the sample size was different between the two data samples, which may bias some of the findings. The baseline data was unavailable for the comparison village, so the comparison only served to demonstrate current differences in health knowledge and behaviors between Jitpur Phedi and the comparison village. The lack of pre-data from the comparison village limits the internal validity, as it cannot be ascertained if the two villages were equivalent at baseline and if change was seen in both groups over time.

The lack of some measurements on the household survey may have also limited this team's findings. The evaluation team may have needed to include more measurements regarding health outcomes, other than diarrhea incidence and hospital visits. In addition, poverty and education level were qualitatively found as barriers to health improvement and more survey questions about socioeconomic status, such as caste and income and educational levels may have added more depth to the findings.

A final limitation was language and culture. Although the evaluation team attended two days of culture and language class and had full support from local translators, there were still gaps in knowledge. The study team had to rely on the translators to ask all the questions, translate responses, and transcribe the interviews and focus groups. One specific difficulty that was discovered at the end of the evaluation was that the survey team had been asking community members if they were aware of Volunteers Initiative Nepal or VIN. It was brought to the team's attention, after the evaluation was conducted, that while volunteers know the organization as VIN, many locals only know VIN by their Nepali name. This may have impacted the awareness of VIN and its services.

C. Conclusion

The evaluation revealed many strengths, as well as some challenges, in regards to the efforts of VIN in improving health, hygiene, and sanitation in Jitpur Phedi. VIN has implemented many interventions into the community that have been well received and appreciated. The success of the toilets and their efforts at the health post was apparent in the results. Health education was another well regarded and useful intervention that had an impact

on the community. It is important that VIN continue to work with the community to help meet their needs around health and hygiene. Following are some recommendations to help improve their successes in the future.

D. Recommendations

After completing an extensive literature review, collecting in-field data, and performing a rigorous analysis of the data, several recommendations for VIN in regard to their community health program in Jitpur Phedi were derived.

1. VIN is known in the community of Jitpur Phedi, but would benefit from increasing clear messages that promote recognition of their name, organizational mission and goals.
2. Initiatives for water purification and waste management are two issues that the community needs to properly tackle. A multi-pronged approach that includes integrated efforts from the VDC, VIN and the community and that targets increasing awareness, sharing knowledge, developing appropriate facilities, and encouraging personal responsibility needs to be developed for initiatives with water purification and waste management. The most successful community health initiatives by VIN have addressed all of these issues and this evaluation team believes it is a main reason for their success. Community "buy-in" and ownership is extremely important in order to gain positive results in the community.
3. Open communication and coordination between the multiple stakeholders of the community are crucial. VIN, local community groups, and the VDC are all partners working to improve the health of Jitpur Phedi and each entity must establish clear roles and responsibilities for all community issues. This is especially important in regard to issues surrounding clean water and waste management.
4. Consistent and timely data collection is vital for monitoring and evaluating the activities of VIN and are important in continuing to understand the impact that VIN is having in the community.
5. VIN must work with other stakeholders in the community to increase capacity and create sustainability of the programs. This will help to ensure a lack of disruption in community health activities as VIN phases out of Jitpur Phedi. As natural leaders in

the community, the women's group may be looked to for dispersing information and maintaining community health programs.

6. VIN has been successful and made meaningful impacts on the community health of Jitpur Phedi. It is important they continue their work in Jitpur Phedi and other surrounding communities.

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Appendix A: Work Plan

TIMELINE Sept 2013- May 2014									
MONTHS	**SEP**	**OCT**	**NOV**	**DEC**	**JAN**	**FEB**	**MAR**	**APR**	**MAY**
Phase I: Infrastructure Development & Maintenance									
Draft Team Charter									
Formalize/Convene with Capstone Team/Instructors and VIN									
Draft of Work Agreement									
Phase II: Materials Gathering & Formative Research									
Review of Existing Materials									
Travel to Nepal									
Participant Recruitment									
Surveys									
Focus Groups									
In-depth Interviews									
Observational Activities									
Phase III: Data Management & Analysis									
Data Entry									
Data Management									
Data Analysis									
Phase IV: Evaluation & Final Reporting									
Evaluation									
Final Report									
Capstone Presentation									

Appendix B: Informed Consent Form

VIN CONSENT FORM

You have been asked to participle in an evaluation project to learn more about Health, Hygiene, and Sanitation practices in Nepal. This study will also be evaluating how Volunteer Initiative Nepal (VIN) has impacted these practices over the past years through various interventions and educational programs they have provided. This study will be conducted by a team of graduate students from New York University in the United States.

If you agree to be in this study, you may be asked to do any of the following (*investigator to check all that apply*):

- Answer questions about your background (age, gender, occupation)
- Complete a survey related to water, sanitation and hygiene practices in your home or at school
- Be asked to show the researchers around your home as it pertains to health, hygiene, and sanitation practices
- Participate in a focus group related to water, sanitation, and hygiene practices in your home or at your local school
- Take part in an interview with questions related to your role in the community and your knowledge of current health, hygiene, and sanitation practices

What is the purpose of the study?

The purpose of this study is to understand current practice trends in health, hygiene, and sanitation in Jitpur, Nepal. The researchers will also evaluate the impact of interventions from VIN's Integrated Community Health Project (ICHP) on your local community. The researchers will also try to identify potential challenges and successes related to health, hygiene, and sanitation and ultimately make recommendations for improvement to VIN and others local authorities as needed.

How does the study work?

Participation in this study will involve a one-time meeting to ask you questions on your knowledge of health, hygiene and sanitation practices in your home, community and/or at schools. This will take approximately (*investigator to check which applies*):

- 30-45 minutes for a household interview & observation
- up to 3 hours for a focus group
- up to 1 hour for a 1:1 interview

Your interviews may be audiotaped and a local translator will be present at all times to assist the researchers with translation.

What risks do you face if you decide to participate in this study?

There are no known risks associated with your participation in this research beyond those of everyday life. Although every effort will be made to prevent it, you may find some questions sensitive or personal in nature and can choose to not answer that question if you so wish. There are no physical risks to you as part of this study and you will not be asked to take any medications.

What are the possible benefits to you for taking part in the study?

You may or may not benefit from being in this research study. You may find it helpful to talk with a group and other members of your community about your experiences with health, hygiene, and sanitation practices locally. You may learn more about proper hygiene and waste management. You may feel good from knowing that what you tell us may help to improve the knowledge known about current issues and concerns regarding health, hygiene, and sanitation practices in your home and community. This may help your local authorities gain a better understanding of educational and logistical needs/gaps in your community.

What will happen if you do not take part in the study?

You will not be affected in any way if you decide not to take part in this study. Even if you choose to take part in the study, you may stop being part of the study at any time.

Are there any costs to you for being in this study?

No

Will you be paid to participate in this study?

No. There will be no monetary compensation for participation in this study.

How will the privacy and the confidentiality of your records be protected?

The study staff will keep your name on a list of people who have been in the study. Only the study staff and VIN administrators will know what any person on the list said or had recorded. In order to protect the information we have about you, we list of the names and the responses will be entered into a computer that will be password-protected. The information on the audio file will also be saved on this password-protected computer. The results of this study will be presented using information from all of the people in the study as a group. Your name will not appear in print. No one will be able to identify you from any published or presented information.

Who can I speak with if I have further questions about this study?

You can reach out to our VIN liaison, **Dr Laxmi Prasad Ghimire**, Program coordinator, Community Health

Volunteer Initiative Nepal, VIN, Office Tel: +977-1-4362560

CONSENT TO PARTICIPATE

I, Mr/Mrs..... have read or have had read out for me all the statements in the consent form and I do here by agree to voluntarily participate as a subject in the study of the **"Integrated Community Health Project in Jitpur, Nepal".** I have a clear idea of this research including its purpose, duration, and the procedures to be followed. I have understood that all information will be kept confidential. My name will not be published or presented in the study report.

I have been given opportunity to ask questions concerning research procedures and for further questions I may contact a representative from VIN. I have also been given information on any potential risk and benefits for participating in this research.

I understood that I have the right to leave or cancel my consent and withdraw myself from the study at any time for any reason without penalty. I have been informed that I shall be given a copy of the signed consent to keep.

I, the undersigned, certify that I have signed this document willingly to participate in the said research work myself or in presence of the following witness.

If literate:

Print Name of Participant: _____

Signature of Participant: _____

Date: _____

If illiterate:

Print Name of Witness: _____

Signature of Witness: _____

Date: _____

Thumbprint of Participant:

I have accurately had the information read by or read out to the potential participant, and to the best of my ability made sure that the participant understands the information that has been given to them. I confirm that the individual has not been coerced into giving consent and the consent has been given freely and voluntarily.

Signature of Researcher/person taking the consent _____

Appendix C: Data Collection Tools

(ALL CHANGES ARE IN PARENTHESES AND CAPITALS AND WERE IMPLEMENTED ON THE THIRD DAY OF DATA COLLECTION)

Water, Sanitation, and Hygiene Household Survey

Date _____

Number of household members (adult/children):
Unit:
Demographics of respondent (age, gender):

Questions about Water:

1. What is your primary source of water for drinking?
    a. Private tap
    b. Public tap
    c. River
    d. Well
    e. Other: _____

2. What is your primary source of water for hand washing, dishes/clothes washing? (ELIMINATED)
    a. Private tap
    b. Public tap
    c. River
    d. Well
    e. Other: _____

3. How long does it take to access the water source? *(includes walk to and from and drawing water from source)*
    a. Less than 5 minutes
    b. 5 to 10 minutes
    c. 10 to 15 minutes
    d. 15 to 20 minutes
    e. Longer: _____ (Specify)
    f.
4. If water is not close to home, who goes to get the water most often?
    a. Adult female (EDITED: Female)
    b. Adult male (EDITED: Male)
    c. Female under 15 years (EDITED: Both)
    d. Male under 15 years (EDITED: Deleted)

5. In the last two weeks has water been unavailable at any time? YES or NO
    a. If yes, how many days? _____ (specify)
    b. Is water available year round? Yes or No

c. If no, when is there a shortage of water? _____(specify season)

6. Do you treat or purify your water? YES or NO
    a. If yes, how? *Circle all that apply.*
        a) Boiling
        b) Filter
        c) SODIS(solar)
        d) Bleach/Chlorine/Iodine
        e) Other:_____

    b. How often? (ELIMINATED)
        a) Multiple times a day
        b) Once a day
        c) 2 to 3 times per week
        d) Once a week
        e) Less:_____

7. Do you have containers to store your water? YES or NO
    a. If yes, what type? Circle all that apply
        a) Narrow mouth
        b) Wide Mouth
        c) With lid
        d) Without lid

Questions about Sanitation:

8. Do you have toilets facilities? YES or NO
    a. If yes which type? *Please mark correct choice in all three rows*
    Temporary or Permanent
    Flush or Pit Latrine or Bucket
    Private (only your family) or Public (How many families use_____)

9. How long has the toilet been there?
    a. Less than 1 year
    b. 1 year
    c. 2 to 5 years
    d. More than 5 years
    e. N/A

10. Was the toilet built with support from VIN? YES or NO (ELIMINATED)
    (10. DID YOU BUILD THE TOILET BY YOURSELF?
    10A. DID YOU BUILD THE TOILET WITH VIN ASSISTANCE?
    10B. DID YOU PAY FOR THE TOILET BY YOURSELF?
    10C. DID YOU PAY FOR THE TOILET WITH VIN ASSISTANCE?)

11. Is the facility cleaned on a regular basis? YES or NO

    a. If yes, how often?
        a) Daily
        b) Weekly
        c) Monthly
        d) Less frequent than once a month
    b. What do you use to clean the toilet?
        a) Soap (DELETED)
        b) Water only
        c) Bleach (DELETED)
        d) Other Household Cleaner: (EDITED: HOUSEHOLD CLEANER)
        e) Ash (DELETED)

12. Does everyone in the family use the toilet? Including children Less than5? YES or NO
    a. If no, who uses it? List all.
    b. Those who don't use toilet, where do they go to the bathroom?
    c. If public, are there separate men and women's facilities? YES or NO

13. The last time the youngest child passed stool, how was it disposed?
    a. Put in toilet
    b. Thrown in garbage
    c. Thrown in field
    d. Buried
    e. Left in open
    f. Other: _____(specify)

14. How many times have family members had diarrhea or dysentery in the last month?
    a. Who? List all.

Questions about Hand Washing and Hygiene

15. Is there a mechanism (sink) or place for washing your hands? *Observe if possible.* YES or NO

16. When do you wash your hands? (Check off responses that respondent gives-*do not read choices off)*

    a. After using toilet
    b. After changing/cleaning child who has defecated
    c. Before preparing food
    d. Before eating
    e. Before feeding children

17. Do you use soap when you wash your hands? YES or NO

a. If no, do you use an alternative (such as ash or mud) YES or NO (Specify_____)

18. How often do you bathe?
    a. More than once a day
    b. Once a day
    c. 2 to3 per week
    d. Once per week
    e. Less than once per week

19. Do you brush your teeth? YES or NO
    a. If yes, how often?
        a) Every day (EDITED: MORE THAN ONCE PER DAY)
        b) 2 to3 times per week (EDITED: ONCE PER DAY)
        c) Once per week (EDITED: 2-3 TIMES PER WEEK)
        d) Less than once per week (EDITED: ONCE PER WEEK)
        e) (LESS THAN ONCE PER WEEK)
    b. What do you use when you brush?
        a) Toothbrush and toothpaste_____(specify toothpaste)
        b) Finger and toothpaste_____(specify toothpaste)
        c) Toothbrush and alternative:_____(specify)
        d) Finger and alternative:_____(specify)
        e) Other: _____(specify)

    (C. WHO TAUGHT YOU TO BRUSH YOUR TEETH?)

20. Do your children brush their teeth daily? YES or NO

Questions about Waste Management and Household

21. Do you separate your waste/garbage? YES or NO

22. Which types of waste/garbage do you separate out? *Check all that apply*
    Plastic Organic Electronic (ELIMINATED) Other: _____(specify) (PAPER)

23. How do you dispose of waste/garbage? *Please ask for each type of garbage if separated.*
    a. Bury
    b. Burn
    c. Throw in bin
    d. Exchange/recycle
    e. Other: _____(specify)

24. Are there public waste/garbage bins? YES or NO
    a. How far from home?
        a) Less than 5 minutes
        b) 5 to 10 minutes
        c) 10 to 15 minutes

d) 15 to 20 minutes
e) Longer: _____ (Specify)

25. Do you recycle or compost organic waste? YES or NO

26. Do you have livestock? YES or NO
    a. If yes, where are they kept?
        a) Inside Home
        b) Outside Home (Fenced area/Non-fenced area)
        c) Other_____

27. Do livestock enter your home at any time? Yes No
    a. (DO WILD ANIMALS OR PETS ENTER YOUR HOME AT ANY TIME?
        a) YES
        b) SOMETIMES
        c) NO)

28. Do you clean your home? Yes No (ELIMINATED)

    28A. How often do you sweep your home?
    a. Once a day (EDITED: SEVERAL TIMES A DAY)
    b. 2 to 3 times per week (EDITED: ONCE A DAY)
    c. Once per week (EDITED: 2-3 TIMES PER WEEK)
    d. Less than once per week (EDITED: ONCE PER WEEK)
    e. (LESS THAN ONCE PER WEEK)

    28B. How often do you wash the floors of your house?
    a. Once a day
    b. 2 to 3 times per week
    c. Once per week
    d. Less than once per week

29. How often do you wash your clothing?
    a. Once a day
    b. 2 to 3 times per week
    c. Once per week
    d. Less than once per week

VIN Specific Questions

30. Have you or a family member attended a VIN sponsored event? YES or NO
    a. If yes, which events?
        a) Health Post
        b) Health Camps (Hand Washing/ Teeth Brushing)
        c) Health Education Campaign

d) Facility Development (involved in toilet construction)
e) Other_____

31. Have any of your children involved in a VIN sponsored health camp at their school? YES or NO

32. How clear and understandable were each of the VIN's awareness campaigns you participated in?
    a. Not clear at all.
    b. Somewhat clear.
    c. Clear.
    d. Very clear.

33. How useful were each of the VIN's awareness campaigns you participated in?
    a. Not useful at all.
    b. Somewhat useful.
    c. Useful.
    d. Very Useful.

34. Overall, how pleased are you with the work VIN has done in your community?
    a. Not at all pleased.
    b. Somewhat pleased.
    c. Pleased.
    d. Very Pleased.

35. How many times in the past month have you been to the Community Health Post?_____

36. Are you aware of any other organizations (other than VIN) providing programs related to health and hygiene in your community? YES or NO

37. What activities and initiatives would you like to see VIN support in your community?
    Specifics? *(Health education camps? toilet construction? garbage bins? health post support?)*

Home Observational Tool for Water, Sanitation, and Hygiene

Water

1. Is there a tap, well, or source of water near (inside or outside) the home? YES, NO, DK
    a. *How far was it? Inside home?*

2. Is area around water source clean? YES or NO

3. Are there puddles of water? YES or NO

4. Were livestock near or around the water, or any evidence of them (like faeces)? YES or NO

5. Did you see water containers? YES or NO

    a. Did they have lids? YES or NO

6. Do they have water filter? Or specific container to boil water? Or water bottle on sun? Or Do they have evidence of using Iodine or chlorine?

Sanitation:

7. Are there toilets facilities near home? YES or NO

8. Does it look clean?

9. Any obstructions or damage?

10. Any signs of use or feces?

11. Are there a roof and walls? What kind of floors do they have?

12. Is there a door? Does it work?

13. If flush toilet, does it work?

14. If public, are there men and women facilities?

15. Did you observe use of the bathroom? Who (age and gender)

16. Did you observe anyone practicing open defecation? Who (age and gender)

17. Is there any cleansing material in toilet? Brush and chemicals

Hand Washing and Hygiene

18. Is there a mechanism (sink) for washing your hands? YES or NO

19. Is it near to the toilet facilities? YES or NO

20. Any soap near hand washing mechanism?

21. Any towels are way to dry hands?

22. Did you notice dirt under fingernails?

23. Is bathing area clean?

24. Do you see a toothbrush (if so how many) or toothpaste?

25. Ask them to wash hands and observe how are they doing? Are they using soap? Are they doing it correctly?

Questions about Waste Management and Household

26. Are there bins or holes for garbage?

27. Is there waste lying around the house or area?

28. Is house clean? Any major or minor damages?

29. Do you see livestock entering the house?

30. Is there a fence for the livestock?

31. How clean is the clothing of respondent?

32. NOTES:

Focus Group (Community Members)

Opening Questions

1. How familiar are you with VIN and their programs/activities in your community?
2. What trainings or interactions from VIN have you or your family members received?
3. What does the term hygiene mean to you?
4. What does the term sanitation mean to you?

Pairwise Ranking of Important health, hygiene and sanitation issues in your community

Problems	Access to clean drinking water	Access to Toilets	Oral Health	Access to doctor	Diarrheal Disease	Access to Water	Lack of health education	G. Bins
D. Water	X							
A. Toilets	X	X						
O. Health	X	X	X					
A. to MD	X	X	X	X				
D. Disease	X	X	X	X	X			
A. to Water	X	X	X	X	X	X		
H. Edu	X	X	X	X	X	X	X	
G. Bins	X	X	X	X	X	X	X	X

Results:

Problems	# of votes	Rank
D. Water		
A. Toilets		
O. Health		
A. to MD		

D. Disease		
A. to Water		
H. Edu		
G. Bins		

Waste Management & Hygiene

1. What is the most common sanitation problem in your village?
2. Are people defecating in public in your village, (not using a toilet)? Yes No
    a. How do you feel about it?
    b. Do you think this is a health issue? Why or why not?
    c. Has this changed at all in the past few years? How?
3. Is garbage an issue in your community? How so?
4. Who do you think should be responsible for waste management in your community?
5. What are the challenges to managing waste in your community?

Health and Hygiene

1. How are health and hygiene related?
    (i.e washing your hands, brushing your teeth and practicing open defecation?)
    a. What are the most concerning illnesses you see related to poor hygiene ?
    b. How do you avoid illnesses related to poor hygiene? how?
2. Where did you learn about the relationship between your health and hygiene?
    a. What did you learn from VIN?
3. What do you think is needed to improve the health and hygiene of your community?

Water Purification

1. What is the most common problem you have with water in your community?
2. Do you feel it is safe to drink the water in your community? Why or Why not?
    a. if no, is there something you do to make it safe?

Overall

1. Were VIN's messages/information easy to understand?
2. Do you feel like VIN's activities in your community have improved or been beneficial to your health?
3. What has VIN done in your community that you like the best?
    b.The least?
4. What activities and initiatives would you like to see VIN support in your community?
    Specifics activities or focus on specific health issues?
5. Are you aware of any other organizations (other than VIN) providing programs related to health and hygiene in your community?

Key Stakeholders: In-Depth Interviews:

Govt Sanitation Officials/VDC Jitpur Secretary/Political Rep

1. Who are you? What is your role?
    a. What services do you provide
    b. What does your office/organization/VDC do for the community?
    c. Who do you report to?
    d. How is information passed down to you?

2. Who is responsible for health and hygiene services in Jitpur?
    a. Hierarchy?
    b. What are their tasks?
    c. How effective do you think they are?

3. Who is responsible for the water supply and sanitation services in Jitpur?
    a. Are there different agencies for water and sanitation?
    b. What is the hierarchy for each service?
    c. What are the major tasks?
    d. How effective do you think they are?

4. What programs exist for health and hygiene promotion?
    a. What trainings and for whom?
    b. What events and for whom?
    c. How well are they attended?

5. What partnerships/collaborations exist for promoting health and hygiene?
    a. Who are the stakeholders?
    b. How are different stakeholders' efforts coordinated?
    c. What is your experience working with various other related organizations in the area?

6. How are health and hygiene messages communicated to the community?
    a. What mediums? (dramas, printed, radio ads, etc)
    b. How often are these messages communicated?
    c. How effective do you think the messages are?

7. What are some challenges in mobilizing the community/increasing community participation in health and hygiene practices?
    a. What do you do to address them?
    b. How has VIN helped you address these barriers?

8. What role has VIN played in health and hygiene in the community?
    a. What activities do they do?
    b. What organizations does VIN collaborate with?
    c. Who will do these activities when VIN programs end?
    d. How effective do you feel VIN is at improving hygiene and sanitation in Jitpur?

9. Is there adequate access to toilet facilities in the community?
    a. What are you doing to address this?
    b. What are the barriers?
    c. How has VIN helped with toilet facility access?

10. Is there adequate access to clean drinking water in the community?
    a. What are you doing to address this?
    b. What are the barriers?
    c. How has VIN helped with clean water access?

10. What do you think are the next steps in promoting/improving health & hygiene in Jitpur?
    a. What organizations would be helpful to work with?
    b. What are your goals for the future?

KEY STAKEHOLDERS: IN-DEPTH INTERVIEWS

Physician (Health Post)

1. What is your title? What is your role? What is your background?
    a. What services do you provide
    b. What does your office/organization/VDC do for the community?
    c. Who do you report to?
    d. How is information passed down to you?

2. Who supports your health and hygiene efforts in Jitpur?
    a. Which organizations?
    b. Government officials or programs
    c. Employees (community health workers)
    d. Who do you partner with?

3. What are the current programs/services at the health post?
    a. Which are most effective? Why?
    b. Which are the most utilized? Why?
    c. Which are the least effective? Why?
    d. Which are the least utilized? Why?
    e. What programs/services need to be added?

4. What are some of the barriers to providing services?
    a. How does this impact utilization?
    b. How does this impact effectiveness?
    c. What are you doing to overcome these barriers

5. What role has VIN played in health and hygiene in the community?
    a. What activities do they perform? what specific activities have they done for the health post?
    b. How effective do you feel they have been with their efforts at the health post?
    c. Who will fill this role when VIN programs end?

6. What have you observed in the poor sanitation and hygiene disease related incidence?
    a. What trends (increase/decrease) in the past five years?
    b. How much of an impact has VIN had on these trends?
    c. What are the major diseases related? major symptoms?
    d. How much of an impact does poor sanitation and hygiene have on the community's health, compared to other diseases? (Proportion)

7. How aware are community members of good health and hygiene practices?
    a. Where do they get their information?
    b. How much of the work the health posts provides is related to education?
    c. How effective do you think are health and hygiene messages in changing behaviors?

8. What are some challenges in mobilizing the community/increasing community participation in health and hygiene practices?

a. How do you address them?

b. How has VIN helped you to address these barriers?

9. What do you think are the next steps in promoting/improving health & hygiene in Jitpur?

a. What organizations would be helpful to work with?

b. What are your goals for the future?

KEY STAKEHOLDERS: IN-DEPTH INTERVIEWS

President of Women's Group

1. What is your background? What is your title and role?
    a. Who do you report to?
    b. How is information passed down to you?

2. Can you tell us about the Jitpur Women's Group?
    a. When did it start?
    b. Who was it started by?
    c. Who are the members and how many members?
    d. What is the role of the women's group in the Jitpur community?

3. Who supports your health and hygiene efforts in Jitpur?
    a. Which organizations?
    b. Government officials or programs
    c. Employees (community health workers)
    d. Who do you partner with?

4. What are the current programs/services of the women's group?
    a. Which are most effective? Why?
    b. Which are the most utilized? Why?
    c. Which are the least effective? Why?
    d. Which are the least utilized? Why?
    e. What programs/services should be added?

5. What are some of the barriers to providing services?
    a. How does this impact utilization?
    b. How does this impact effectiveness?
    c. What are you doing to overcome these barriers

6. What role has VIN played in health and hygiene in the community?
    a. What activities do they perform?
    b. How effective do you feel they have been with their efforts at the health post?
    c. Who will fill this role when VIN programs end?

7. What poor sanitation and hygiene related diseases have you observed?
    a. How has the amount of diseases changed in the past five years
    b. How much of an impact do you think VIN has had on these changes?

8. How aware are community members of good health and hygiene practices?
    a. Where do they get their information?
    b. How much of the work the women's group provides is related to educaton?
    c. How effective do you think the educational messages are in changing behaviors?

9. What are some challenges in mobilizing the community/increasing community participation in health and hygiene practices?
    a. How do you address them?
    b. How has VIN helped you to address these barriers?

10. Is there adequate access to toilet facilities in the community?
    a. What are you doing to address this?
    b. What are the barriers?
    c. How has VIN helped with toilet facility access?

11. Is there adequate access to clean drinking water in the community?
    a. What are you doing to address this?
    b. What are the barriers?
    c. How has VIN helped with clean water access?

12. What were the effects of the garbage/waste management educational initiatives?
    a. What are you doing to address this?
    b. What are the barriers?
    c. How has VIN helped with garbage/waste management?

13. What were the effects of water purification educational initiatives?
    a. What are you doing to address this?
    b. What are the barriers?
    c. How has VIN helped with water purification?

14. What do you think are the next steps in promoting/improving health & hygiene in Jitpur?
    a. What organizations would be helpful to work with?
    b. What are your goals for the future?

DIAGRAM OF INDICATORS FOR ASSESSING HYGIENE IMPROVEMENT

Health Impact Indicator (page 37):
Essential Family Practices:

- **0.1 % of children < 36 months of age with diarrhea in the last 2 weeks**
- **0.2** Percentage of caretakers washing hands properly with soap and at appropriate times
- **0.3** Percentage of children whose feces were disposed safely
- **0.4** Percentage of households that practice safe drinking water management
- **0.5** Percentage of caretakers who practice safe food management

Priority Indicators

1. ACCESS TO HARDWARE (page 52)

- **1.1** Percentage of HHs with access to improved water sources
- **1.2** Percentage of HHs that had principal water source available daily for past two weeks
- **1.3** Percentage of HHs where time to collect water is 30 minutes or less
- **1.4** Percentage of HHs with access to an improved and hygienic toilet facility
- **1.5** Percentage of HH with access to handwashing place with essential supplies

Supporting Indicators

Community Water Systems
- **1.6** Percentage of HHs that have sufficient quantities of water (20 liters per capita per day)
  Note: adapt quantity to local minimum standards
- **1.7** Percentage of HHs with access to improved water sources during dry and wet seasons

Sanitation and Solid Waste
- **1.8** Percentage of HHs that have child-friendly feces disposal facility
- **1.9** Percentage of HHs that have a hygienic solid waste disposal system

Household Technologies & Materials
- **1.10** % of HHs that have soap
- **1.11** Percentage of HHs that have water-treatment supplies
- **1.12** Percentage of HHs that use a safe method for transferring drinking water from a container
- **1.13** Percentage of HHs that have covered and narrow-neck water storage containers

HH – households **CT** – caretakers
SC – schoolchildren **HF** – health facility
Model questions: **H** – household
C – community **F** - facility

How To Use This Menu
This is an interactive document, meaning it contains hyperlinks between indicators and Model Questions; for example, click on a number to go to the corresponding survey questions, or, in the model questionnaire, click on the Indicator number to go to the indicator in this diagram; click on the indicator text to go to the description. Links are in blue text, but they may be hidden. To see them on screen or to print them, change settings in Tools->Options->Show Tab and Print Tab.

2. HYGIENE PROMOTION (page 66)

- **2.1** % of CT who report having used soap for handwashing at least at two critical times during past 24 hours
- **2.2** % of HHs using improved toilet facilities

Communication
- **2.3** % of CT who had been reached about water, sanitation, or hygiene during past month
- **2.4** % of CT who heard about hygiene promotion
- **2.5** % of CT who recall at least one hygiene message
- **2.6** % of CT who report that messages are understood and useful
- **2.7** % of CT doing a recommended hygiene practice

Knowledge & Attitude
- **2.8** Percentage of CT who know at least two ways to prevent diarrhea
- **2.9** Percentage of CT who know at least two danger signs of diarrhea
- **2.10** Percentage of CT who know how to treat drinking water
- **2.11** Percentage of CT who know at least two reasons why it is important to wash hands with soap
- **2.12** % of CT who know critical times for handwashing
- **2.13** Percentage of CT who say that the community can do something together to prevent diarrhea

Reported Behavior
- **2.14** % of HHs using a properly cleaned toilet facility
- **2.15** % of CT who clean their water storage containers at least once per week
- **2.16** % of CT who have participated in community hygiene promotion activities

INSTITUTIONAL SANITATION AND HYGIENE (page 95)

Schools
- **3.22** % of SC with basic sanitation
- **3.23** % of SC with separate facilities for boys & girls
- **3.24** % of SC with access to handwashing facility
- **3.25** % of SC learning about sanitation and hygiene
- **3.26** % of SC who know two ways to prevent diarrhea

Health Facilities
- **3.27** % of HF with access to an improved water source
- **3.28** % of HF with improved, hygienic toilet facility
- **3.29** % of HF with adequate medical waste disposal
- **3.30** % of HF that use auto-disable syringes
- **3.31** % of HF with adequate handwashing facility
- **3.32** % of HF with adequate pest or vector control

3. ENABLING ENVIRONMENT (page 81)

HOUSEHOLD LEVEL
- **3.1** % of HHs that know whom to contact if problem exists with water system
- **3.2** % of HHs that know of water/san. committee
- **3.3** % of HHs that participate in water/san. committee
- **3.4** % of HHs involved in water/sanitation problem-identification & problem-solving exercises
- **3.5** % of HHs paying full share of water user fee

COMMUNITY LEVEL
Financing & Cost Recovery
- **3.6** Community has clearly defined water fee structure designed to cover recurrent costs
- **3.7** % of recurrent costs recovered from user fees
- **3.8** Percentage of HHs that pay full share of water fee (verification of 3.5)
- **3.9** Community has three-month operating reserve for water system emergencies
- **3.10** Community has a financial management system in place and functioning

Community Management
- **3.11** Water system performs properly, giving community regular, continuous water supply
- **3.12** Percentage of tested water sources at established standards
- **3.13** Community organization functioning effectively to manage operations & maintenance of water supply systems
- **3.14** Committee has clearly defined responsibility for overseeing both water supply and sanitation
- **3.15** Committee meets regularly
- **3.16** Committee meetings are conducted properly and decisions fully recorded
- **3.17** Committee has capacity to oversee hygiene activities

Community Behavior Change Capacity
- **3.18** Mechanism exists to carry out effective hygiene promotion
- **3.19** Community has gone through a mobilization exercise
- **3.20** A trained person or organization is responsible for carrying out hygiene behavior change activities
- **3.21** A close linkage exists between local person(s)/ organization(s) & health personnel

Appendix E: Quantitative Data Tables

Figure 10: VIN FEEDBACK DATA

Sample Size (N)	75

		Intervention %
Attended a VIN Sponsored Event	No	45
	Yes	55
Children Attended a VIN Sponsored Event	No	47
	Yes	29
	N/A	24
OF THE VIN EVENT ATTENDEES (N=29)		
Event Type	Health Camp	20
	Health Education	23
	Women's Group	34
	Other	23
How Was the Event	Not Clear	0
	Somewhat Clear	10
	Clear	69
	Very Clear	21
How Was the Event	Not Useful	3
	Somewhat Useful	3
	Useful	52
	Very Useful	41
How Pleased were You with the Event	Not Pleased	3
	Somewhat Pleased	7
	Pleased	28
	Very Pleased	62
N=52		

Visited the Health Post	No	4
	Yes	96
Visits to the Health Post – Last Month	No	64
	Yes	36
	Average	0.6
	Range	0-4
Know of Other Health Programs Besides VIN	No	95
	Yes	5
Health Post Related Recommendations	No	87
	Yes	13
Toilet Related Recommendations	No	76
	Yes	24
Waste Bin/Garbage Related Recommendations	No	81
	Yes	19
Health Education Related Recommendations	No	85
	Yes	15
Vocational and Literacy Related Recommendations	No	81
	Yes	19
Infrastructure Development Related Recommendations	No	75
	Yes	25
Water Capacity Related Recommendations	No	63
	Yes	37
Financial and/or Material Related Recommendations	No	99
	Yes	1

Figure 11: WARD 8 DATA COMPARISON CHART

	2009	2014
Average Household Size	5.48	5.73

		2014
Waste Bin in Community	No	67%
	Yes	33%

		2009 %	2014 %	P-Value
Allow livestock in the house	No	67	100	.035**
	Yes	33	0	
Water source	Public tap	86	93	
	Private tap	12	0	
	River	2	7	
Purify water	No	73	93	.087*
	Yes	27	7	
Boil water to purify	No	50	93	
	Yes	50	7	
Filter water to purify	No	50	93	
	Yes	50	7	
Times bathe per week	>1/day	0	0	.044**
	1/day	0	7	
	2-3/week	65	47	
	1/week	34	47	
	<1/week	1	0	
Times brush teeth per day	>1/day	13	0	
	1/day	79	80	
	2-3/week	6	13	
	1/week	1	7	
	<1/week	1	0	
Household toilet	No	16	20	
	Yes	84	80	
OF THOSE WITH HOUSEHOLD TOILETS				
Permanent household toilet	No	31	0	.090*
	Yes	69	100	
Compost organic waste	No	44	40	
	Yes	56	60	
Burn plastic	No	19	47	.017**
	Yes	81	53	

* = Trending ** = Statistically significant

Figure 12: INTERVENTION VS. COMPARISON GROUP DATA

	Intervention	Comparison
Sample Size (N)	75	42
Average Household Size	5.48	5.17
Average # of Adults/House	3.9	3
Average # of Children/House	1.6	2.1
Average Age of Interviewee	38.5	36.8
# of Male Interviewees	20	18
# of Female Interviewees	55	24

		Intervention %	Comparison %	P-Value
Water Source	Public tap	57	95	.000**
	Private tap	39	5	
	River	4	0	
Length of Time to Access Water	<5 mins	81	79	
	5-10	13	17	
	10-15	1	2	
	15-20	1	0	
	>20	3	2	
Gender of Person Who Fetches Water	Male	4	9.5	
	Female	36	23.8	
	Both	56	66.7	
	N/A	4	0	
Water Unavailable in the Last 2 Weeks	No	83	93	
	Yes	17	7	
# of Days Unavailable	Average	0.57 days	2.67	
	Range	0-7 days	0-3	
OF THOSE WHO REPORTED WATER BEING UNAVAILABLE (N= 13, 3)				
# of Days Unavailable	Average	2.92 days	2.67 days	
Water Available Year-Round	No	47	52	
	Yes	53	48	

OF THOSE REPORTING UNAVAILABILITY YEAR ROUND (N=35, 22)				
Water Available During Monsoon	No	66	55	
	Yes	34	45	
Water Available During Winter	No	80	64	
	Yes	20	36	
Water Available During Summer	No	66	59	
	Yes	34	41	
Water Available During Spring	No	86	82	
	Yes	14	18	
Water Available During Autumn	No	91	82	
	Yes	9	18	
Water Available During Dry Season	No	69	82	
	Yes	31	18	
Treat Drinking Water	No	71	90	.022**
	Yes	28	10	
	Sometimes	1	0	
OF THOSE WHO TREAT THEIR DRINKING WATER (N=21, 4)				
Boil Water	No	24	50	
	Yes	76	50	
Filter Water	No	62	25	
	Yes	38	75	
Solar (SODIS) Water	No	86	100	
	Yes	14	0	
Bleach/Chlorine/Iodine Water	No	100	100	
	Yes	0	0	
Container for Water	No	1	0	
	Yes	99	100	
OF THOSE WITH A CONTAINER FOR THEIR WATER (N=74, 42)				
Container – Narrow Mouth	No	1	0	
	Yes	99	100	
Container – Lid	No	11	5	
	Yes	89	95	
Practice Open Defecation	No	93	98	
	Yes	7	2	
Household Toilet	No	7	2	
	Yes	93	98	
OF THOSE WHO HAVE HOUSEHOLD TOILETS (N=70, 41)				
Toilet – Permanent	No	6	0	
	Yes	94	100	
Toilet – Pit Latrine	No	4	2	
	Yes	96	98	
Toilet – Private	No	14	15	

	Yes	86	85	
Age of Toilet	<1 year	4	2	
	1 year	9	5	
	2-5 years	22	34	
	>5 years	65	59	
Toilet Built With VIN Assistance	No	86	100	
	Yes	14	0	
Toilet Paid for With VIN Assistance	No	87	100	
	Yes	13	0	
TOTAL VIN ASSISTANCE	--	16	n/a	
Toilet Cleaned on a Regular Basis	No	3	5	
	Yes	97	95	
Frequency of Toilet Cleaning	Daily	68	66	
	1-3 times/week	25	24	
	As needed	7	10	
Solution Used to Clean the Toilet	Water	45	59	
	Household cleaner	55	41	
Everyone in House Uses Toilet	No	17	12	
	Yes	83	88	
Public Toilets Separate for Men and Women	No	29	19	
	Yes	0	0	
	N/A	71	81	
OF THOSE WITH CHILDREN UNDER 5 (N=14, 7)				
Child Under 5's Stool Disposal Method	Toilet	50	86	
	Field	21	14	
	Garbage	7	0	
	Other	21	0	
Average Instances of Diarrhea – Past month	Average	0.2	.07	
	Range	0-7	0-1	
Who Suffered from Diarrhea in the Last Month	Child	4	2	
	Interviewee/Spouse	5	2	
	Grandparent	1	0	
	N/A	89	96	
Designated Hand Washing Area	No	15	31	.033**
	Yes	85	69	
Wash Hands – After Toilet	No	12	26	.046**
	Yes	88	74	
Wash Hands – Before Preparing Food	No	55	52	
	Yes	45	48	
Wash Hands – Before Eating	No	12	7	
	Yes	87	93	
OF THOSE WITH CHILDREN IN THE HOME (N=13, 6)				

Wash Hands – After Changing Child's Diaper	No	62	0	
	Yes	38	100	
Wash Hands – Before Feeding Child	No	36	0	.034**
	Yes	64	100	
Learned to Wash Hands From…	Family Member/Self	49	67	.060*
	School	16	10	
	VIN	13	0	
	Unknown	12	21	
	Other	4	2	
Use Soap When Washing Hands	No	11	12	
	Yes	65	52	
	Sometimes	24	36	
Alternative to Soap When Washing Hands	Ash	1	10	.059*
	Mud	7	0	
	Nothing	8	2	
	N/A	84	88	
Frequency of Bathing	1/day	13	21	
	2-3/week	44	38	
	1/week	17	36	
	<1/week	1	5	
Brush Teeth	No	0	2.4	
	Yes	97	95.2	
	Sometimes	3	2.4	
Frequency of Brushing Teeth	>1/day	25	20	
	1/day	65	73	
	2-3/week	5	5	
	1/week	1	2	
	<1/week	3	0	
Use When Brushing Teeth	Brush and toothpaste	97	87.8	.056*
	Brush and alternative	0	7.4	
	Finger and toothpaste	0	2.4	
	Finger and alternative	3	2.4	
Learned to Brush Teeth From…	Family Member/Self	55	69	
	School	12	7	
	VIN	8	0	
	Unknown	17	21	
	Other	1	3	
OF THOSE WITH CHILDREN (N=57, 29)				

Children in House Brush Teeth	No	14	7	
	Yes	86	93	
Separate Waste	No	20	29	
	Yes	80	71	
Separate Plastic	No	21	22	
	Yes	79	78	
Method of Plastic Disposal	Burn	57	62	.091*
	Throw in Bin	5	0	
	Throw in River/On Ground	37	31	
	Exchange	0	2	
	Bury		5	
Separate Organic	No	21	19	
	Yes	79	81	
Separate Paper	No	37	41	
	Yes	56	59	
Method of Paper Disposal	Burn	44	47.6	
	Throw in Bin	3	0	
	Throw in River/On Ground	35	26.2	
	Exchange	0	2.4	
	Bury	0	4.8	
Public Waste Bins in Community	No	93	100	
	Yes	7	0	
OF THOSE WHO SAID THEY HAVE WASTE BINS IN THEIR COMMUNITY (N=5)				
Travel Time to Waste Bin	<5 mins	100	n/a	
	5-10 mins	0	n/a	
Compost Organic Waste	No	21	33	
	Yes	79	67	
Own Livestock	No	7	5	
	Yes	93	95	
Location Livestock is Kept	Inside house	8	12	
	Outside-contained	84	83	
	Outside-free roaming	1	0	
	N/A	7	5	
Livestock Enters Home	No	61	59.5	
	Yes	31	28.6	
	Sometimes	1	7.1	
	N/A	7	4.8	
Wild Animals/Pets Enter Home	No	20	40.5	.003**
	Yes	37	14.3	

	Sometimes	17	38.1	
	Unknown	25	7.1	
Frequency Home Floor is Swept	>1/day	65	67	
	1/day	35	31	
	2-3/week	0	2	
Frequency Home Floor is Washed	1/day	71	59.5	
	2-3/week	16	16.7	
	1/week	7	11.9	
	<1/week	4	11.9	
	N/A	3	0	
Frequency Clothes are Washed	1/day	55	45.2	
	2-3/week	31	30.9	
	1/week	12	19.1	
	<1/week	3	4.8	

* = Trending

** = Statistically significant

Appendix F: Triangulation Table

Category Domain: FUNCTIONING & STRUCTURE OF COMMUNIITY HEALTH

Data Methods	Govt	VIN	Community
Secondary Sources	Currently, there are many large-scale government initiatives to improve access to proper sanitation facilities, clean water and changing hygiene behavior (Government of Nepal, 2011). The government has sponsored various plans, policies, and strategies to meet millennium development goals and expand coverage of water and sanitation facilities to both urban and rural populations of Nepal (UNDP, 2011). For achieving the national sanitation goal, milestones were set in in three levels: toilet coverage of 60% by 2012/13, toilet coverage of 80% by 2014/15 and 100% toilet coverage by 2016/17.	The success of community programs focused on engaging the local community and leadership, changing hygiene behavior, and fostering innovative solutions from the community directly lies in their ability to empower the community and integrating hygiene promoting techniques with a bottom-up approach (UNICEF, 2009). VIN conducted health camps in both community wards and local schools. These camps incorporated educational and practical components that taught community members about proper hand washing and teeth brushing techniques. VIN has also lead health talks on water purification techniques, garbage management, and other general and menstrual hygiene practices. These health talks aimed to increase understanding regarding the link between poor hygiene and sanitation to communicable diseases. To address the need for improved sanitation facilities, VIN built 30 toilets in the community and installed public waste disposal bins in one of the Jitpur wards (VIN, 2012).	Currently, there are community lead interventions to improve the health of the Nepalese people by increasing access to proper sanitation facilities, clean water and changing hygiene behavior (Government of Nepal, 2011). Community led programs may demonstrate benefits initially, but there are many questions surrounding the stability and durability of the behavior changes encouraged (Mehta & Movik, 2010). It is crucial that there is continuous monitoring and evaluation of programs to ensure that there is a genuine shift in attitudes towards proper hygiene and sanitation practices (Mehta & Movik, 2010). In addition, a lack of political structures providing financial and technical assistance or creating bureaucratic barriers for obtaining funding approval for local communities can lead to program failure (van Haren, 2011).
Observational		People said they had attended functions but were unsure of it being sponsored by VIN. (PP) People were generally pleased with VIN. (PP)	
Quantitative Data		**ACTIVITIES** In the intervention group, 55% reported to have attended a VIN event. 29% of interviewees stated that at least one child in the home participated in a VIN event at school. Women's group was the most frequent event type response with 34% of the VIN event participant subgroup. 23% stated that they attended a health	**OTHER ORGS** 5% of the intervention group knew of other programs that provide health services in addition to VIN.

		education event, 20% a health camp, and 23% "other". **TOILETS** Of those with a household toilet, 16% receiving VIN assistance in procuring it. More specifically, 14% reported VIN's assistance with construction and 13% reported VIN assistance with funding. **HANDWASHING** 13% of the intervention group cites VIN as the source of their hand washing knowledge. **TOOTH BRUSHING** 8% of the intervention group cites VIN as the source of their knowledge around tooth brushing. **WASTE BINS** Despite 20% of the intervention group being in a ward with waste bins, only 7% acknowledge that the waste bins are present. Of those who know about the waste bins, 100% state that they are less than five minutes away from their home. 19% of interviewees requested additional services from VIN related to vocations and literacy. Common requests include learning to read and write as well as learning to run/work a fruit or vegetable market. 25% of interviewees requested additional services from VIN related to infrastructure development (ie new/more roads to their village, improving existing roads). 1% of interviewees requested additional services from VIN related to finance and/or materials. Common requests include (ie farming supplies, monetary assistance for schools).	
Interview	• Hierarchy of health & sanitation services: District health office→Jitpur Health post→VDC→Local NGOs • It is an integrated effort but the main are the VDC and health post. • Health Post: promotion of	• VIN has provided multiple helpful programs on health, hygiene, sanitation • People mostly pleased with VIN's services, especially work at the health post and women's empowerment initiatives. • Large role in constructing toilets with the VDC. • VINS efforts focused on the most marginalized	• Concerns on community self-sustainability if VIN is to leave. Belief that VIN should stay for a few more years until community is self – sustainable on health, hygiene and sanitation concerns. • Jitpur is not yet self-sustainable without the work of VIN, this make

	preventative and curative treatment. Promotion and education, campaigns on h/h, school health programs. • VDC: allocates the budget to run the health post, makes the master plans, right now focusing on the becoming ODF. They are in charge of planning and budgeting for all parts: water, sanitation and health. • District Health Office: the focus on women's health problems. Everything they do is based on the government's Master plans. • Organizational issues with successfully implementing initiatives. Lack of integrated effort. • VDC trying to become a model village, which means ODF. There is a Master Plan and finances in place for ODF initiative. VDC and VIN have collaborated to construct toilets and implement awareness campaigns. • No plan or policy in place for waste disposal or community water system. • Barriers to successful implementation of programs include cultural, financial and educational diversity in the community. • "The first important thing is we have resources and we are not mobilizing it. That is because we are suffering from financial crisis. We do not have enough money to run all the programs,	in the community. • Overall, people feel that VIN has created H/H/S awareness. • "VIN is working in different sectors in our community, especially empowering women, giving them funding, giving them knowledge about sanitation also. And providing good support for the health post, providing doctor facilities and also providing so many equipments in the laboratory. So, and also creating awareness among the people and besides that, VIN is supporting for the ODF program, that is, stopping open defecation program. So, it is contributing a lot. And we are just happy." • Though many people aware of VIN, there was some confusion on what specific activities/programs VIN provided. • "VIN is working on a symbolic basis. They have no end target that they are working toward. They do not inform the VDC on their specific goals or targets for each year. This is a problem as they don't know what they are aiming for."	take a few years. If VIN leaves, there are other NGOs who have approached the VDC to work in the community. • "If VIN left it would be very difficult. We would not have a doctor, no agency would be supporting/empowering the women. No one can do what VIN does." • "I am not thinking about this, but I am telling Dr. Laxmi and VIN president to stay Jitpur for next 5 years…I want to work with VIN." • The people expect VIN to stay and provide more help.

	especially the programs for drinking water supply." • The VDC and the community need to untie and collaborate in solid waste management .The VDC and community have collaborated on other issues in the community but they have yet to address solid waste management.		
Focus Group	• No proper management of waste disposal in the community. (WFG)	• VIN has positive influence in the community.(WFG & MFG) • Vin has provided awareness campaigns on basic hygiene and sanitation practices such as washing hands, brushing teeth and ways to identify common illnesses such as typhoid. (WFG & MFG) • VIN has improved the health of the community because they have constructed toilets and helped with waste management. (MFG)	• "We should start from self so that whole society will do….we need to lead by example." (WFG) • If VIN were to leave, the VDC, Health Post and Women's Co-op should take over the responsibility of promoting health and sanitation. (WFG) • VIN taught the people how to manage their waste so now the people should by responsible to manage their own waste. (MFG)

Category Domain: HEALTH POST

Data Methods	Health Services	Infrastructure
Secondary Sources	Surveys conducted by VIN (2007, 2009) of the Jitpur community revealed insufficient access to health facilities The goal of this project was to improve the basic health of the Jitpur community by 2014 by enhancing health post facilities	N/A
Observational	N/A	N/A
Quantitative Data	**EVENTS** Of those interviewed who attended a VIN-sponsored event, a majority reported that the information taught was clear (69%) and useful (52%). Most attendees reported that they were pleased (28%) or very pleased (62%) with the event. **HEALTH POST** Of those asked (N=52), 96% of the intervention group have visited the health post at least once since its establishment. In the last month, the intervention group visited the health post in a range of 0 to 4 visits with an average of 0.6 times. 64% of the group did not visit at all. **HEALTH POST REQUESTS** When asked what services they would like to see VIN provide more of, 13% stated that they'd like more services at the Health Post. Some of the responses included free and more diverse medicines and additional health services for women.	N/A
Interview	• The health post & its services are a huge benefit to the community. • VINs support to health post (the doctor) has benefitted whole village including the children of school. • "Mostly, many people come here (HP) for doctor. Doctor services are most important here. Dr. Laxmi is helping many people here. So, doctor service is most important."	• VIN constructed the lab and helped repair the health post facilities. • VIN has provided equipment in the health post as well as trainings. • Doctor service is most important and additional doctors are needed, as there is only 3 days for Dr. Laxmi and they would like more. If VIN leaves, they will not have a doctor at the health post. • "I have seen many problems, like we have a no infrastructure

	• "The health post specially focus on promotive, preventative, curative and rehabilitative health services." • The health pose provides come health education but mostly focuses on treatment. • All health services are free but laboratory have fee. • The female health volunteers provide community health education. • There is a lack of dental care at the health post.	for gynecological services. There is no delivery service; we have to refer all the pregnant women to the hospital." • "Lab, we are unable to run perfectly. Because we have many people go there and ask for fees. So people say 'I have not any money so I come tomorrow' and then don't come back." • Would like to establish the Health Post as a Primacy Care Center. After this process, there will be many facilities. They will then have access to a government-supplied physician, lab tech, delivery services, and a staff nurse. • Need to increase the training of the female health volunteers to provide more medications and treatments in the community. • There is no scale to weigh children at the Health Post.
Focus Group	• They had to go to city area for blood test or any minor test but now there is a lab in the health post. Now the minor cases can be easily handled in health post. (WFG) • What health services are needed: (WFG &MFG) ○ Effective health camps on weekly or monthly basis providing health checkup, medicines and training in the community. • VIN use to have weekly health camps, want these back as well as a nearby medical facility (to ward 8). (MFG)	• Significant improvements by VIN in the service of health post. Previously there was a single room in the health post, which would create difficulties for women for general check up. But now is not the situation at present.

Category Domain: HEALTH KNOWLEDGE

Data Methods	
Secondary Sources	Surveys conducted by VIN (2007, 2009) of the Jitpur community revealed low levels of knowledge relating to basic hygiene. VIN conducted health camps in both community wards and local schools. These camps incorporated educational and practical components that taught community members about proper hand washing and teeth brushing techniques. VIN has also lead health talks on water purification techniques, garbage management, and other general and menstrual hygiene practices. These health talks aimed to increase understanding regarding the link between poor hygiene and sanitation to communicable diseases. (VIN, 2012).
Observational	An answer of "taught self/relative" usually means they taught themselves. Exception is if a child participated in a VIN event; then their child taught them. (ED) People appeared knowledge in general about hygiene, especially younger. (PP)
Quantitative Data	**HAND WASHING** Of the five times to wash one's hands that were assessed, a majority of the intervention group stated that they washed their hands during three of them. Those times were after using the toilet, before eating, and before feeding a child. Further, there was a statistically significant difference between the intervention and comparison group in those who knew to wash their hands after using the toilet and before feeding a child (p=.046, .034). The greatest number of respondents stated that they learned how to wash their hands from a family member or that they taught themselves (49%). **TOOTH BRUSHING** The greatest number of respondents stated that they learned how to brush their teeth from a family member or that they taught themselves (55%). **REQUESTS** 15% of interviewees requested additional services from VIN related to health education. Common requests include first aid and women's health issues.
Interview	• VIN has been very effective in creating hygiene, health and sanitation awareness in the community. There is a vast difference in the awareness level from before VIN arrived till now. • VIN has taught the whole village from child to elderly people. VIN focuses on first personal hygiene and then cleanliness of home and then the surrounding. People are now aware of health and hygiene and this is due to VIN. • The health post and female health volunteers also conduct health education. • Methods of dispersing health knowledge can be improved. Only verbal, lecture style of education currently being used. VDC only conducts awareness campaigns on a yearly basis, rarely door to door. • "I do no think this is effective because it is only spoken. There is diversity in culture, language and education level which makes this difficult to deliver effective messages. Diversity is the major challenge to effective education. The way to overcome this is to target specific groups at a time." • "We are teaching in a very traditional way, giving lecture, that is the problem. And we are not, I think, giving good education to the children, that means practical education." • Tradition, culture and poverty are also barriers to effective health education and behavior change. • "We suffer from so many from traditional and conservative way of thinking, this is a barrier to effective health education

	and awareness, getting people to listen to the messages. It is hard to change people's way of thinking in the community. We have not been successful in changing the minds in terms of h/h practice… We are trying to eliminate taboo's and this way of thinking by the campaigns and providing education." • Poverty is a major challenge. The wealthy have knowledge, learn from family and are aware but, it is difficult to make the poor aware of sanitation and hygiene. • When Children and their families are put together for awareness, the programs become effective. Involving parent in the programs along with children is thus required. • "The very important thing is the school kids must be provided knowledge about sanitation and hygiene, because they can convey the message to their home, to their house. They can even teach their parents also. That is very much important."
Focus Group	• Both men and women's FG identified that lack of hygiene and sanitation can lead to many illnesses. They were able to identify proper personal hygienic practices as well as the importance of keeping a clean environment. (WFG & MFG) • "Health and hygiene are related with each other. Personal hygiene makes one healthy." (WFG) • Sources of health knowledge include: family, school, community, VIN, tradition and culture. (MFG & WFG) • People in the community learn from each other and need to teach each other (WFG) • Most of the people are aware about cleanliness and hygiene and most people practice these behaviors. However, some people (especially in ward 3 and 8) need more education on health and hygiene. (WFG) • Educated people in the community were already aware on H&S practices. However, VIN has helped educate those with low levels of education and literacy. (MFG) • Health education should be active, not only words. (MFG)

Category Domain: HEALTH BEHAVIORS

Data Methods	Water	Personal Hygiene	Sanitation
Secondary Sources	The majority of the community did not purify their water (Ghimire, 2009). Consuming unclean or contaminated drinking water is also related to infection and diarrhea (Gyawali et al., 2009). Tap water is observed to be the least contaminated, followed by well and finally spring water, with spring water being the most related to occurrences of diarrhea (Aryal, J., Gautam, & Sapkota, 2012). The majority of Nepalese families do not treat their water regardless of the source (Aryal, J. et al., 2012). Lack of treatment is a major health concern because of the presence of fecal contamination (Sherchand et al., 2009) that has lead to total coliform in 55% of natural water sources, 100% of reservoirs, and 92% of taps (Aryal, J. et al., 2012).	Personal hygiene behaviors are correlated with an increase of parasitic infection (Mukhiya et al., 2012), including the lack of soap during hand washing after defecation (Gyawali et al., 2009) and not trimming one's fingernails (Shrestha, Narayan, & Sharma, 2012).	Open defecation occurs commonly (Ghimire, 2009). Poor sanitary conditions, such as the improper disposal of waste, are major risks for parasitic infections, leading to diarrhea and gastrointestinal illness (Sherchand, Yokoo, Sherchand, Pant, & Nakagomi, 2009).
Observational	Many had water containers (PP, LC, ED, MA) Saw some water containers without lids, though family reported having lids on containers (PP, LC, ED, MA). When asked, the water in uncovered containers was for washing dishes or cooking. Covered = drinking (ED) Most had lids (PP, ED, MA) Saw very few houses with filters (PP, LC, ED, MA) Saw some taps with cloth on the tap as a filter (PP, LC, MA) An answer of "sometimes" for purifying water means that they do so during certain seasons only (monsoon) (ED)	Any soap near hand washing mechanism? Soap by few taps (PP, LC, MA) Most kept soap inside house (PP, ED) Most had no towels (PP, LC, ED, MA) Observed one family use a towel when washing hands (PP) Most had dirty fingernails and hands (PP, LC, ED, MA) Very few bathing areas (PP, LC, ED, MA) Those seen were very clean (PP, ED) Most kept toothbrushes in house in basket (PP, ED, MA)	Toilets most were clean (PP, ED) Various degrees of cleanliness, although mostly clean (LC, MA) Toilet had no sign of feces (PP, ED) Few houses saw some feces left in toilet or heavily stained (LC, MA) Some families threw a cup of water down before looking in (PP) No OD observed (PP, LC, ED, MA) Saw brush in a few toilets (PP, LC, ED, MA) Water bucket for cleaning in most toilets (PP, LC, ED, MA) No Chemicals seen in toilet (PP, ED) a few houses had some household cleaner in toilet (LC, MA) Saw no bins, holes, or composting areas outside of ward 8 (PP, LC, ED, MA) Two public bins in 8 about half full of garbage

		Saw many baskets that container both toothbrushes and toothpaste (LC, ED, MA) Some used soap when washing hands (PP, LC, MA) Some did not use soap (PP, LC, MA) All were thorough in hand washing (PP, LC)	(PP, LC, ED) Most houses had garbage lying around the house (PP, LC, ED) Some houses had no garbage around the house (PP, ED, MA) Most houses were in good condition (PP, LC, ED, MA) Most houses were swept (PP, LC, ED, MA) Most of the clothing was faded, but appeared clean (PP, LC, ED, MA) Some clothing was dirty (PP, LC) Washing the floor means with a mix of mud and water. (ED) Some cement floors- they were washed with a cleaner (ED)
Quantitative Data	**PURIFICATION** Only 28% of the intervention group purifies their drinking water regularly. An additional 1% reports that they sometimes treat their water. This is significantly more than the comparison group, where only 10% purified their water (p=.022). The most popular method of treatment reported was boiling (73%) followed by filtering (38%). 7% of those interviewed in Ward 8 purify their water. This is less than the number of people in Ward 8 who reported that they treat their water in VIN's baseline data from 2009 (27%). The difference between the two percentages is trending (p=.087). **CONTAINERS** Almost all individuals reported having containers to hold their water (99%). Of those with containers, 99% have a narrow mouth and 89% have lids. **WATER FETCHER (BEST FIT IS HERE)** 56% of those interviewed report that both males and females in the household will	**HAND WASHING** A majority has a designated area for washing their hands. This might include a sink or, more frequently, an area where a water container and/or soap are located. Most respondents state that they use soap when they wash their hands (65%) followed by a report that they sometimes wash their hands (24%) when they are supposed to. Of those who do not wash their hands, mud and no alternative were the most popular options. This is different from the comparison group, where 52% responded that they use soap when washing hands and 36% said thei sometimes use soap when washing their hands. The difference between the two groups is trending (p=.059). **BATHING** Most respondents wash their bodies two to three times per week	**OPEN DEFECATION** 93% have toilet access. No one who has a toilet reported practicing open defecation. **TOILET CLEANING** Of those who have toilets, 97% report that they clean it on a regular basis, with 68% cleaning their toilet daily. 55% report using household cleaner while the other 45% use only water. Of those w/children who don't use toilet (<5), only half throw child's stool in toilet. Other half throws stool in field, garbage, or other location. **WASTE DISPOSAL** The most common form of waste disposal is burning followed closely by throwing in a river or on the ground. A majority of respondents state that they separate their waste before disposing of it (80%). The most commonly separated waste types were plastic and organic waste. 79% of respondents reported to separate both types of waste. A majority of respondents report to either burn their plastic (57%) or throw it in the river or on the ground (37%). This is different from the comparison group, where more respondents burn plastic (62%) and less throw in river or on the ground (31%). The

	fetch water, followed by females only (36%).	(44%) followed by once per week (17%) and once per day (13%). In Ward 8, 47% of respondents reported washing both 2-3 times and once per week. This is a shift from 2009 when a majority of respondents reported bathing 2-3 times per week (65%) followed by once per week (34%). This difference is statistically significant (p=.044). **TOOTH BRUSHING** All respondents brush their teeth, with only 3% stating that they sometimes brush their teeth. Of those with children, a majority report that the children also brush their teeth (86%). The majority of respondents brush their teeth once a day (65%) followed by more than once per day (25%). When brushing, a majority or respondents state that they use a toothbrush and toothpaste (73%). This is different from the comparison group, where a much larger percent (87.8%) use a toothbrush and toothpaste when brushing their teeth. Additionally, 7.4% in the comparison group use a toothbrush and an alternative for brushing their teeth. The difference between the two groups is trending (.056).	difference between the two groups is trending (p=.091). In Ward 8, 53% of participants stated that they burn their plastic. This is different from 2009 when 81% reported to. This difference is statistically significant (p=.017). 79% of participants report that they compost their organic waste. **LIVESTOCK** Only 8% of respondents keep their livestock inside their homes, with a majority keeping them either fenced or tethered outside of their living space (84%). Despite this, 32% of the respondents state that their livestock enter their homes. In Ward 8, no of participants stated that livestock enter their homes. This is different from Ward 8 in 2009 when 33% of participants in the baseline survey reported that livestock entered their homes. This difference is statistically significant (p=.035). Additionally, 20% stated that pets or wild animals do not enter their homes. This is different from the comparison group, where 40.5% states that pets or wild animals did not enter their homes. The difference between the two groups is statistically significant (p=.003). **FLOOR CARE** Every respondent states that they sweep their floors once a day, with a majority reporting they do so more than once a day (65%). A majority of respondents report that they wash their floors once a day (71%). **WASHING OF CLOTHES** A majority of respondents state that they wash their clothes once a day (55%) followed by two to three times per week (31%).

Interview	• There is conflicting understanding of water quality and necessity in purification. • For all purpose the same water is used. The water is not treated at all. There is popular belief that the spring water doesn't require any purification • "We, lets say, we, the people of the Nepal do not believe that even this spring water is contaminated." • Most people do not purify their water because they believe the spring water is pure and therefor safe to drink. Some say the government has tested it and determined safe to drink as well. However, some people in the community do purify their water. • "We use to teach people about just boiling water, filtering it and then drink. so they use to say us, 'this water is from spring and it does not need to boil. It is free from matter, it is safe so, why we need to boil'."	• Personal hygiene practices have improved in Jitpur. • "It is quite difficult you know (to change health behaviors) we suffer from the traditional approach." • "The VDC must provide the H/H messages to the school kids so they can change the minds of their parents." • "The hygiene practices of children are not adequate... 10 to 15 percent of students have not yet internalized the basic hygiene practice. However, the hygiene practice of children has been improving." • Especially the children sponsored by VIN are more alert with maintaining hygiene because they fear that VIN may withdraw the sponsorship if they do not maintain cleanliness. • Washing hands benefits self, so people do it.	• "It has been seen that where toilet is constructed, it is used." • The owner is responsible for repair and maintenance of the toilet. • "In Ward 8 there was stool everywhere. And after VIN supported and gave education there is toilet now and there is no stool on the roads now." • People in Jitpur do no think waste is an issue. They just throw their trash wherever. • People are reluctant to maintain sanitation. They know that environment should be kept clean but they are careless. However the situation has been progressing. Trash bins are only used by those who understand its importance. • There is no practice of throwing waste in trash bins in Jitpur. The adults don't use trash bins so the children do not. The school is trying to teach, but no role models for the students.

Focus Group	• The WFG identified purifying water as a way to prevent illness. They filter (made up of steel, clay), boil or expose their water to the sun. They believe many people in the community filter their drinking water. However, they also stated that spring water is considered safe because it comes directly from the source. • Most of the MFG stated they do not purify their water and that only some families purify their water during the rainy season.	• WFG identified personal hygiene as hand washing, nail trimming and teeth brushing and state they are well-practiced behaviors in the community. • There has been increased awareness and people generally do try to take care of themselves. (WFG) • They believe children are motivated to wash their hands and brush their teeth. (WFG)	• People feel they are personally responsible for waste management & toilet maintenance. (WFG & MFG) • "We should start from self so that whole society will do." (WFG) • Previously people were compelled to openly defecate, as there was no toilet. Only 2 to 4 houses had toilets prior to VIN. (MFG) • OD has decreased in the years since VIN has been here due to toilet construction. But economically disadvantaged groups without toilets still practice OD. (WFG) • WFG stated not to burn trash because of carbon monoxide risk. However, most people in the community burn.

Category Domain: HYGIENE & SANITATION FACILITIES

Data Methods	Toilet	Water System	Waste Disposal
Secondary Sources	According to the Gov of Nepal (2011), only 43% of the population has access to sanitation facilities; 78% of the city population has access to toilets versus 37% of the rural population (Government of Nepal, 2011; Karn, Bhandari, & Jha, 2012). 80% of community schools in Nepal have toilet facilities on campus; 65% of these schools have separate facilities for females (UNDP, 2013). 40-50% of Jitpur households do not have access to a permanent toilet, that open defecation occurs commonly as a result, and that the majority of the community did not purify their water (Ghimire, 2009). Individuals and families without toilet facilities are between 1.5 and four times as likely to become ill, depending on their source of drinking water (Aryal, K.K. et al., 2012). Having no sanitation facilities is the situation most associated with diarrhea; a pit latrine reduces incidence and the use of a water-shield toilet is least associated with diarrhea (Gyawali, Amatya, & Nepal, 2009). Between 2000 and 2013, the number of families with access to improved sanitation facilities has more than doubled from 30% to 60%. (UNDP, 2013). Surveys conducted by VIN (2007, 2009) of the Jitpur community revealed insufficient access to proper sanitation and health facilities. VIN built 30 toilets in the community and installed public waste disposal bins in one of the Jitpur wards (VIN, 2012).	According to the Government of Nepal (2011), 80% of the population has access to clean water. Broken down and neglected sewage systems have increased the rates of infection, as leaks from the sewage pipes or pits have merged with drinking water sources causing contamination of water supplies (Mukhiya, Rai, Karki, & Prajapati, 2012). During the rainy season in June and July, the extra water causes overflows and increases the likelihood of drinking water contamination, which is why there are spikes in cases of diarrhea during this time every year (Karki, Bhatta, Malla, & Dumre, 2010; Sherchand et al., 2009). As of the latest MDG Progress Report in Nepal, 44.5% of families have access to a tap, 38.5% to a covered well, 7% open wells, and 10% other sources such as springs (UNDP, 2013). Between 2000 and 2013, the number of families with improved water has increased from 73% to 85%, surpassing the MDG2015 target (UNDP, 2013).	N/A

Observational	Toilets were near to houses (PP, LC, ED, MA)Most were free of obstruction and damage (PP, LC, ED, MA) Few were run down or in need of repair (PP, LC, ED, MA) All had roof and walls (PP, LC) Most had roof and all walls (ED, MA) Almost all had doors that closed properly (PP, LC, ED, MA) Some had broken doors (PP, LC, ED, MA) If flush toilet, does it work? None (PP, LC, MA) Yes (ED) If public, are there men and women facilities? N/A (PP, LC) Most use taps to wash hands. (ALL) Several had a "station" or designated area with just a pitcher. (LC, ED, MA) Some actual sinks. (PP, ED) Very few HW place next to toilet/Some HW stations outside toilet. (All) Almost all <5 mins from toilet. (ALL)	Water Source: Most were near homes. (PP, LC, ED, MA) Cleanliness of taps: Most were relatively clean. (PP, LC, ED, MA) Some had garbage in the area. (PP, LC, ED, MA) Puddles: Most had puddles. (PP, LC) Livestock near or around the water. There were some houses with LS/dogs near the water source or a cowshed next to the tap. (PP, MA) Saw feces near tap. (PP)	Waste bins only seen in Ward 8. (PP) Most had garbage in them/mostly full. (PP) Less garbage around homes near to waste bin. (PP)
Quantitative Data	**GENERAL** 93% of those interviewed have access to a toilet. Of those with access, 86% are private, 96% are pit latrines, and 94% are permanent. In Ward 8, all of the toilets are permanent. This is a change from 2009 when only 69% were. This change is statistically significant (p=.090). **AGE** A majority of toilets are > five years old (65%) followed by two to five years old (22%). No shared toilets are segregated for men's use and women's use only. **REQUESTS** 24% of interviewees requested additional services from VIN related to toilets. Common examples of such requests include help installing the toilets and monetary assistance.	**SOURCE** 57% of those interviewed get water from a public tap, 39% from a private tap, and 4% from a river. This is different from the comparison group, where 95% get water from a public tap and 5% from a private tap. The difference between the two groups is statistically significant (p=.000). The majority of respondents state that it takes less than five minutes to get water (81%). **AVAILABILITY** Only 17% reported that water was unavailable in the last two weeks. Of those reporting unavailability, average number of days was 2.92 with a range of 1-7. Year round, 53% of respondents state that water is available. The most frequently reported seasons of unavailability are winter (80%), spring (86%) and autumn (91%).	**WASTE BINS** Despite 20% of the intervention group being in a ward with waste bins, only 7% acknowledge that the waste bins are present. Of those who know about the waste bins, 100% state that they are less than five minutes away from their home. **REQUESTS** 19% of interviewees requested additional services from VIN related to waste. Common requests include waste disposal pick-up and community garbage bins.

		REQUESTS 37% of interviewees requested additional services from VIN related to water capacity. Common requests include adding water tanks for the homes or community.	
Interview	• Of 1022 houses 222 still w/o toilet. Goal is to complete the process of toilet construction within two years. (• "I think now around 150 households do not have toilet, out of 1000 households. By this year, we also have a master plan and policy from VDC; by this year all the people will have access." (• The VDC's ODF program has lead to budgeting and construction of toilets in Jitpur. • VIN and VDC worked together to provide different types of support for toilet construction. They made the household responsible for some of the construction to help the owners feel responsible for the toilet & encourage upkeep of the facilities. • The VDC and VIN have collaborated together and provided awareness campaigns to make people understand why toilets are necessary. • VIN provides supplies and equipment while the family is responsible for the cost of construction of the toilet. • There is no public toilet and it is a problem. Need public toilets, if you charge to use, the fees can be used to pay someone to clean toilet-which is also job creation.	• Lack of integrated effort, lack of coordination, lack of finance and lack of plan in regards to community water supply. • "We have so many sources of water but we don't have such a master plan to manage all the sources of water. That is a challenge. In terms of the proper safe supply of drinking water system, uh it is quite difficult here. Because, there is no such integrated plan or policy, that is very much important." • No tap in each and every house due to rough topographical feature and land structure. In some places five to ten houses share same tap. • Everyone has access to public tap and households also share taps with their neighbor if they approve for it. • There is no formal treatment of the water and the water has not been tested in Jitpur. • Water at the school has been tested and declared to be drinkable by concerned authority. • "The water is not treated and there has been no government testing of the water. Therefore, we do not know how clean the water is or what chemicals/microorganisms are in the water."	• Lack of integrated effort, lack of coordination, lack of finance and lack of plan in regards to community waste disposal. • Solid waste is not creating much problem as the area is large and population density is low. The VDC has been planning to specify dumping site for solid waste. It is a long-term plan as solid waste management has not been seen as a pressing problem. • VIN has a few small bins in a few places but not in each ward and they are not effective. The bins by VIN are just symbolic. There are not enough for all of the wards, are too small and too far away. There is no collaboration with this program. Not effective and no one uses them. • The schools are now focusing on solid waste management. The bin is kept in school and the school burns the trash after the bin is full. • They (Women's Cooperative) plan that each and every house should have trash bin and the waste collected as such should be submitted to the tractor taking the waste. • People should unite and collaborate with VDC especially for solid waste management.
Focus Group	• Almost everyone has a toilet now. Previously only 2 to 4 houses had toilet	• There is no proper management of water. Though spring water is	• People currently take turns emptying the public bins. (MFG)

	and after VIN started working the problem has been solved. (MFG)	available, there is no proper management of the tanks that store water. So there is a difference in the quality of water not because of the source but because of its storage and supply. (WFG) • Complains of scarcity of water (in ward 8), that they only get water when the adjourning village closes (MFG) • The water is believed to be clean from the spring and we use this water for everything: drinking, washing, ect. Taps in public areas are for all to use. (WFG)	• The WFG did not identify public bins in the community. (WFG) • Scarcity of public bins is the most common sanitation problem in the village. There also not enough bins or a vehicle to dump the bins. (MFG) • The public waste bins are easily filled (fill in 2 days and are shared by 3-4 families). There is no one responsible for emptying the Bins. Belief that the community would use the bins more if the was someone managing the waste of the bins such as a public vehicle to collect and dump the bins. (MFG) • Need for a public vehicle to collect the garbage (empty the bins). Thoughts that VIN would provide this, but this has not happened. (MFG)

Category Domain: HEALTH OUTCOMES

Data Methods	
Secondary Sources	12,700 children under the age of five die annually from acute respiratory infection or diarrhea due to poor sanitation or hygiene, and 90% of the total population have worms at any given time (Government of Nepal, 2011). Lack of sanitation has been correlated with an increase in child mortality and diarrheal disease and disproportionately affects women and children (UNDP, 2013). 72% of Nepal's population has suffered illness due to poor sanitation and unsafe drinking water, leading to high health expenditures and economic loss due to decreased worker productivity (Government of Nepal, 2011). Poor sanitary conditions, such as the improper disposal of waste, are major risks for parasitic infections, leading to diarrhea and gastrointestinal illness (Sherchand, Yokoo, Sherchand, Pant, & Nakagomi, 2009). During the rainy season in June and July, the extra water causes overflows and increases the likelihood of drinking water contamination, which is why there are spikes in cases of diarrhea during this time every year (Karki, Bhatta, Malla, & Dumre, 2010; Sherchand et al., 2009).
Observational	N/A
Quantitative Data	**DIARRHEA** Participants reported an average of 0.2 instances of diarrhea in the last month with a range of 0-7 instances. **HEALTH POST VISITS** 36% of participants reported that they visited the health post at least once in the past month. The average number of visits was 0.6 with a range of 0-4.
Interview	• There has been a general trend in decreased hygiene related health outcomes in Jitpur. • "They mainly come for fever, like common cold and mainly fever and common cold. Sometimes we find typhoid. Diarrhea, some cases." • Illnesses have decreased due to VINs work. They provided health awareness campaigns, taught cleanliness and provided a doctor at the health post. Previously the diseases like diarrhea, dysentery, typhoid was commonly seen which was due to lack of sanitation. But it has been decreasing now because of VIN. • Poor Hygiene and sanitation is only related to 5-10 cases of diarrhea a month seen at the health post, that is 1% of all cases seen per month. Hygiene has improved and is no longer a health issue in Jitpur.
Focus Group	• There is no disease in village due to lack of proper sanitation and Sanitation doesn't seem to be a big problem in their village. However, sometimes there is dirty water at certain water sources and people get sick. Diarrhea and typhoid are most common problems from dirty water (WFG) • VIN has contributed toward the improved health and hygiene in the community. (MFG)

Category Domain: SOCIAL DETERMINANTS OF HEALTH

Data Methods	SES	Educational Level
Secondary Sources	65% of Nepal's population lives below the poverty level with a wide gap in sanitation coverage occurring between the rich (80%) and poor (12%) (Government of Nepal, 2011). In some rural areas of Nepal, socio-cultural taboos exist that lend to open defecation such as the belief that certain males and females should not share a toilet, or that menstruating women cannot use the toilet due to uncleanliness (Government of Nepal, 2011).	Lack of sanitation correlates w/ increase in child mortality & diarrheal disease. This disproportionately affects women and children (UNDP, 2013). High illiteracy rates & lack of education have led to widespread unawareness of the connection between many communicable diseases & unsanitary & improper hygiene practices. (Government of Nepal, 2011) Surveys conducted by VIN (2007, 2009) of the Jitpur community revealed a high illiteracy rate.
Observational	Houses and levels of cleanliness were different according to wealth (PP) Wealthier families had cement houses, private taps, and bathrooms (PP) Poorer families had mud houses and less facilities (PP)	N/A
Quantitative Data	N/A	N/A
Interview	• Economically disadvantaged have less resources and health knowledge. • Poverty and unemployment are big issues. • Children are of 2categories. First, those from educated family &2nd, from poor & illiterate family. Low level of awareness of parents (family) creates problem. Thus poverty is a major challenge. • Children are absent (from class) due to illness. But rather than sickness, poverty is a cause of absenteeism and drop out. Especially during the harvest season • Women coop is most significant work of VIN as empowerment of women has also helped the health of the children. • She believes that women in the village are forward compared to men. They have been empowered socially and economically. This improves health. • VIN is focusing on the "untouchables". They have helped by focusing on this targets group who are the lowest and most marginalized.	• HE is not effective because it is only spoken. There is diversity in culture, language and education level which makes this difficult to deliver effective messages. Diversity is the major challenge to effective education. • The verbal only awareness campaigns are not effective in the community because there is a wide range of education and literacy levels within the community. There are also cultural difference between wards and families, which make awareness campaigns difficulty to be effective. • Lack of awareness of parents is biggest challenge. If child is from good family does not need much attention regarding H&S. • "People are involved to generate income so, people I think, they are not more interested to listen to our things because we suffer from poverty and we have to eat. That is the problem."

Focus Group	• Some are economically poor and unable to construct toilet. This issue is directly related to health. Some people don't have toilet because the support provided by VIN is not adequate for them. (WFG) • VIN has helped children of Low SES: providing books, pens, clothes, ect in the schools. (MFG) • Garbage is an issue in their community. But some people don't understand and some have very low condition that they hardly think about such issues (WFG)	• VIN has helped educate those who were illiterate or uneducated on health behaviors and practices. (MFG) • Educated people were aware (about H&H) from the beginning but uneducated were made aware by VIN. (MFG)