Living on the Margins
Prawn Harvesters from Little Rann of Kutch
(An Exploratory Study of Health Status)

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Area Networking and Development Initiatives

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List of Abbreviations

AMMC	Azad Mahila Macchimar Cooperative
ANANDI	Area Networking and Development Initiatives
ANC	Ante-natal Care
APL	Above Poverty Line
ASHA	Accredited Social Health Activist
ATREE	Asoka Trust for Research in Ecology and the Environment
BPL	Below Poverty Line
CEHAT	Centre for Enquiry into Health and Allied Themes
CHC	Community Health Centre
Df	Degree of freedom
DLHS	District-level Health Survey
DNT	De-notified Tribes
DOT	Directly Observed Treatment
DPT	Diphtheria-Pertusis-Tetanus (vaccine)
FGD	Focus Group Discussion
Ft	Feet
Govt	Government
HH	Household
IFA	Iron-Folic Acid
IUD	Intra-uterine Device
Km	Kilometer
LPG	Liquid Petroleum Gas
LRK	Little Rann of Kutch
NFHS	National Family Health Survey
NGO	Non-governmental Organisation
NT	Nomadic Tribes
OBC	Other Backward Castes
PDS	Public Distribution system
PHC	Primary Health Centre
PVK	Paryavaran Vikas Kendra
Pvt	Private
SHG	Self-help Group
SPSS	Statistical Package for Social Sciences
TT	Tetanus Toxoid
VSSM	Vicharata Samuday Samarthan Manch

Preface

This study has been jointly conducted by CEHAT and ANANDI. It was during the National Dialogue on women and health in 2006 that representatives from the organisations met and discussed the concerns surrounding rural communities such as migrants and those living outside revenue boundaries such as forest dwellers, fishers whose basic health needs were not in the ambit of NRHM or the right to health campaign. The rapidly growing economy is throwing up newer forms of unorganised patterns of labour within the formal and informal sector. There is very little information on communities who are migrant labours, communities which are from non-revenue villages, those who work in forests, ports, occupational sites like salt pans, prawn fisheries. Preliminary interaction with groups working with such communities and direct meetings with workers in prawn industry, salt pans, ship breaking, agricultural workers suggest that their access to water, shelter and health services is very poor. There was a felt need to document the living and work environment of such a community and is impact on health so that their demand are well articulated in the right to health campaign.

Discussions were held with the community in Jan 2007 and funding was sought from Oxfam-NOVIB for conducting research. It was in 2008 that the process of conceptualization began and it was decided to focus on the prawn harvesters Gujarat. The study began in 2009. The partnership was crucial as the two organizations brought in their respective strengths. ANANDI had its roots in the community which made this study possible in the first place. Their background work in this region shaped the research study in all its stages from conceptualization to analysis. Their rapport with the prawn harvesters, and representatives of Miyanas working on the ANANDI team greatly helped in reaching the potential respondents. ANANDI's intervention in the Maliya region post the rehabilitation phase of the earthquake was to nurture women's leadership and enable the community to plan and intervene in the development processes. The women members of the sanghatan kept raising the concerns regarding poor state of living conditions & morbidity at the worksites & resultant impact on wellbeing & household resources. Hence, ANANDI felt that it was important for the women fishers cooperative to address health and living conditions as part of the overall livelihood strengthening of its agenda. There had been interminent lobbying for health services at district level, based on cases where there were glaring denial of services, child mortality and on malarial deaths but there was no recognition by the state public health services of such populations that might require specific attention. The department of fisheries too had little to contribute to improving living standards as this fisher community were in direct competition for the scarce resources with the salt industry. Unlike the salt producers which are important to the market economy of the state, there is little attention on this community living in the same vicinity leading to their continued deprivation and denial of basic human rights. As in most marginalised communities, there were severe conflicts within the community and it is a challenge to organise the community for collective action. Little information was available to ANANDI too, to enable the community to understand the overall situation of the community.

CEHAT has a longstanding experience in health research. It has also provided support to the right to health care campaign in India through research and documentation on health and human rights issues. An important thrust was raising right to heath issues on neglected areas such as sexuality, migration, disability, aged, caste and so on. This collaboration therefore provided an opportunity for CEHAT to conduct primary research on the impact of seasonal migration on the living and work environment of prawn harvesters and its consequences on their health. It could never have possibly undertaken this critical subject considering the barriers of language and access.

The goal for both therefore was to build evidence on the status of health and sanitation services, strengthen the advocacy with the state to increase outreach of health and sanitation services as a basic human right to this marginalised community at their habitations and worksites in the fishing belt.

During the course of this partnership, ANANDI was able to organize a meeting with the district level officials from the health and fisheries department where the preliminary findings form the study were presented by CEHAT and several women from the sanghtana spoke eloquently about their living conditions and their expectation from these departments. This resulted in positive changes at the temporary settlements and a commitment by the health department for organisation of medical camp and provision of outreach services was sought.

The participation in the research process followed by dialogue with official was instrumental in increasing the confidence of the team to articulate the extent of deprivation. The process has led to the community organising to improve their own living conditions as well as engage with the government at the district level to increase access to public services and invest in water, sanitation at the worksites. While the study is limited in its scope, we hope it will build interest in conducting more intensive and focused studies on health in the region for improving the health and livelihoods of this socially, economically and ecologically vulnerable community living on the margin,

The usefulness of the study is evident from the impact even the sharing of preliminary results has had on the temporary settlements. The visits by PHC medical officer, their holding a health camp at temporary settlement, health education to women about child care and to community men and women about cleanliness and hygiene resulted in noticeable cleanliness at atleast one settlement. This is an encouraging experience, and a testimony to the power of research as a tool for advocacy.

We thank Sejal Dand for the inputs on this through all its phases. We also thank the Programme Development Committee, Padmini Swaminathan, Vibhuti Patel, Padma Prakash, Sangeeta Rege, Sana Contractor for their comments and feedback which has been very useful in improving the quality of the final report.

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Executive Summary

Introduction

Prawn harvesters from the Little Rann of Kutch, Gujarat, largely members of the Miyana community, are seasonal migrants from along the coastal areas of Gujarat, who engage in monsoon fishery. Unlike the salt pan workers with whom they share the geographical area, the prawn harvesters remain to be a relatively poorly documented group.

The prawn harvester community's marginalisation was first noticed in 2001 when the local NGOs reached out to offer relief after the earthquake that shook Gujarat. Total absence of basic amenities and apathetic attitude of the public sector was apparent. Subsequent explorations in 2009 by ANANDI revealed very high morbidity especially among neonates and infants. However health needs of the population remained unexplored.

The present exploratory study conducted by CEHAT in collaboration with ANANDI which has a strong presence among the prawn harvesters; is an attempt to document the socio-economic and health condition of the prawn harvesters at temporary settlements along the coast.

Background

The Little Rann of Kutch (LRK), spread over five districts and ten talukas of Gujarat is a semi-arid flatland criss-crossed with river beds, that are dry or nearly dry for most period of the year. In the monsoon however the rivers pour into the LRK submerging the flatlands and connecting it through multiple water channels to the Gulf of Kutch. This creates a unique ecosystem in the LRK that is conducive for estuarine prawn harvesting during the monsoon months of July to October.

In the recent decades seasonal prawn harvesting in the LRK has become an important economic activity for the Miyanas - a tribe that traditionally engaged in marine fishing and rain fed agriculture. Miyanas are residents of Maliya Miyana Taluka of District Rajkot. According to the historical accounts the then ruler of Maliya invited the Miyanas to Maliya in the last two decades of the nineteenth century. They have been known as courageous but lawless people and the British classified them as a notified tribe but the Miyanas consider themselves as fearless warriors. Their distrust for the government still prevails.

Over the past three-four decades, there has been a shift in the Miyana's occupation. With the salinity ingress, increasing aridity, decreased rainfall, increased salt farming in the area and spread of Prosopis juliflora, monsoon fisheries, farming and salt pan labor (in that order) have become the main sources of income for the Miyanas.

The monsoon fishery - prawn harvesting lasts for three to four months over July to October. Over this period about 2500 families from LRK migrate to the coast to engage in prawn harvesting. The migrant prawn harvesters set up temporary settlements along the coast, at times cut off from nearby villages by the water channels that submerge the flatlands of the LRK.

Though prawn harvesting is a lucrative business the prawn harvesters get only a marginal share in the gains. A large proportion of the seasonal earnings are spent on settling earlier debts, preparing for the season and living at the temporary settlement. Health care and social events like marriage account for large unplanned expenses.

According to the community elders, the Miyanas who traditionally engaged in marine fisheries were introduced to prawn harvesting by the Fisheries Department in the 1960s and through the support of the department prawn harvesting became the main source of income for the Miyanas from the LRK. However, the support from the Fisheries Department ended about 25-30 years ago and private traders and agents representing large processing units from Veraval took over the market. Over period, the relation between the prawn harvesters and the agents eroded into an exploitative one.

Initiative by ANANDI in collaboration with another NGO Paryavaran Vikas Kendra resulted in formation of self help groups among the Miyanas. Over period, the women gained confidence and registered a fisherfolk's cooperative - Azad Mahila Machimar Cooperative. The main reason for the formation of Azad Mahila Machimar Cooperative was to control the increasing exploitation of prawn harvesters by agents, to work collectively to improve the conditions of living, to work at the temporary settlements and hamlets and to mainstream gender concerns in this sector (ANANDI, unpublished). The cooperative, with the help of ANANDI, works towards facilitating the community's access to government schemes and also spreading awareness about these schemes and their rights.

Uncertainties inherent to the occupation, exploitation by agents, poor literacy and awareness about the market as well as one's civic rights, lack of basic amenities and a general apathy by the public sector services has had implications for the health status of the prawn harvester community. At the Gujarat Social Forum, in a workshop organised to discuss the draft policy of communitisation of public health services in 2007, prawn harvesters were one of the groups of 'floating population' that spoke about denial of basic health services to them. The need for objective data to support advocacy for the rights of these groups too was discussed at the Forum. The present study was a response to this felt need. CEHAT in collaboration with ANANDI designed and carried out the present study to document the living conditions of the prawn harvesters, and availability and access to essential services. The study also explored general, chronic and occupational health status and the extent of availability and utilization of health services among the prawn harvesters.

The specific objectives of the study were

1. To study the various factors that compelled the Miyana community to continue to engage in fish prawn work over generations.
2. To understand the socio-economic profile of the prawn harvesters at their temporary settlements.
3. To assess the reach of mandated government schemes (basic and essential services) at the temporary settlements.
4. To identify the general morbidity pattern of health of prawn harvesters at the temporary settlements.
5. To report women's health problems at the temporary settlements.
6. To report the occupational health problems among prawn harvesters (men and women) at the temporary settlements.
7. To understand the health seeking behaviour (utilization and expenditure) of prawn harvesters at their temporary settlements.

Methodology

The study area

The study was conducted in 13 temporary settlements spread across Rajkot and Surendranagar districts along the coast of the western Indian state of Gujarat.

Sample

The study was conducted between August and October 2009 and 10% of the households that were present at the temporary settlements at the time of the study were included in the sample. Selection of households was random from a listing for the settlement in all settlements except Venasar; where at the request of the community leaders, households were selected to represent base villages from where the prawn harvesters migrated to this settlement. Only households where a female member of the household aged 15-49 years was present were included in the sample for the study. Of the 290 sampled households 288 agreed for an interview.

Respondents

Different persons from the selected households participated as respondents for different components of the study.

A married woman in the reproductive age group, 15-50 years from each of the selected households was interviewed to gain information on the socio-demographic-economic status of the household as well as to document general morbidities reported for the male and female members of the household, women's reproductive morbidities, maternal morbidities and occupational morbidities for women from the household. If the identified woman respondent was not able to give information on age, education and income of the household members, a senior (male or female) member of the household was administered the same question. In case more than one woman in a household met the inclusion criteria, a married woman who had been migrating to the temporary settlement for the maximum number of years, and who gave consent for participation was selected as the respondent.

One adult male member from the same household, who was involved in prawn harvesting and agreed to participate in the study was administered the section on occupational health hazards for men.

Tools and techniques for data collection

In addition to the survey, interviews were conducted with 11 key informants and group discussions were held with 12 representatives of the community.

Socio-economic and morbidity data were collected using a semi-structured interview schedule which was finalised after pilot testing and in consultation with ANANDI. Interviews with key informants were documented using an open-ended interview schedule and explored the history of Miyanas, socio-cultural practices, health status, essential health services, public distribution system and education system.

Group discussions and group interviews were conducted using a discussion guide, which explored the history of the Miyanas, their migration to the temporary settlements and the role of Mahila Macchimar (Fisherfolks') Cooperatives in the trade of prawn harvesting in the Little Rann of Kutch .

Observations by field investigators as well as supervisory staff were documented in the form of a diary in an unstructured format. At times, when the field investigators' notes were abrupt, debriefings were conducted and issues presented during these were summarised.

Data analysis
Quantitative data were analysed using SPSS, version 12. Qualitative data was summarised thematically.

Ethical issues

The interviews were conducted after informed consent at the community, household and individual levels. Separate consent was sought from the women respondents who provided information on reproductive health and maternal health. The women respondents were interviewed inside the huts to ensure privacy and confidentiality. Similarly, men were interviewed for documenting occupational health after seeking written consent from them.

Written consent forms were obtained from 281 households, whereas the remaining seven households granted verbal and not written consent.

Involvement of members of the Miyana community as research investigators may have introduced a bias in the data collection process despite preventive measures taken by the organisation.

Identity of the respondents, key informants and participants of the group discussions have been masked by using pseudonyms throughout the report.

Limitations of the Study

The present study focussed on the health status of the prawn harvesters at temporary settlements and did not document the vulnerabilities at the base village. The study was not designed to document the social context and extreme marginalization of the prawn harvester community comprehensively.

The data collection year experienced delayed monsoons as a reason many prawn harvester families had moved back to the base villages or were moving between temporary settlements. This may have influenced the sample selection. Due to logistics, data collection was carried out within a month of the setting up of temporary settlements. As a result the documentation of morbidities may not be comprehensive.

Community's awareness about ANANDI's role in advocacy for facilitating access to basic amenities for the prawn harvesters may have influenced their responses to the survey tool.

Results

Socio-demographic profile of the sample

- The prawn harvesters migrate 2-150 km from base villages to the temporary settlements.
- At temporary settlements the prawn harvesters stay in huts made from plastic sheets, and cloth stretched over a reed skeleton. Huts range from 48 to 120 square feet in area and are used as shelter for humans and animals from the household and to store belongings of the household. Due to scarcity of space, when it does not rain, the families cook, eat and sleep in the open space outside the huts. Prawn processing too is carried out in the open space.
- All except one settlement face acute water problem. Residents use rain water collected in a ditch till it dries up and then fetch water from distances of upto 12 km. When the source of water is more than 2 km away from the temporary settlement, often the settlers purchase water from the water vendors. At the time of the survey more than half the households used ditch water and another one-third households purchased water. The poorest of the households are more likely to purchase water (Chi-square, p=0.006).
- On an average, the households spent about Rs 50/- (median, range 10 - 500) per day on purchasing drinking water. This accounts for 15% (median, range 1% - 180%) of their seasonal income on the purchase of drinking

water. The burden was higher for those from the lowest quartile of the income categories (Kruskal-Wallis test, p=0.000).

- Bajra roti, wheat roti, plain rice, dal, spiced rice cooked with prawns, curry of small fish, eggs and poultry and occasionally fresh vegetables - mostly onions, potatoes, tomato, brinjal are the constituents of their everyday diet. Milk, curds, buttermilk too are consumed. All Miyana households own poultry and goat and about half the households own one or two buffaloes. Families that do not own goats (extremely rare situation) or cattle, purchase milk from other settlers at Rs. 2.50 for 125 grams.
- Three fourth (75%, 205/274) of the households collected firewood from forest while the rest reported purchasing firewood for cooking and for boiling prawns.
- Temporary settlements do not have toilets and facilities for management of solid and liquid waste. All 288 sample households disposed waste from prawn processing in the open leading to unhygienic environment, breeding of flies and mosquitoes.
- All basic amenities are practically inaccessible to the prawn harvesters at temporary settlements. Residents of temporary settlements travel 5km - 60 km to market place or grocery shops; the nearest PDS shop was reported to be at a distance of 5 km - 33 km from the temporary settlements. Distance to public sector health care facilities ranged from 5 km - 76km and only one of the 13 settlements reported services from the ANM, ASHA, MPW and gramsevak at the temporary settlement. Except for Tikar where school is located at a distance of 1km from the temporary settlement, distance to school ranges from 4 km - 150km from the temporary settlements.
- 278/288 households were Muslims - Miyanas. Though officially categorised as 'Other Backward Castes' 274/278 respondents were not aware of their of this.
- Sixteen percent of the households (45/288) did not have a ration-card and of the rest, 56% (135/243) reported having a below-poverty line ration-card.
- Majority (85%, 245/288) households were below poverty line with monthly per capita income of $\leq$ Rs. 502 at the base village.
- Fifty-eight percent (166/288) of the surveyed households were nuclear families comprising parents and children.
- The household size (number of persons in the household) ranged from two to thirteen (mean=7). Number of children (persons aged 0 - 14 years) per household ranged from 0 - 8 (mean and median =3). On an average the households had four earners (mean, minimum 1 to maximum 10) and both men and women engaged in income generation activity. In an average large household, each earner supported two non-earners (minimum 1.0 to maximum 6.0; mean 1.87, median 1.69).
- Child-earners were reported in 85/288 households; of these 34 households reported male child earners while 63 households reported female child earners. Whether children from the household contributed to income generation was not associated with the economic status of the household.
- Monthly per capita income at the base village showed extreme variation with a minimum of Rs. 73/- to a maximum of Rs. 1,875/- (median=Rs. 300/-).
- Per capita monthly income from prawn harvesting (calculated for the year before the survey; assuming the season lasted for four months) was Rs. 673/-.
- Almost two-thirds (64%, 180/288) of the households reported having taken loans/advance from agents. The advance amount ranged from Rs. 1,000/- to Rs. 50,000/-, with half of the households reporting an advance of Rs. 3000/- or less (median). Among those who reported taking an advance, the proportion of households from lower economic status was significantly more than those from the higher economic status (chi-square=12.576, df=2, p=0.002).
- Average expenditure at the temporary settlements was reported to be Rs. 10,000/- (median, range: Rs. 2000/- to 60,000). Average net income after deducting the loan/advance and expenditure from the reported income from sales was Rs. 8,000/- (median).

- Only 14% of the (39/288) households owned agricultural land. Except for two households, all reported that the land was non-irrigated.
- Gunja, katar, and boat (non-mechanised) are essential assets for prawn harvesting, whereas dhori, mechanised boat, fishing license and cold storage box can be grouped into desirable assets. Distribution of ownership of assets over economic status showed a statistically significant relationship between ownership of dhori, cold storage box and boat (non-mechanised) with economic status, with a higher proportion of less poor households reporting ownership of desirable assets. Eleven of the 288 (4%) sample households did not own any of the above mentioned assets. Of the rest, most (92%, 266/277) owned gunja, and only three households reported ownership of mechanised boats.
- The literacy rate was 38% for men and 24% for women. Educational status of younger persons was higher than that of the older persons. The proportion of persons who had more than seven years of schooling was more among the younger age groups.
- Seventy-four percent (1198/1605) of the population reported being engaged in gainful employment at the time of the survey. Animal rearing, fishing and menial labour (at salt pans or farms) were reported as sources of income and the main occupations at the base village. A little less than three-fourth (72%, 1159/1605) of the persons had a secondary occupation. Fifteen students who reported studying as the main activity and two persons who were unemployed at the base village too engaged in prawn harvesting related activities at the temporary settlements.

Health

Acute illnesses

- Almost one-fourth (24%, 481/2017) of the sample reported being ill at least once during the 15 days preceding the day of interview (acute illnesses). The poorest households reported significantly higher morbidity (chi-square, p=0.005). There was no difference in the proportion of men and women reporting morbidity (chi-square=0.868, p=0.362 for all men and women; p=0.0.876 for men and women from the poorest category). Duration of illness reported by the respondents ranged from one day to twenty days, with half of those who reported illness reporting a duration of more than seven days (median = 7 days).
- Details about illnesses were available for 449/481 persons. Most common acute illnesses experienced during the 15 days preceding the survey were fever (70%,(312/449), skin problems such as itching, boils, rashes etc (10%, 45/449), and symptoms related to the gastro-intestinal system such as loss of appetite, constipation, dysentry and pain in the abdomen (8%, 37/449).
- The prawn harvesters believed that the weather (havamaan), prolonged contact with water and contaminated drinking water were responsible for ill health.
- Ninety percent (402/449) of persons sought treatment for an illness they had reported during the 15 days preceding the survey. Treatment seeking did not vary over the sex of the person and economic status of the household, but it was significantly higher (chi-square, p=0.000) for fever which is believed to be a serious condition that could prove fatal if not treated immediately.
- Besides seeking formal help for illnesses, the prawn harvesters also tried traditional home remedies and practiced religious customs for common health conditions. Traditional home remedies include fomentation for fever using salt-water, buttermilk, neem leaves, onion juice; use of jaggery, ginger, fennel seeds etc for stomachache etc.
- Information on source of treatment was available for 400 of 402 persons who reported having sought treatment. The private health care sector seemed to be the preferred source of treatment - 76% (304/400) persons reporting consultations with private practitioners.
- Three of the 402 persons who accessed health care were transported in 108 ambulance, the rest used rickshaw or personal vehicles to reach the health facility.
- Eleven percent (11%, 43/402) of the persons who reported illness during the 15 days preceding the survey

needed hospitalisation. Fever alone or with other symptoms accounted for majority (72%, 31/43) of the hospitalisations.

- Information on costs incurred on treatment of acute illnesses was available for 364 persons. Average (median) expenditure on treatment was Rs 230 (minimum Rs 5/- to maximum Rs. 20,000/-). The expenditure was higher for hospitalisations.
- Sources of finances for meeting the expenditure were available for 382 persons who reported illness during the fifteen days preceding the survey. Two-thirds (67%, 254/382) used personal savings, and the rest met the expenses by borrowing money from friends, relatives, prawn agents or by pawning household items. The source of finance was associated with the amount incurred, with people being forced to borrow or pawn items to meet the relatively higher costs of care.

Chronic illnesses

- More than ten percent (17%, 348/2017) of the prawn harvesters surveyed reported one or more chronic illnesses (300/348 reported one condition and 48 reported two conditions.) Reporting of chronic illnesses was significantly higher among women (Chi-square, p=0.000) and persons from the working age group of 18-45 years (p=0.000).
- Respiratory conditions including tuberculosis, conditions of the musculoskeletal system including joint pain, skin diseases and mental illnesses were the other commonly reported chronic health conditions.
- Reproductive health problems accounted for 81% (188/231) of the chronic illnesses among women in the 17-50 year age group. Lower backache (37%, 65/177), excessive vaginal discharge (24%, 42/177) and pain in the lower abdomen (10%, 18/177) were the most reported conditions.
- One third of the respondents who reported one or more chronic conditions had not sought treatment at base village and at temporary settlements. Information on the status of treatment at both the base village and the temporary settlement was available for 57% (179 of 316) of the persons who reported a chronic illness. Migration had more severe impact on women's access to health care. The proportion of men and women who reported having sought treatment for all chronic health conditions at both the base village and temporary settlements was 53% (53/100) and 22% (17/79).

Occupational health

- Details of activities 18-50 year old women carried out during the prawn harvesting season were available for 191 women. All except two women (189/191) for whom information on activities was available, reported being engaged in processing prawns only or with various other activities. More than two-thirds of these (69%, 132/191) carried out household chores and prawns processing. Skin diseases (63%, 123/191), posture related aches and pains (46%, 87/191) and headaches (27%, 52/191) were the most reported health problems among women.
- Ninety percent (258/288) of the men reported at least one occupational health problem. Data on activities was available for 258/259 men and information on health problem and activities was available for 257 men. Nearly all (97%, 251/258) of them reported being involved in catching prawns/ prawn harvesting only or along with other activities. As with women, skin diseases (66%, 168/257), posture related aches and pains (53%, 135/257), and weakness (23%, 58/257) were the most commonly reported health problems.

Maternal health

- The reported age at marriage ranged from 13- 25 for the 288 respondent women, with a median of 18 years.
- The number of total pregnancies reported by the respondents ranged from 0 - 13 (median 4). The number of living children ranged from 1 to 11 (median 4). The average (median) number of surviving male and female children was 2 (range: 0-9) and 1 (range: 0-7) respectively.

- Eighty-four (29%) of the 288 respondents reported having lost one or more children. The number of children reported dead ranged from 0 - 8 (mean 0.5, median 0).
- Utilisation of contraception was low; two-thirds of the respondents (66%, 189/288) did not use contraception. Oral contraceptive pills and Copper T were the most preferred methods with 42% (42/99) and 39% (39/99) women reporting these respectively. None of the women who did not have a living son had opted for terminal methods.
- Of the 288 respondents, 37 (13%) reported having delivered one or more children while at the temporary settlement (44 births). Only one woman had received IFA tablets and TT injection during pregnancy at the temporary settlement. Only one third (32%, 14/44) of the births took place in a hospital and four of these were instrument assisted deliveries. Of the 30 deliveries that took place at home, only four (13%) were attended to by a trained dai (ASHA worker) and the rest were assisted by untrained dais or women from the family. The component of post-partum care was found to be totally lacking at the temporary settlement.
- Group discussions and key informant interviews highlighted apathetic attitude of public sector health care providers. Women narrated instances of the ANM refusing to visit temporary settlements to conduct deliveries, and 108 ambulances refusing to collect patients from temporary settlements sighting poor road conditions as a reason. Documentation of vital demographic data like births and neonatal deaths too was found to be ridden with inaccuracies with inconsistencies between various government organisations entrusted with the responsibility.
- Indifference, lack of or delayed response, and disrespectful behaviour of the public sector health care providers was reported as one of the reasons for preference for private sector health services.

Conclusion

- The study highlights the lack of access to basic amenities such as potable water, sanitation, health care, transportation, education and public distribution system for the prawn harvesters from the LRK.
- The poorest are the worst affected from general deprivation - they rely more on poor quality water from the ditch, spend larger portions of their earnings on meeting needs of daily lives such as purchase of drinking water and engage in additional hardships of gathering firewood.
- Morbidity rates are higher than other tribal populations from the state probably as a result of combined effect of harsh environmental and work conditions, unhygienic living conditions and poor access to health care facilities.
- At temporary settlements, the women bear the double burden of household chores, and back-breaking work related to prawn harvesting which also keeps them in direct contact with prawns for long durations. These work conditions and prolonged contact with sea-food are known risk factors for health conditions including asthma, skin conditions and poor obstetric outcomes.

Recommendations

- The study findings point towards the urgent need for provision of basic amenities including drinking water, PDS shops, health care, sanitation and education at temporary settlements. Mobile schools and mobile health care vans can be arranged for the prawn harvester residents at the temporary settlements.
- Efforts should be made to free prawn harvesters from the control of agents. Social mobilisation and strengthening of cooperative societies could help the prawn harvesters gain the essential power to negotiate market rates.
- There is ample evidence in published literature that hints towards links between work, living environments similar to that experienced by the prawn harvesters of LRK and various health conditions commonly reported by the study population. Appropriate investigations should be carried out to assess the impact of various environmental and occupational risk factors on prawn harvesters' health. Based on the results, steps should be taken to minimise the adverse effect on health of residents at temporary settlements.

Introduction

Prawn harvesters from the Little Rann of Kutch, Gujarat, largely members of the Miyana community, are seasonal migrants from along the coastal areas of Gujarat, who leave their base villages for temporary settlements along the coast between July and October every year. The Little Rann of Kutch - 4,953 sq. kms in area - is spread across the jurisdiction of six districts of Gujarat-Surendranagar, Banasakantha, Jamnagar, Patan, Kutch and Rajkot. District Kutch is a growing economic and industrial hub in one of India's fastest growing states, Gujarat. The Little Rann of Kutch, is also the country's largest salt producer. The salt manufactured in the coastal area here contributes about 60 percent of the total salt produced in the country. While, the plight of salt pan workers has been well documented, not much is known about the prawn harvesters who share the same geographic area.

Traditionally, fishery - marine and inland - in Gujarat was largely a subsistence occupation. With a predominance of vegetarian Hindu population, the state's rich resource was not commercially harvested. Fisheries and especially prawn harvesting in Gujarat came into focus in the 1950s only after the Government of India emphasised the high potential for growth in agriculture and fisheries to support modernisation in post-independence period (Bavink and Johnson, 2008). In the 1950s and 1960s, a number of studies were carried out in the Gulf of Kutch and the Kutch region that documented and described prawn harvesting - the processes involved, gear used, characteristics of the catch, marketing processes and socio-economic conditions of the fisher folk engaged in the occupation. However, prawn harvesting in the Little Rann of Kutch (LRK) remained undocumented till the 1980s when the Department of Fisheries carried out the first study in the region (Rao, 1983). Some observations about the fisher folk engaged in prawn harvesting in the LRK are revealing: *"Living conditions of the fishermen are very poor at all these camps. There is acute shortage of drinking water, which at times has to be brought from 4 to 5 km away. The fishermen are generally heavily indebted as they are in the habit of borrowing beyond their repaying capacity. General condition of health is also very poor because of unhygienic practices and malnutrition. Generally the fishermen get very low price as a major share goes to the middle men, who act as the agents for the freezing factories. Most of the fishermen are not members of any co-operative society."* (Rao 1983)

Though more studies on the marine life and their contribution to the catch and the trade continued to be carried out through the 1980s, 1990s (Deshmukh, 2006) and the 2000s (Kizhakudan, undated), people of the region, especially the seasonal prawn harvesters rarely found mention in this literature. Even popular articles and blogs of informed visitors aimed at generating awareness about the riches of the Little Rann of Kutch talk about the migratory birds, insects, and the wild ass and about the plight of the salt pan workers who strive to survive in the harsh environs, but have mostly failed to notice the other occupants, especially the prawn harvesters from the area (Bunsha, 2006; http://www.shunya.net/Pictures/WesternIndia/Gujarat/LittleRannKutch/LittleRannOfKutch.htm). On rare occasions when they are written about (only in the last decade), the accounts are usually sketchy, and often in the context of humans interfering or interfacing with the bio-conservation efforts for the Rann of Kutch and adjacent areas (ATREE report, undated). A review of literature reveals that humans from the LRK, especially the seasonal prawn harvesters, have largely been invisible.

Remoteness and inaccessibility of the areas where seasonal prawn harvesting occurs (Rao, 1983; ATREE, http://www.envfor.nic.in/pt/LRK%20Final.pdf) may be partly responsible for this. Rao (1983) presenting findings from the first ever study of prawn harvesting in the LRK mentions having accessed preliminary information about the

settlements from traders from Veraval and Surajbari since the settlements were too remote and difficult to approach. Unfortunately the temporary settlements where the prawn harvesters camp during the season have continued to be so 'remote and unapproachable' that the communities were noticed by the NGOs for the first time after the 2001 earthquake (Patel M, VSSM, 2010 downloaded from - www.indianfolklore.org/journals/index.php/Mukt/article/download/.../1088). However, all those who managed to reach the temporary settlements of the seasonal prawn harvesters from the LRK have noted the poor conditions in which they live, the absence of potable water, hygiene (Rao, 1983), and the absence of all basic amenities and services provided by the Government to which all Indian citizens are entitled (ATREE downloaded from http://www.envfor.nic.in/pt/LRK%20Final.pdf). The prawn harvesters - largely from the Miyana community, do not have ration cards or voter cards (Patel, VSSM[1] , 2010 downloaded from - www.indianfolklore.org/journals/index.php/Mukt/article/download/.../1088), their hamlets are so remote that even information about government schemes do not reach them (ATREE downloaded from http://www.envfor.nic.in/pt/LRK%20Final.pdf).

In 2009, a small study carried out by Area Networking and Development Initiatives (ANANDI), a Gujarat based NGO working for the rights of the marginalized showed that the attitude of the public sector health care services towards prawn harvesters was apathetic. A review by verbal autopsy found that the proportion of neonatal deaths in the community was much higher than that reported by the local anganwadis / PHC. Though one could believe that this was due to under reporting of such deaths by the grieving families, the fact that the public sector facilities contradicted themselves in recording the dates of births and deaths for these children born in remote areas was disturbing. For example, in one of the 14 cases of neonatal deaths explored by ANANDI; a baby born on July 3rd, 2009; the note from Maliya CHC mentioned the birth date as August 5, 2009. For the same child, there was a death certificate for July 13, 2009 but the aanganwadi register mentioned the child's birth date as July 17, 2009 (ANANDI, unpublished). ANANDI's interactions with women from the prawn harvester communities revealed the pathetic situation regarding health care. The women spoke about the outreach workers' reluctance to provide services even for deliveries. They shared experiences of often delayed response and occasional no-response from the 108 emergency ambulance service. The most common reason for refusing to visit the temporary settlements given by the 108 services was that the settlements lacked proper access. The same settlements however are well accessed by the prawn merchants, their agents as well as a number of vendors and traders from across the district. There were stories of denial of basic amenities such as adequate drinking water leading to death by dehydration. (ANANDI, unpublished; Personal interactions with ANANDI team members). This is indeed ironic in an economically developed state.

However, till date, the specific health needs of this group have remained unexplored. The present study is an attempt to document the socio-economic and health condition of the prawn harvesters at temporary settlements along the coast. The study was conducted by CEHAT in collaboration with ANANDI which has a strong presence among the prawn harvesters since the 2001 earthquake in Gujarat. Apart from the findings about the health of the prawn harvesters, this study proved to be an enriching experience for both the organisations, CEHAT and ANANDI.

[1] VSSM: 'Vicharata Samuday Samarthan Manch' - the DNT-NT Rights Activism wing of Janpath - the wellknown Ahmedabad bsed NGO.

Background

Little Rann of Kutch (LRK)

The Little Rann of Kutch (LRK) occupies an area of 7000 sq km spread over five districts and ten talukas of the state of Gujarat (ATERE downloaded from http://www.envfor.nic.in/pt/LRK%20Final.pdf). Environment in the LRK is harsh with day temperatures reaching 50 degrees celcius in the summer and winter night temperatures at near-zero. For most part of the year, the LRK is a semi-arid mud flatland that is criss-crossed with dry or nearly dry river beds. During the monsoon water surging through the rivers - the Banas, the Saraswati, the Rupan, the Umai, the Chandrabhaga, the Phulka, the Kanakavati, the Bambhan, the Godadhroi and the Machchu-discharges in the Little Rann, submerges the flatlands and also connects the inland water channels with the Gulf of Kutch (Rajkot Gazette). This along with a number of environmental factors results in a unique environment. A number of contrasting situations co-exist in the LRK - rich bio-diversity and semi-arid conditions, a long coast line and acute shortage of potable water, vast stretches of land largely uncultivable and green cover provided by the Prosopis juliflora that soaks up more ground water than it harvests (ANANDI, Unpublished).

The LRK , remote and inaccessible until recently, has been undergoing a transition of sorts. Natural and man-made conditions have resulted in ecological changes. Breakdown of the boundary wall that was built to check desertification, the flooding of the villages with sea water and the ingress of salinity that rendered lands unproductive, reduced rainfall, human interventions such as introduction of Prosopis juliflora in the area that affects the ground water table adversely, are some of the changes underway at the LKR (ANANDI, unpublished). This has forced the communities that inhabit the landscape, the Koli, Patel, Maldhari, Dalit and Miyana, who traditionally depended on the natural resources of the LRK for subsistence (Rao, 1983), into opting for more viable sources of income. With increased soil salinity, salt farming has been the occupation among the people here. This has in turn adversely affected the natural ecosystem that supported the lives of some other communities, for example, the traditional fisher folk. With an increase in the area of land under salt farming, agricultural cultivation has deteriorated and this has affected animal husbandry, one of the main sources of income for some communities here. It has also negatively influenced the seasonal (monsoon) estuarine fishing for prawns (ATREE undated downloaded from http://www.envfor.nic.in/pt/LRK%20Final.pdf). During the monsoon, the rivers are flooded with fresh water and the sea rushes inland because of strong wind currents; this results in fertile estuarine conditions favourable for the production of prawns. The prawns migrate into the estuarine waters to breed and the juveniles are then harvested by the local traditional fishermen largely from the Miyana community, concentrated in the Maliya block of District (Rao, 1983; ATREE undated downloaded from http://www.envfor.nic.in/pt/LRK%20Final.pdf). With increased salinity, the conditions are not favourable for breeding of the local species and at some prawn harvesting sites, the yield has decreased over the years (based on an interview with a retired officer from the Department of Fisheries, October 2010).

Maliya Block[2]

Maliya block, home to 83,471 population (District Census Handbook, Rajkot, 2001) lies on the southern border of the Little Rann of Kutch. Situated in the proximity of the Gulf of Kutch, part of it is occupied by the Little Rann of Kutch. The environmental situation in this block is similar to that in other areas from the LRK. In most of the villages in this area, seawater enters the village boundaries during high tide. Breakdown of lengths of boundary

[2] Based on experiences and unpublished work of ANANDI

walls has aggravated the problem. The increased salinity of the soil and increased desertification as a result of recurrent cycles of drought and more recently cyclones have reduced the area that was once rich with its bio-diversity and highly fertile into a dry, barren and Prosopis juliflora (Gando Baval) dominated ecosystem.

Environmental degradation has also affected the availability of drinking water for these villages. Large village ponds that traditionally served as the source of drinking water have less holding capacity due to siltation and intrusion of Prosopis juliflora. Use of these ponds for irrigation, washing, bathing and as a water source for cattle and goats has reduced the availability of drinking water for the villagers.

Maliya is one of the most backward talukas of Gujarat. With severe and rapid erosion of natural resources, the last three decades have witnessed a breakdown of the traditional economies of agriculture and animal husbandry. Communities dependent on these traditional occupations now face the challenge of unsustainable livelihood systems, and hence increased marginalization. Out-migration as labour in neighbouring districts has increased.

In addition to the environmental degradation, lack of political power impedes the development of the population in the LRK. The villages often lack electricity, access to roads, health care facilities and other basic necessities. Summers are usually very harsh, with severe water shortage and the lack of livelihood opportunities.

The poor communities of this block comprise Koli, Harijans, Bharwad and Miyana. Most Kolis and Harijans of this region can be classified as marginal farmers and many are still landless. The Miyana community that gives a definite identity to the block (it is known as Maliya Miyana), follows Islam and is engaged in fishing, marginal farming, tile kilns, salt pans and other small trades. Other communities of this block are Ahirs, Patels and Darbars.

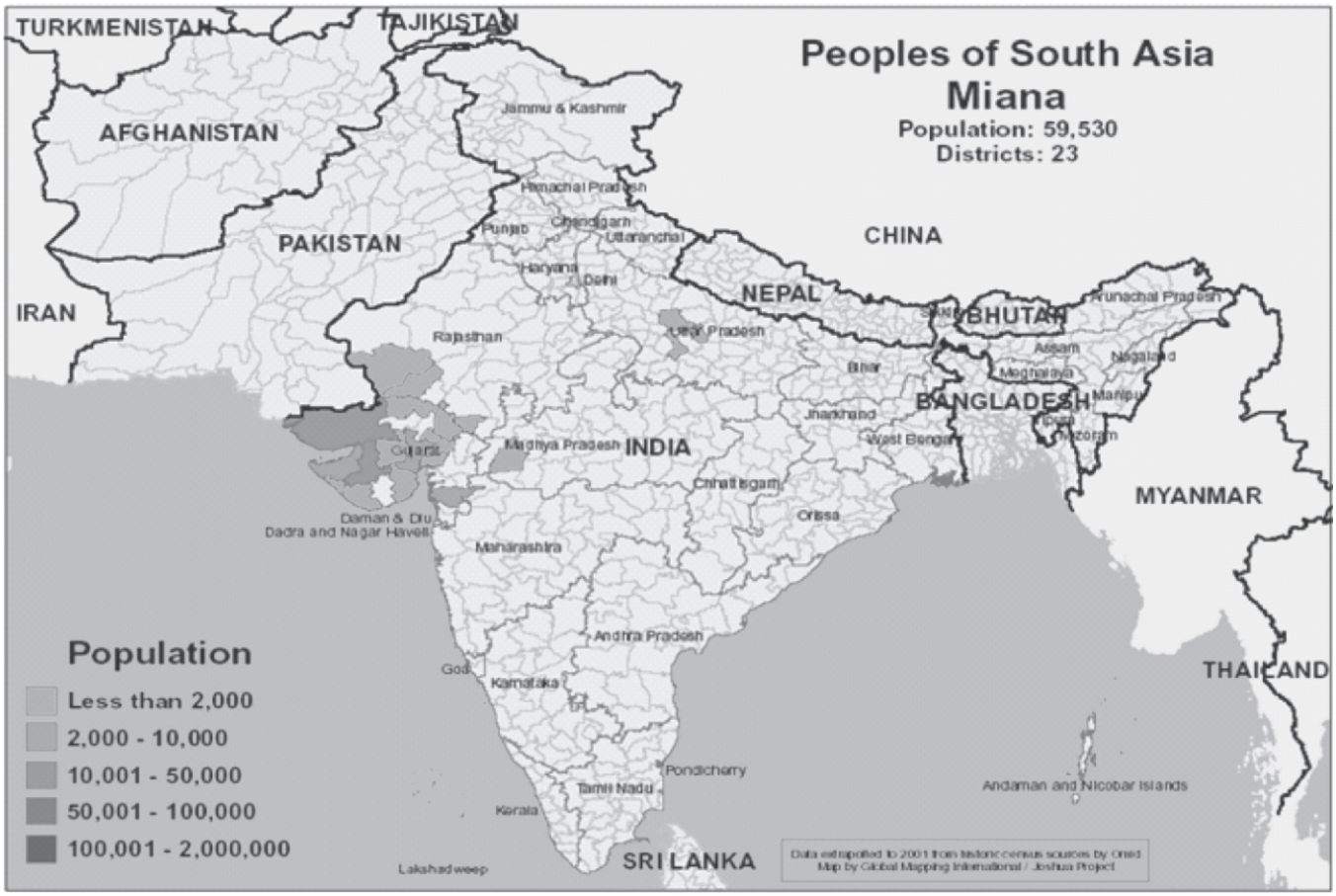
The Miyanas[3]

The Miyana community is largely concentrated in the LRK in India and in the Sindh province of Pakistan; in India, the community identifies itself as Rajput Muslims (Wikipedia). The population of the Miyanas in India, most of whom (nearly 65,000, 97%) are residents of Gujarat, was estimated at 67,000. The rest of the population is distributed over Rajasthan (300 persons), Maharashtra (90 persons) Madhya Pradesh (50 persons), and Uttar Pradesh (population unknown) (http://www.joshuaproject.net/peopctry.php?rop3=112979&rog3=IN accessed on June 19, 2009). Maliya and Halvad talukas from Rajkot and Surendranagar districts respectively have a concentration of Miyanas, which has resulted in the taluka being recognised as Maliya Miyana.

The Rajkot Gazette notes that the Miyanas who were fisherfolk from Sindh were invited from Kutch to Maliya in the last two decades of the nineteenth century by Maliya's first chief Morji who was trying to gain independence from his brother, the ruler of Morvi. The Miyanas were documented as a courageous but lawless people. The rulers, including the British, thought it necessary to keep them under control to prevent "them from straying from the beaten path" (Rajkot Gazette). Women's traditional clothing consisted of a dark/black ghaghra (skirt), choli (blouse) and a bright coloured (mostly red) dupatta (long scarf) which served as a veil to cover their faces. Distinctive earrings, toe rings and silver anklets formed part of the traditional attire of a married woman. Until a few years ago, women's mobility was restricted and they could move about only when accompanied by men (ANANDI, experience of interacting with the community).

[3] The Miyanas are also referred to as Mianas in literature

Map showing distribution of the Miyana Community in India



However, interventions by ANANDI and Paryavaran Vikas Kendra[4] have initiated a process of change among the Miyanas, especially among the women. There is increased mobility among the women. The change is apparent even in their attire, which is dictated more by practical use than age-old tradition. More women, especially the younger ones opt for the salwar-kameez, unmarried women prefer contemporary imitation jewellery in place of traditional gold and silver ornaments and fewer older women insist on veils to cover their faces. Women have now become more vocal as active members of the cooperative societies (Personal communication with seniors researchers of ANANDI).

There have been changes at the community level as well. Traditionally, the miyanas observe both Hindu and Muslim customs. For example, they celebrate Muslim festivals like Eid and at the same time observe Diwali and other Hindu festivals and worship Lord Ganesh. Their women folk apply kumkum (vermilion) on their foreheads. Their customs at the time of child birth, for instance, naming the child, resemble Hindu customs, and at the same time they follow Muslim customs in their marriage and death rituals. While they dress like Hindus, their food habits are like those of Muslims (Rajkot Gazette). However, since the Godhra riots and the communal tension, the Miyanas have started identifying themselves as Muslims and some of the Hindu customs mentioned in the earlier documentation (for instance, applying kumkum or Ganesh worship) are not prevalent anymore (ANANDI, field observations by researchers).

[4] Paryavaran Vikas Kendra (PVK) is a Rajkot based non-governmental organization engaged in rural development through interventions aimed at natural resource management. PVK belives in participatory development where the community members are partners in the process and the process itself results in the empowerment of the community. One of PVK's interventions at the prawn harvesters' settlements was water harvesting, which resulted in a sustained source of water as well as the settlements receiving piped water.

Miyanas are divided into many sub-divisions such as Jeda, Manek, Bhathi, Baidani Kajardia, Malan, Sandhvani, Ladhani, Musani, Sumerji, Sumera and Vagher. According to the community leaders, the surnames indicate the place of origin, for example, the Miyanas from Venasar carry the surname Jeda, while the Nothiars are from Fatehgarh (key informant interviews and interviews with community leaders from the Miyana community). Though the community as a whole is marginalized, there appears to be some subtle hierarchy within the community, between the clans, with the Movar, Jeda and Nothiars/Notyar being the relatively well-off families with clout in the community and ownership of fishing and other assets. (Informal discussions with representatives of the Miyana community, October 2010)

Historically, the Miyanas were considered a criminal community and were among one of the notified tribes from Bombay Presidency during the British rule. The Miyanas however consider themselves as fearless warriors. Stories of valor abound. One such "famous" outlaw from this community, "Valo NaMori" from Kajarada village features in the works of the renowned Gujarati author, Shri Jhaverchand Meghani (early 20th century). The Miyanas with their historical distrust of government systems are known to take recourse to their own 'law'. Use of knives and guns against 'enemies' is not uncommon (ANANDI, Unpublished).

The 'nomadic-warrior' lifestyle of the Miyanas was fostered by the then political environs. Before 1948, the existence of a number of small princely states in Saurashtra, at times with inter-state rivalry, provided an atmosphere which was conducive to the growth of criminals who could commit crimes in one state and then sneak away into the other, only a few miles away. As a result, they had no permanent dwellings and they lived the life of nomads. However, after independence and the integration of the princely states, they have settled around the areas of Maliya near Morbi (from which the area is known as Maliya Miyana). Though the sources have not been verified, some of the Miyanas claim to have documents that show that they settled down in Maliya at least a century ago. The Miyanas have their own traditional council and the headman or mukhiya presides over it. They maintain cordial relations with the Baniar, Lohana and other Hindu communities living in the region. Only sons inherit property among them.

Box 2.1: Origins of the Miyanas

The Miyanas themselves believe that the community had its origins among the Rajputs from Kutch. The group separated from the Rajputs about 500 years (approximately seven generations) ago. About five centuries ago, groups of fearless Rajputs from Sindh (now a province in Pakistan) who robbed wedding processions for a living, settled at Maliya which at that time was a ghost village. The early settlers settled among the ruins of buildings built during Moghul emperor, Babur's reign, hence they are also known as the babi community.

Another folk tale claims, (the Rajkot district Gazzette supports it) that the Miyanas settled at Maliya on invitation from the king of Morbi. Morbi was an erstwhile princely state and a large village near Maliya. The story goes somewhat like this - The king of Morbi had two sons. When the empire was divided between the two sons, one son dominated and got the bigger share. The other son took the help of the Miyanas to defeat his brother, and as a reward, promised to give the Miyanas a "Sainik Status" in his empire. After the victory, he kept his word. One family, considered to be the most erudite, was given the post of "sanchalak" (manager) and the place where that family lived was called the 'Darbar Ghar'. This place is situated 35 km from Maliya towards Kutch. (jadeja darbar, kshatriya). Later, this family acted as Raja for the Maliya community and their word is still considered final in any dispute or settlement.

(Source: Group Discussion with Mahila Machhimar Cooperative and Community representative)

The Rajput-Muslim identity and the introduction to fishing as a means of livelihood are explained in another folktale. About 500 years ago, Usman, a Muslim from Kutch (not a Miyana) came to Surajbari and married a Miyana girl. He started fishing at Surajbari now called 'Surajbari Bandar' and the community was introduced to fishing. Gradually, the Miyanas from nearby villages also took to fishing till the community developed an identity as a fishing community. Traditionally, the Miyanas fished for sustenance in the rivers that flow across the Little Rann of Kutch, Kajaraki, Hanjiyasar and, Mover and Surajbari.

(Source: ANANDI, group discussions with elders from the Miyana community)

Most Miyanas reside in remote areas in the LRK in small hamlets called 'vandhs' situated at a distance from the main villages. Typically a vandh consists of 25 to 30 families. There are about 40 such hamlets located at a distance of about 8 to 30 km from Maliya village.

As with other remote settlements in India, the vandhs remain beyond the reach of most government services and schemes. ANANDI observes that only 20% of the hamlets have schools or anganwadis. Only one hamlet receives

piped drinking water. Often women walk 3 to 5 km to fetch water for drinking and other household purposes. There are no approach roads, and it is very difficult for the residents to negotiate the flooded flatlands, especially in the monsoon, to access health care or for the children to go to school. Education in these areas is a problem as teachers have to travel long distances and there is hardly any check on them. (ANANDI unpublished, personal communications with ANANDI team)

Traditionally, the Miyanas engaged in rain fed agriculture as well as seasonal (monsoon) fisheries in the estuaries of LRK. However, over the past three-four decades, there has been a shift in occupation with the salinity ingress, increasing aridity, decreased rainfall, increased salt farming in the area and spread of Prosopis juliflora, monsoon fisheries, farming and salt pan labor (in that order) have become the main sources of income for the Miyanas.

Gambling is a major problem in the Miyana community which further contributes to the marginalization of the households. Though women actively contribute to livelihood, their status is lower than men and social customs are oppressive towards them. Notable participation in social activities is seen only post 2001 earthquake with interventions by ANANDI (ANANDI, unpublished).

Seasonal Prawn Fishery in LRK

The seasonal prawn fishery in the LRK takes place on about 1200 sq km area out of the 7000 sq km (Rao, 1983) and is influenced by rainfall in the Rann of Kutch which ensures floods, controls salinity, and immigration of prawn larvae into the creeks. This movement is aided by strong monsoon winds that create near-surface currents in the water. Ample availability of food that supports the specific species of prawns that migrate into the creeks in LRK and the estuarine conditions of the creek result in good nursery grounds for the breeding of the prawn species (Metapenaeus kutchensis) between July and September (Deshmukh, 2006). The prawn harvesters keep track of the movement of the prawn juveniles and catch these when they reach an economically viable size (Rao, 1983).

The seasonal prawn fishery in Maliya taluka and Navlakhi in Rajkot district is a commercially important fishery in Gujarat. Prawns account for more than 90% of the fish catch from Rajkot district. Other commercially important varieties of fish caught in this district include palla (8%), mullets, cat fish, trichurus, zinga and mandelli (2%) (ANANDI, unpublished).

The seasonal (monsoon) prawn fishery lasts for a period of three to four months. The season starts with the advent of the monsoon in July and goes on till October. The maximum landing is reported between August and September (Rao, 1983; interview with a retired officer from the fisheries department at Rajkot, a key informant). Prawn catching is remunerative when the season is favorable. As per one estimate there are about 2500 families involved in this activity. Each year, the prawn harvesters migrate from base villages to the settlements along the shores in LRK. The distance between settlements and base villages ranges from 3 km to 50 km. Unlike many other seasonal migrants, the prawn harvesters migrate with the entire family and most of their livestock. Temporary structures made of plastic and cloth serve as shelter for the period of prawn harvesting.

The Miyanas employ traditional fishing techniques that are eco-friendly and therefore do not contribute to the exploitation of natural resources (Kizhakudan and Kizhakudan, 2005). Traditionally, the Miyanas used a bag net called gunja made of cotton twine of 20/12 ply. The net is conical in shape with a wide quadrangular mouth and a long tapering conical cod end that can be transferred into the boat without disturbing the position and fixation of the net. This bag net can be used both as stake net or dragnet. The mesh size from mouth to cod end varies from 1" to 1/6". The nets are operated in creeks with the mouths directed against the water current and the length varies from 16 ft to 20 ft. from mouth to the cod end. The quadrangular mouth has a circumference of 20 ft. Over the years the

fishing gear used by the prawn harvesters is modernized. Having realizied the advantages of using nylon gear, fishermen have switched over to nylon nets. The gill net has a length of 30 ft. on the head rope with a breadth of 6 ft., 30 to 40 such units are used in one complete fleet of nets used by one boat. (Gujarat State Gazetteers- Rajkot district; Nair, 2005 , Rao, 1983). The prawn harvesters typically use flat bottommed plank-built boats which are convenient to ply in the tidal waters and marshy places. Fishermen in Navlakhi use the larger boats trawlers (Kizhakudan and Kizhakudan, 2005). Recently, economically better off prawn harvester families have shifted to sturdier, lighter fiber glass boats (personal communication with community representatives, and with ANANDI representatives).

Often the prawn harvesters operate at night. The gunja-bagnet is either used as a stake net where two people with a boat can operate seven to eight nets, or as a dragnet where two persons hold sticks tied to the sides of the net and drag it along the bottom of the creek in waters with less than 0.75 meter depth and low tidal force. In case it is used as a dragnet, the boat is used only to transport the catch (Rao, 1983). The operators of dragnets are called pagadiyas.

Economics of Seasonal Prawn Harvesting at Maliya and Halvad Talukas

Exploitation of the prawn harvesters at the hands of the traders and their agents has been documented by the Department of Fisheries in 1980 (Rao, 1983). Though prawn harvesting is a lucrative business and a good catch of prawns earns well in the market, the Miyanas who toil for harvesting the catch get only a marginal share of the gains. A value chain analysis of seasonal prawn harvesting in LRK showed that the packaging units in Veraval that ship prawns to other countries earn seven times the price earned by the prawn harvesters in LRK (ANANDI- SPJain unpublished).

A large proportion of the seasonal earnings which form the main income for most of these poor families are spent on settling earlier loans, on repairing fishing gear, on travelling to and living in the temporary settlements. Health care and social events like marriages account for large unplanned sudden expenditure.

The seasonal income in itself depends on a number of factors beyond the control of the prawn harvesters. Environmental conditions like the monsoon, temperature and salinity of the creeks determine the volume of the prawn catch. Additionally, different locations along the shore record different volumes of landings and prawn harvesters go to a place which has higher landing benefits from the catch. According to a key informant, a retired officer from the Fisheries Department from Rajkot, the volume of catch or landing varies across settlements even within the season and is controlled by the progress of the land bound movement of monsoon winds. Adequate fishing gear and helping hands matter too. Families that can migrate from one temporary settlement to another during the season have better chances of earning (Key informant interview, October 2010).

The Miyanas' Involvement in Prawn Harvesting

The Miyana community's engagement in prawn harvesting makes for an interesting story. According to the community elders, for Miyanas though traditionally engaged in estuarine and marine fishing, prawn harvesting was not the focus till the 1960s. Alienated from the world and confined to the remote areas of the LRK, the community was completely unaware of the commercial value of prawns. It was the Fisheries Department that educated the community about the commercial value of prawns - "told them that prawns were the most expensive fish in other Indian cities as well as abroad" - and thus initiated them into prawn harvesting. Encouraged, the Miyanas started actively engaging with prawn harvesting along with capturing other fish. As part of the promotion of prawn harvesting in the area, the Fisheries Department extended gear like boats and nets, provided information about the techniques for prawn harvesting and purchased the catch at fair price. Since then the Miyanas have made prawn harvesting their main

activity, and the fish they earlier were keen on capturing have assumed a secondary status to the prawns. Changes in the employment opportunities in the region that were gradually taking place in the 1960s and 1970s, with a reduction in income from other occupations like farming, labour and robbery, meant that prawn harvesting though seasonal became the main source of income for the Miyana residents of the LRK and adjoining areas.

Though details were not available, according to the community elders, support from the Fisheries Department ended about 20 - 25 years ago, probably with change in policies, and private traders and agents representing processing plants from Veraval took over. Some key informants believed that the inability of the prawn harvesters to pay off the loans extended by the Fisheries Department (Rs. 6000 - 7000 each) for purchase of gear within a stipulated period of five years resulted in the Department's withdrawal (Group discussions with representatives of the Miyana community). In the period of waning government support, a few members of the prawn harvester community facilitated the entry of the private traders by selling their catch to the traders at a price higher than the government price.

Over period the private market became more competitive as the private companies started hiring independent agents, who would buy the prawns from the harvesters and transport them to the company locations. In the initial stages, there were fewer numbers of agents and they were fixed for each company. An informal system formed with the agents tying up with certain prawn harvesters. The agents took on the role that the Fisheries Department had played in the initial years, that of providing the advance for professional and personal reasons and ensuring a guaranteed purchase of the catch. According to the community elders, the agents at that time "provided good compensation". The loan repayment was adjusted against the ensured price of the catch - "if the family had taken an advance, they used to get Rs. 50 less per carton of prawns (dabba) and thus used to pay off the loans throughout the season".

The reportedly harmonious and mutually beneficial situation eroded into an exploitative one with the gradual increase in the number of agents and with increased demand for and commercial value of prawns. Over the years persons with vested interests forcibly took control of the settlements and compelled the prawn harvesters to sell the prawns to them. In addition to affecting the wellbeing of the prawn harvesters this change also affected the agents adversely. They became vulnerable as their primary source of income was jeopardised. Exponentially increasing costs of transportation, storage and labour, not matched by the price paid by the companies have made survival more difficult for the agents. Declining quality and quantity of the catch and non-repayment of loans by some of the prawn harvesters have further affected the economic situation of some agents.Many agents suffered losses when a union defrauded them. (Informal discussions with agents and elders from the prawn harvester community).

Fisher Folks' Cooperatives in the LRK

Establishment of fishing cooperatives was a part of the Gujarat Government's policies in the 1960s for encouraging equitable development in the fisheries sector. For some period, introduction of modernization and establishment of cooperatives matched pace. However, gradually the focus of the fisheries industry shifted from equitable development to maximizing potential. The cooperatives failed to make an impact on the market situation except for providing initial encouragement to the fisher folk to engage in prawn harvesting. The fishing cooperatives in Gujarat thus remained as mere channels for reaching the government schemes to the people (Bavink and Johnson, 2008).

Azad Mahila Machhimar Cooperative (AMMC) of Prawn Harvesters

A discussion was held with members of the Azad Mahila Macchimar Cooperative to understand the origin and impact of the cooperative on the lives of the prawn harvesters from the LRK. According to the group members, before AMMC, there were two Mandals called the - Sultani Mandali and the Bahulakshmi Mandali at Surajbari.

A particular community leader had a strong hold over the community. Also, salt pans did not exist at the time. However, after the death of this community leader, the mandalis dissolved. Around the same time salt farming started in this area which had a downward spiralling impact on the prawn harvester community from the area, mostly Miyanas . Salt farming in the vicinity of the prawn harvesting sites increased the salinity of the estuarine waters and affected the fish catch at the settlement. Reduced catch resulted in the community looking out for alternative wage earning opportunities that the salt farms provided. (Group discussion with representatives of AMMC.)

Following the Gujarat earthquake of 2001, ANANDI came to this village (and the Maliya area) as part of the rehabilitation agencies. ANANDI in collaboration with Paryavaran Vikas Kendra (PVK) suggested that the women in the community form a women's self help group (SHG). Earlier, women resisted the idea due to social mobility constraints. After some time through many meetings, the women were convinced that they could approach their husbands and families to support such initiatives. But it did not happen, so they finally decided to form their self-administered women's group in spite of resistance from the community.

The group started with 30 members and with a contribution of Rs. 10/- per month. The number of members increased to 50 over time, and later was divided into three groups, as the bank and members of ANANDI suggested that a group of 10-15 was easier to handle. The women were trained by Paryavaran Vikas Kendra to deal with all the administrative and management requirements. Through this SHG, many fisherwomen have received loan amounts up to Rs. 6000/- to buy nets and other fishing equipment.

The training provided to the prawn harvesters by the Fisheries Department in 2005 helped the women realize their dependency on agents for business, and therefore, they decided to form a cooperative. As they did not know how to form and run a cooperative, they visited Mahavir Cooperative in Mang which is run by women with the help of ANANDI. In 2007, they applied to the Fisheries Department for the registration of their cooperative and finally in 2008, the Azad Mahila Machimar Cooperative was formally registered and established.

The main reason for the formation of AMMC was to control the increasing exploitation of prawn harvesters by agents, to work collectively to improve the conditions of living, to work at the temporary setttlements and hamlets and to mainstream gender concerns in this sector (ANANDI, unpublished). The cooperative has helped fishermen in getting licences for pagariya[5] . The cost was Rs. 200/- for getting a new licence and the renewal charge, Rs.100/- p.a. Licence for women who sell fish cost Rs. 50/- for new as well as renewal p.a. Boat licence was Rs. 500/- for new and renewal charges, Rs. 350/-. For a mechanized boat, the licence costs 1000/- p.a.[6] The cooperative also helps the prawn harvesters acquire information about the new technology and equipment for fishing. Member fisher folk have also been provided with ice boxes for transporting the prawns.

Challenges Faced and Work Accomplished by the Cooperative

Being a nomadic and notified community in the past, most members of the Miyana community do not have basic identifying documents such as ration cards or voter cards (Patel, VSSM 2010 downloaded from www.indianfolklore.org/journals/index.php/Mukt/article/download/.../1088). This posed an obstacle while applying for registration and resulted in delay. The cooperative took the first step by applying for registration for selling fish for women. Later they applied for registration for men for catching fish. Licensing and registration for the boats owned by the community is still pending, but the cooperative hopes to start working on it soon. The cooperative

[5] Prawn harvesters who walk and catch prawn.

[6] Per annum is indicative of per season.

also provides help to the community members to renew the licenses at regular periods to ensure their validity. It also helped the women members to access fish storage boxes through government schemes.

The cooperative, with the help of ANANDI, works towards facilitating the community's access to government schemes and also spreading awareness about these schemes and their rights and sharing experiences with other village women to help them forming their cooperatives and SHGs. The agents at the settlements started dealing in bulk at lower prices than the average market rate of prawns at the settlement, which has affected largely the profits of the cooperative who deals with the market price. During the group discussion, the cooperative members said that the cooperative was working on this issue by trying to liaise with private fishing companies and factories.The members of the cooperative belived that by dealing directly with the companies and processing units, the cooperative would be able to influence the market price for the catch and thus put an end to the exploitation by agents. Yet, the presence of the cooperative has already benefitted the prawn harvesters. According to the members of the AMMC, since the formation of the cooperative, the prawn harvesters have started receiving timely payments from the agents. The fishermen also get a better price for the catch from agents. The corruption by the agents, dishonesty in the measurement of catch, and the price paid for the catch has reduced. (Group discussion with members of the AMMC).

Though men too have benefited from the women's cooperative, the community does not have any men's cooperatives. Commenting on this the women said that there was one attempt by men in the community to form a cooperative, but one of the members and leaders misused the funds and there were many power struggles, so it could not be formed. The women decided not to include any men in their cooperative, as this would possibly result in power conflict due to gender inequalities. The women believe that men's organisations are not very stable, and it is easier to get loans for mahila sangathan. Hence, there were no further initiatives for organising men.

Socio-economic Condition of the Community

Uncertainties inherent to the occupation, exploitation by agents, poor literacy and awareness about the market as well as one's civic rights, lack of basic amenities and a general apathy by the public sector services has had implications for the health status of the prawn harvester community. At the Gujarat Social Forum, in a workshop organised to discuss the draft policy of communitisation of public health services in 2007, prawn harvesters were one of the groups of 'floating population' that spoke about denial of basic health services to them. Discrimination against many of these communities was layered with access to other public services such as water, sanitation, food, education also being non-existent in places where they lived and worked. This was becuase they were from the lower castes or engaged in lowly occupations and were located in areas which were relatively "far" for public servants to access.

The need for objective data to support advocacy for the rights of these groups too was discussed at the Forum. The present study was a response to this felt need. CEHAT in collaboration with ANANDI designed and carried out the present study to document the living conditions of the prawn harvesters, and availability and access to essential services. The study also explored general, chronic and occupational health status and the extent of availability and utilization of health services among the prawn harvesters.

The specific objectives of the study were

1. To study the various factors that compelled the Miyana community to continue to engage in fish prawn work over generations.
2. To understand the socio-economic profile of the prawn harvesters at their temporary settlements.
3. To assess the reach of mandated government schemes (basic and essential services) at the temporary settlements.
4. To identify the general morbidity pattern of health of prawn harvesters at the temporary settlements.
5. To report women's health problems at the temporary settlements.
6. To report the occupational health problems among prawn harvesters (men and women) at the temporary settlements.
7. To understand the health seeking behaviour (utilization and expenditure) of prawn harvesters at their temporary settlements.

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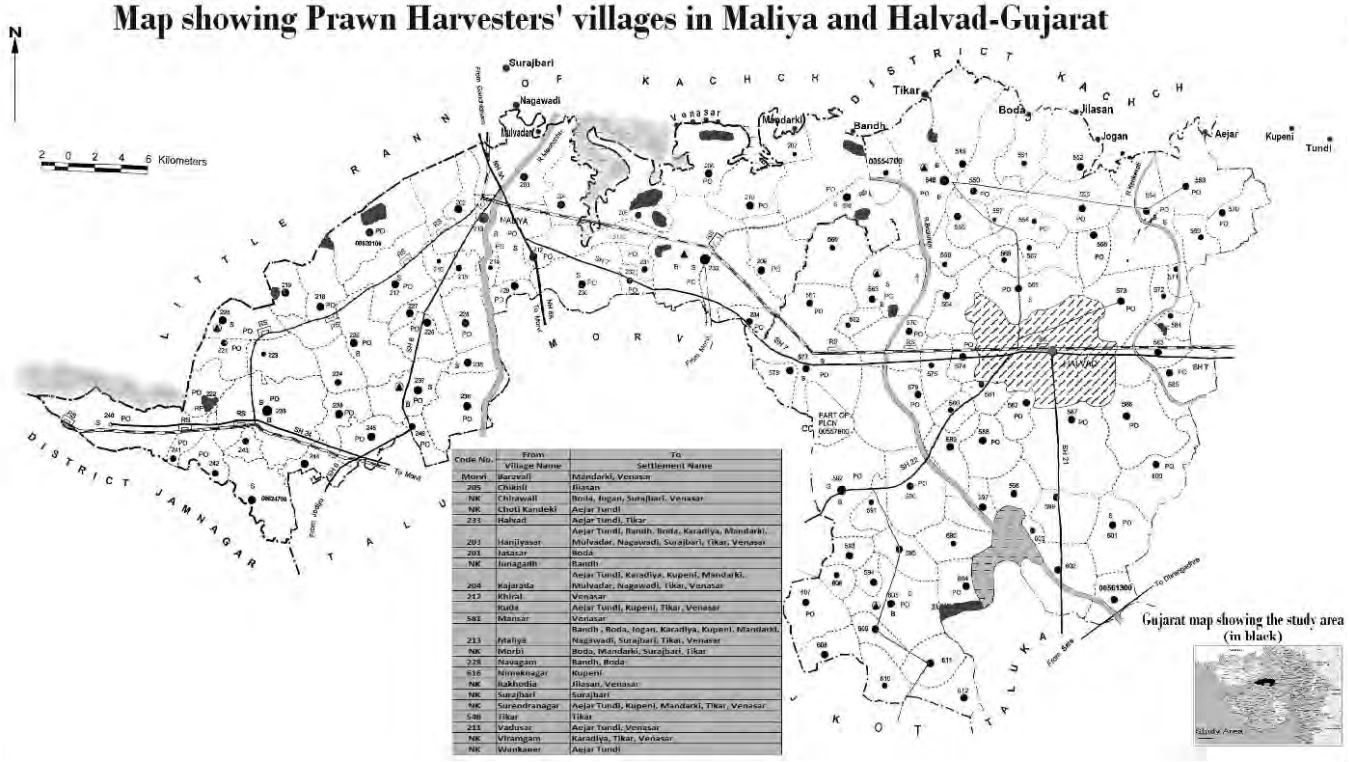
Methodology

Study Area

The present study was conducted in the Western Indian state of Gujarat in 13 temporary settlements of prawn harvesters from the Little Rann of Kutchh. The temporary settlements are spread along the stretch of 50 km of coast across the districts Rajkot (Taluka Maliya) and Surendranagar (Taluka Halvad).



Code No.	From Village Name	To Settlement Name
Morvi	Barawali	Mandarki, Venasar
205	Chikhli	Jilasan
NK	Chirawali	Boda, Jogan, Surajbari, Venasar
NK	Choti Kandeki	Aejar Tundi
231	Hahad	Aejar Tundi, Tikar
201	Hanjiyasar	Aejar Tundi, Bandh, Boda, Karadiya, Mandarki, Mulvadar, Nagavadi, Surajbari, Tikar, Venasar
201	Jalasar	Boda
NK	Juragadh	Bandh
204	Kajarada	Aejar Tundi, Karadiya, Kupeni, Mandarki, Mulvadar, Nagavadi, Tikar, Venasar
212	Khiral	Venasar
582	Kuda	Aejar Tundi, Kupeni, Tikar, Venasar
	Mansar	Venasar
213	Maliya	Bandh , Boda, Jogan, Karadiya, Kupeni, Mandarki, Nagavadi, Surajbari, Tikar, Venasar
NK	Morbi	Boda, Mandarki, Surajbari, Tikar
228	Navagam	Bandh, Boda
636	Nimeknagar	Kupeni
NK	Rakhodia	Jilasan, Venasar
NK	Surajbari	Surajbari
NK	Surendranagar	Aejar Tundi, Kupeni, Mandarki, Tikar, Venasar
588	Tikar	Tikar
211	Vadvasr	Aejar Tundi, Venasar
NK	Viramgam	Karadiya, Tikar, Venasar
NK	Wankaner	Aejar Tundi

ANANDI, one of the partner NGOs in the study has extensive experience of working on the issues of prawn harvesters from the Little Rann of Kutch. The collective insight of the ANANDI team provided the background for developing the present exploration.

Sample Size

At the planning stage of the study, a sample size of 353 households across the 13 temporary settlements was arrived at using a statistical formula to provide a confidence level of 95% and a precision of 0.5. The details of the procedure employed in calculating the sample size are presented in Annexure 1.

However, due to practical constraints[7], at the time of data collection, a more practical sampling method was adopted and 10% of all households at the selected temporary settlements at the time of the survey were included in the sample. This yielded a sample size of 290 households. Two of the selected 290 households refused participation in the study. The analysis presented in this report is based on 288 households that agreed to participate in the study.

[7] The year this study was planned, the monsoon was delayed by almost a month and some of the prawn harvesters who had migrated to the temporary settlements in anticipation of the prawn harvesting season had to return to the base villages. The survey could not be postponed to the following year because of the limited time frame available to CEHAT.

In addition to the survey, interviews were conducted with 11 key informants and group discussions were held with 12 representatives of the community.

Observations of the investigators recorded in unstructured format, formed the context against which the results of the exploration are presented.

At the time of analysis, some gaps in the data became apparent. A two day field trip was planned to address these gaps. In October 2010, researchers from CEHAT and ANANDI visited Nagavadi and spoke with women to collect the required information. Insights and information gained from this interaction too has been incorporated into the report and the source has been mentioned.

Table 3.1: Profile of Key Informants

Code	Criteria for selection	Age (years)	Sex	Settlement
KI1	Community leader, member / Chairperson / Office Bearer of Fishing Cooperative	52	Male	Aejar, Kupeni Tundi
KI2	Community leader	55	Male	Bandh
KI3	Community leader	35	Male	Bandh
KI4	Community leader	55	Male	Boda
KI5	Community leader	45	Female	Boda
KI6	Community leader	55	Male	Cherawadi
KI7	Community leader	48	Male	Cherawadi
KI8	Has been going to this place for prawn harvesting for a number of years	42	Female	Karadiya
KI9	President of XXX Mahila Macchimar Sahakari Mandali	45	Female	Nagawadi
KI10	Community leader	42	Female	Venasar
KI11	Medical Officer at a YYY PHC	40	Male	Maliya
K12	Retired officer, Department of Fisheries, Rajkot	Not asked	Male	Not applicable

Sample Selection

Households

Households were randomly selected from all 13 temporary settlements using the physical listings of the households conducted by ANANDI. Only households where a female member of the household (in the age group of 15-49 years) was present were included in the study.

In all temporary settlements except Venasar Khadi (which is included in Venasar due to its proximity to the Venasar settlement), the households were selected randomly following a pre-decided system (explained in Annexure 1). In Venasar where very few households had set up base at the time of the initial contact, the selection was not random. At this settlement, at the request of the community leaders, households were selected to represent base villages from where the prawn harvesters migrated to this settlement.

Table 3.2: Sample Size over Selected Temporary Settlements

Temporary Settlement	Number of households		
	Total	Intended sample size	Completed sample size
1. Surajbari	445	44	44
2. Venasar#	417	42	41*
3. Mandarki	182	18	18
4. Karadiya	178	18	18
5. Bandh	167	16	16
6. Jilasan	79	9	9
7. Mulvadar	113	11	11
8. Nagavadi	428	42	42
9. Boda	141	14	14
10. Jogan	29	3	3
11. Anjar, Tundi	116	11	11
12. Kupeni	106	10	10
13. Tikar	497	52	51*
Total	**2898**	**290**	**288**

**One household each from Venasar and Tikar refused to participate in the study. (In Venasar in one household the proposed respondent refused an interview as she had to take her son to the hospital. In Tikar, the identified woman respondent refused because she was busy cooking for her family and could not spare time for the interview. The investigators also noted that her husband did not allow her to talk to the interviewers. #In Venasar, the selection of households was not random.)*

Respondents

Different persons from the selected households participated as respondents for different components of the study.

A married woman in the reproductive age group of 15-50 years from each of the selected households was interviewed to gain information on the socio-demographic-economic status of the household as well as to document general morbidities reported for the male and female members of the household, women's reproductive morbidities, maternal morbidities and occupational morbidities for women from the household. If the identified woman respondent was not able to give information on age, education and income of the household members, a senior (male or female) member of the household was administered the same question. In case more than one woman in a household met the inclusion criteria, a married woman who had been migrating to the temporary settlement for the maximum number of years, and who gave consent for participation was selected as the respondent.

One adult male member from the same household, who was involved in prawn harvesting and agreed to participate in the study was administered the section on occupational health hazards for men.

Tools

A structured interview schedule was used for collecting socio-economic as well as morbidity data. The tool was finalised after pilot testing. Subsequent revisions were it more appropriate for the present study. Data collected during pilot testing were not included in the main survey data. The survey tool was finalised in consultation with ANANDI. The process of finalisation of the survey tool is presented in Box 3.1.

Box 3.1: Process of Developing the Tools

- *Experiences of ANANDI team provided the context for development of tools*
- *Available published literature on migration and health of migrants were reviewed to identify key issues*
- *Tools were drafted in consultation with ANANDI*
- *Draft tools were reviewed by the Peer Development Committee and Ethics Committee at CEHAT*
- *Tools were modified according to the suggestions of the Ethics Committee and ethical clearance was obtained*
- *The revised tools were translated into Gujarati /local dialect by ANANDI*
- *CEHAT and ANANDI team members trained the research investigators for conducting data collection*
- *The tools were pilot tested outside the study area of the selected 13 temporary settlements among Miyana households from a village in Maliya Block*
- *The pilot testing provided insights about colloquial and regional terms used for issues covered by the study and these were incorporated and the tools were finalised.*

Interviews with key informants were documented using an open-ended interview schedule that explored the history of Miyanas, socio-cultural practices, health status, essential health services, public distribution system and education system.

Group discussions and group interviews were conducted using a discussion guide, which explored the history of the Miyanas, their migration to the temporary settlements and the role of Mahila Macchimar (Fisherfolks') Cooperatives in the trade of prawn harvesting in the Little Rann of Kutch .

Observations by field investigators as well as supervisory staff were documented in the form of a diary in an unstructured format. These diaries also documented the researchers' interactions with settlers in the temporary settlements who were not included in the sample. At times, due to their insistence, information on all issues covered in the interview schedule was collected from these persons though the households were not included in the sample. This information was not included for analysis. At times, when the field investigators' notes were abrupt, debriefings were conducted and issues presented during these were summarised.

All tools used for the study are included as Annexures 2 and 3.

Data Collection

The survey and key informant interviews were conducted by two male and two female research investigators and a male supervisor who supervised the data collection process. Both the male investigators and the field supervisor were members of the ANANDI team and from the Miyana community. The survey was conducted by a pair consisting of a male and female investigator. The male research investigator collected information about the socio-economic-demographic profile of the household and later the female research investigator interviewed the selected woman respondent for documenting morbidities, especially those concerned with reproductive and maternal health. The research investigators were trained prior to data collection and were given instruction sheets with detailed instructions for each question. The interviews were conducted in the local dialect that the respondents normally speak.

The group discussions/group interviews were conducted by trained researchers from CEHAT in pairs, in the presence of representatives of ANANDI. The group discussions/interviews were conducted in Hindi; ANANDI representatives present during the discussions/interviews facilitated the discussions/ communication in case of language barriers. Notes were taken by a researcher/co-facilitator at the time of the discussion/interview and expanded later into English to present salient points.

The sample households were contacted for the survey about one month after they had moved to the temporary settlement, between August and October 2009.

A brief description of the key areas explored in the study (components), the respondents and nature of information collected is presented in Table 3.3.

Table 3.3: Components of the Present Study

Component	Technique	Sample size and respondents / participants	Whom did the component get information on?	What was the information gathered?
Socio-economic-demographic profile of the sample population	Household survey	288 households	All members of the household Household	Socio-demographic-economic information. Information on living conditions of the household at the temporary settlemen
General morbidity	Household survey	2017 persons from selected households	All members of the household	Illnesses experienced in the 15 days preceding the interview Duration, perceived causes, healthseeking behaviour and costs of health seeking Reasons for not seeking treatment Problems faced in availing treatment Chronic illnesses Duration of illness, nature of treatment sought at base village and at the temporary settlement, reasons for not seeking treatment
Women's reproductive health and maternal health	Household survey	288 women respondents from reproductive age group from selected households	Women respondents themselves	Obstetric history, use of contraception, reproductive health problems, health seeking, costs
Occupational morbidity	Household survey	288 women from reproductive age group 288 men involved in prawn harvesting	All men and women earners from the household	Nature of morbidity, activities in which the person is involved and health seeking
Background information on the prawn harvesters	Group discussion	One group discussion with men and women from Hanjiyasar village at the initial stage of the study. Participants were from a wide age group - men (25-65), women (30-60 years) and a woman who was around 100 years old.	The prawn harvester community at temporary settlements	History of prawn harvesting in Little Rann of Kutch / at temporary settlements, process of prawn harvest, equipments required for prawn harvesting, role of the Fisherfolk's Cooperatives
	Group discussion	One group discussion with women (age 25 – 70) from Mahila Machhimar Sangathan and three male members (18-85) from the Miyana community	The Miyana community	History of Miyana community, their engagement in fishing, migration History of prawn harvesting in Little Rann of Kutch / at temporary settlements, role of the Fisherfolk's Cooperatives

Component	Technique	Sample size and respondents / participants	Whom did the component get information on?	What was the information gathered?
	Group discussion	One group discussion with both men (age 30 – 70 years) and women (age 25 – 60 years) members in the community at base village Venasar	The Miyana community	History of Miyana/prawn harvesters. Alternate occupation at the base village Gendered division of work at the settlement and in the base village, Process of prawn harvest, Social and cultural rituals in the community, Health condition of the prawn harvesters at the base village and settlement, Income at the settlement and base village Women were asked about the reproductive health problems.
	Group discussion	One group discussion with men and women members in the community at Karadiya Settlement	Households Men and women	Duration of their stay at the present settlement Health problems Health services available Drinking water facility The questionnaire was pilot tested at this settlement.
Background information on the prawn harvesters	Interviews with key informants	11 persons who were either community elders, leaders or influential persons from the community	Temporary settlements	Historical perspective on temporary settlements, the trade of prawn harvesting at the temporary settlements, role of Fisherfolks' Cooperatives, profile of the migrant prawn harvesters, access to health, education, public distribution system services for the prawn harvesters.

Data Analysis

The survey data was coded using pre-determined codes, entered and analysed using SPSS, version 12. Simple frequency tables and bivariate analysis was carried out, tests of significance such as chi-square, Mann-Whitney, Kruskal-Wallis Tests were used where applicable to provide answers to the research questions.

Key informant interviews were translated into English and salient points from these interviews were summarised thematically.

Group discussions/group interviews were summarised thematically.

Key points/observations from researchers' field notes were summarised and summaries were translated into English.

Qualitative information from key informants' interviews, group discussions/interviews, observations recorded by research investigators is used to provide the background and context for the learnings emerging from the household survey. Where qualitative data are used to support the quantitative data in this report, the source has been mentioned.

Ethical Issues

Consent

The interviews were conducted after informed consent at the community, household and individual levels. The detailed process of seeking consent is presented below.

Community level

At the time of their first visit to the temporary settlement, the research investigators met with the community leaders, elders and influential persons and explained about the purpose of study - that the study aimed to document the living conditions and health status of the prawn harvesters at the temporary settlements. Often the community representatives expressed expectations of help, in cash or kind from the researchers and enquired about the benefit to the community from participating in the research. The researchers explained that the individuals or households would not be offered any benefits in cash or kind for participating in the survey. They also explained that there would be no short term benefits for the community. However, the study findings would be compiled into a report which would be shared with the community and the government officials and "it will definitely help to lobby with the state officials and bureaucrats for provisioning of basic health services".

It was the experience of the research investigators that residents of temporary settlements were interested in the study since it aimed to address some of their urgent needs namely, provision of drinking water, health services and education. Community members also expressed willingness to get involved in the advocacy with the government departments.

Household level

At the household level, the research investigators took both verbal and written consent. The research investigators approached the potential respondent, introduced themselves by name and as representatives of the organisations undertaking the survey and explained the purpose of their visit, that is, to collect information about the household and the health status of its members. If the potential respondent expressed interest and showed willingness for the interview; the research investigators read out the letter of introduction and consent form to the respondent, explained the right to withdraw consent at any point during the interview or even after completion of the interview - either by informing the interviewers at the time of the interview or by contacting representatives of the research organisations at addresses mentioned in the letter of introduction within 30 days after the day of interview. The research investigators then conducted the interview, summarised what the respondent had said during the interview, and asked the respondent

to sign the consent. The interviewers then signed the document to respect the respondents' consent saying that the information recorded in the interview schedule was correctly documented as provided by the respondent. This instilled confidence among the respondents.

Individual consent

Separate consent was sought from the women respondents who provided information on reproductive health and maternal health. The women respondents were interviewed inside the huts to ensure privacy and confidentiality.

Similarly, men were interviewed for documenting occupational health after seeking written consent from them.

Written consent forms were obtained from 281 households, whereas the remaining seven households granted verbal and not written consent.

Introduction letter and consent forms used for the study are included in Annexures 4 & 5 respectivly.

Other Issues

The research investigators employed for the study were from the Miyana community and were aware of ANANDI's interest in the present study, and that ANANDI intended to use the findings of the study for advocacy for the rights of the prawn harvester community from the Little Rann of Kutch to public sector health and education services. This may have introduced a bias in the data collection process despite preventive measures taken by the organisation.

Identity of the respondents, key informants and participants of the group discussions have been masked by using pseudonyms throughout the report.

Limitations of the Study

Study design

The present study focussed on the health status of the prawn harvesters at temporary settlements; hence, the household survey was conducted at the temporary settlements. However, this household survey at the temporary settlement did not document the vulnerabilities of the community at the base villages which have a bearing on the prawn harvesters' health status at the temporary settlement.

The study did not collect data on Miyanas as a community, its interactions with other communities, and other sections of the society (people who are not engaged in prawn harvesting) both at the base village and the temporary settlements and the resultant vulnerabilities that this group faces. This design is thus inadequate to document the social context and extreme marginalization of the prawn harvester community (mostly the Miyanas) comprehensively.

Additionally, non-availability of documentation of the history of the prawn harvesters at temporary settlements on the coasts of Little Rann of Kutch, most of whom are the Miyanas meant that the root causes of the exploitation and marginalization of the community could not be traced. Such information would have provided an insight into the community and a context against which contemporary marginalization could be studied.

Sample Selection

When the data was being collected for this study, many families had moved back from the temporary settlements to their base villages or were moving between temporary settlements on account of the delayed monsoon. At one of the settlements, where hardly 20 households had set up base, the research investigators selected households that represented base villages from where the prawn harvesters migrated to this particular settlement.

Time of Data Collection

The morbidity pattern is influenced by the environmental conditions; for instance, here the quality of drinking water is abysmal and the harsh work conditions expose men to saline waters and women to intense heat for prolonged periods. Certain ailments that might be a cumulative result of harsh conditions and more apparent towards the end of the prawn harvesting season may not have been documented during the exploration. Hence, the illnesses documented in the study may not be comprehensive.

Data Collection

ANANDI's identity as an activist NGO and promise of advocacy with the government officials for facilitating the prawn harvester community's access to health care, education and public distribution services at the temporary settlement may have introduced a bias in the data. The research investigators at one point shared the community's under-reporting of financial information and highlighting hardships, hoping for additional help from the government.

The Data

This study is based on 'reported' data. No attempts were made to verify the information provided by the respondents. This may prove disadvantageous especially for income and health expenditure data.

Remedial Action

Almost a year after data collection, at the time of analysis, researchers noticed some inconsistencies and gaps in the data. Some of these were filled in by communicating with ANANDI representatives who were part of the data collection process. To get a clearer perspective, CEHAT researchers held a one day meeting with ANANDI and visited a temporary settlement to collect additional data to fill in the gaps. During the course of this visit, the researchers spoke with some women from the prawn harvester communities to obtain detailed case studies and gathered data that complemented the earlier data on health seeking behaviour and experiences of the prawn harvesters. The researchers also interacted with a retired officer from the Department of Fisheries of the Government of India (key informant) who provided valuable insights into the processes and economics of prawn harvesting. Another interview was conducted with two senior members of the ANANDI team to gain more information on the prawn harvester community.

The insights and information gathered during the course of this second round of data collection has been mentioned separately in the report.

Structure of the Report

The report is presented in six chapters.
The context for undertaking the study is presented in Chapter 1, the Introduction, while background information on the locale of the study as well as the prawn harvesters at temporary settlements in the Little Rann of Kutch is presented in Chapter 2. Chapter 3 provides details of the methodology employed and also includes the ethical considerations for the study. Chapter 4 deals with the findings from the household survey based on interviews with women regarding reproductive and maternal morbidities, interviews with men regarding occupational health and health seeking for all illnesses along with supporting information from group discussions and interviews with key informants and observations of the research investigators. The findings are presented under appropriate heads. Significance of the findings is discussed in the context of the published literature to draw out key learnings in Chapter 5. Learnings from the collaborative research for advocacy are presented in Chapter 6.

Supporting material in the form of tools, additional data etc are presented as Annexures .
References cited in Chapter 1, Chapter 4 and Chapter 6 are listed at the end of the report.

Results

Socio-economic-demographic Profile of the Sample

Temporary Settlement

The participants of the group discussions and key informants provided information about the settlement patterns, living conditions and access to basic amenities such as drinking water, groceries, market place, education, and health care for the temporary settlements.

Location and settlement patterns

Interviews with key informants (leaders and elders from the Miyana community) elicited the history of temporary settlements of the prawn harvesters. For over 50 years, the prawn harvesters have been seasonally migrating to the coasts. Entire families migrate from their base villages (along with cattle / goat if any) to the temporary settlements that are at distance of 2 km - 150 km during the monsoon dependent four month long prawn harvesting season. The temporary settlements are spread along a stretch of coastline about 50 kms across the Rajkot and Surendranagar districts. It is common to find families from a number of base villages at one temporary settlement. The families stay in small groups of 25 - 30 in small settlements called 'vandhs'. During the season there are 40 such small settlements along the coast. Thirteen of these settlements were included in the study. Table 4.1 shows distances prawn harvesters travel from their base villages to reach temporary settlements. The temporary settlements lack basic facilities such as potable water, sanitation, health care and education.

Box 4.1: The Terrain

"With unmarked mudflats and the surrounding forests, it is extremely difficult for a visitor to find one's way to the temporary settlements without the help of a local Miyana prawn harvester. Even the prawn harvesters who migrate to these settlements do not know the way back to their base villages. This is particularly true for women and children. There is a constant fear of getting lost in the vast flatlands while travelling from and to the base village. This fear and the large distances prevent the settlers from accessing basic services."

(Excerpts from a field investigator's diary)

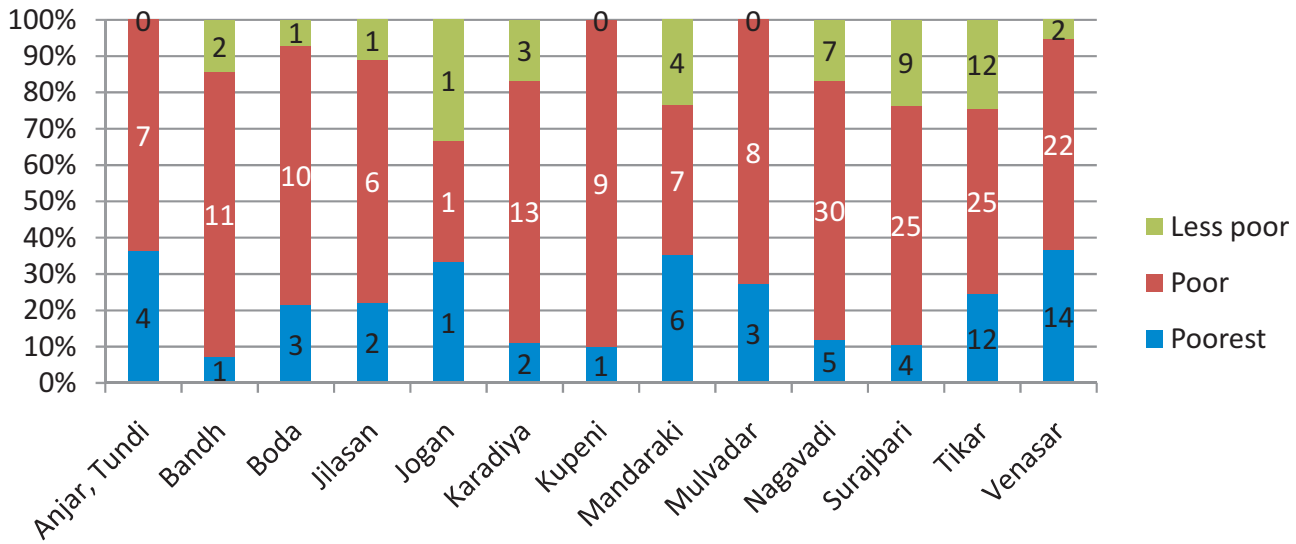
The sample households are representative of the settlements they are drawn from and the settlements vary in terms of economic status. Though the entire community is marginalized and economically weak, some settlements are relatively poorer than the rest. Distribution of households over poorest, poor and less poor categories on the basis of per capita income at the base village and at the temporary settlement is presented in Figure 1. The details of procedure for arriving at the indicator are presented in Annexure 6.

Table 4.1: Distances between Base Villages and Temporary Settlements

Temporary settlements	Base villages from where prawn harvesters migrate to the temporary settlements																	
	Bhagadia	Bholi area	Chikhli	Choti Khandeki	Datar	Datar na jhaad	Halvad	Kajeda	Khirai	Kuda	Maliya	Maliya cross roads	Nava hajiyasar	Navagam	Rakhodia	Surajbari, Cheravadi	Venasar	Wankaner
Surajbari Cheravadi	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	4 km	--	--
Venasar	35 km	40 km	10 km	--	38 km	--	--	--	38 km	--	35 km	--	40 km	--	--	--	--	--
Mandarki	--	--	--	--	--	--	--	65 km	--	--	60 km	--	70 km	--	--	--	--	--
Karadiya	--	15 km	20 km	--	--	30	--	30 km	20 km	--	25 km	25 km	35 km	--	21 km	--	--	--
Bandh	--	--	--	--	--	--	--	--	--	--	60 km	--	--	75 km	--	--	--	--
Jilasan	--	--	3 km	--	--	--	--	--	--	--	--	--	--	--	20 km	--	--	--
Mulvadar	--	--	--	--	--	8 km	--	5 km	--	--	15 km	--	--	--	--	--	--	--
Nagavadi	13 km	13 km	--	--	13 km	--	--	6 km	--	--	18 km	--	2 km	--	--	--	--	--
Boda	70 km	--	--	--	75 km	--	--	--	75 km	--	80 km	--	90 km	--	70 km	--	--	--
Jogan	--	--	65 km	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Aejar	--	--	--	150 km	--	--	90 km	--	--	--	--	--	110 km	--	--	--	--	--
Tundi	--	--	--	--	--	--	--	100 km	--	21 km	--	--	--	--	--	--	70 km	110 km
Kupeni	--	--	--	--	115 km	--	--	--	--	--	90 km	--	110 km	--	--	--	--	--
Tikar	--	90 km	--	--	--	70 km	--	60 km	--	--	75 km	--	85 km	--	--	--	--	--

Source: Interviews with ANANDI team and representatives of the communities surveyed.

Figure 1: Economic status of households at temporary settlements



Housing and living conditions

The prawn harvesters traditionally migrate to a fixed site/temporary settlement. However, the prawn harvesters do not own land at these settlements. Often the land on which the temporary settlements are established is owned by the government, the settlers are considered illegal occupants and threatened with eviction. In some cases, the local landlords and influential families own the land and each year, the other families are allowed to set up huts for rent. Additionally, the terrain into which they pitch their huts is hostile - often it is on the plains without vegetation that are situated between the estuary and the forest. With heavy rains, the flatlands experience floods that cause loss of life and assets. The floods at times cut the settlements off from the nearby villages. The huts are kutcha structures over an area ranging from 48 square feet (6 feet by 8 feet) to 120 square feet (10 feet by 12 feet), made of cloth and plastic sheets stretched on a bamboo skeleton; and are used to shelter the household members as well as their assets, such as gear,and belongings they might have brought along. Often, when it does not rain, the families eat and sleep in the open space outside the huts. Prawn processing also is done outside the hut (Source: Group discussion with representatives of the prawn harvesters).

Water

Lack of availability of safe drinking water is one of the problems that the temporary settlements face. At the time of the survey, only one of the thirteen temporary settlements from where the sample was drawn had access to piped water. This settlement of Surajbari is situated at a distance of about one km from the base village and has a pipeline that supplies water from the Narmada Canal. Residents from the other temporary settlements reported using water from a ditch (dug before establishing the settlement,) that collects rain water for drinking and all other household purposes till it dries. For the people at Venasar, Mandarki, and Boda temporary settlements, the pond water lasts for about fifteen days and for others like those from the settlements at Mulvadar, Nagavadi and Jogan, it lasts for about a month into the prawn harvesting season. The cattle/goats also drink from the same ditch and this water is also used for boiling prawns.








Work and Living condition at temporary settlements






Work and Living condition at temporary settlements

Table 4.2: Access to Drinking Water for Temporary Settlements

Temporary settlement	Fetched / purchased by settlers	Source of drinking water	Distance to the source of water (km)	Duration in months for which the settlers depend on this source	Who fetches water to the settlement	Mode of transporting water to the settlement	How often is water fetched
Surajbari Cheravadi	Fetched	Tap water at Surajbari Khari, Narmada river	½ km	4	Women	Walk	Daily
	Purchased	--	–	–	–	--	--
Venasar	Fetched	Ditch at the settlement	1 km	½ month	Women	Walk	Daily
	Purchased	at Venasar village	3 km	3 ½ months	Men	Bicycle	Daily
Mandarki	Fetched	Ditch at the settlement	½ km	½ month	Women	Walk	Daily
	Purchased	Narmada canal at Mandarki	12 km	3 ½ months	Men	Bicycle	Daily
Karadiya	Fetched	Ditch / pond at the settlement	½ km	1 month	Women	Walk	Daily
	Purchased	Piped water from Chikhli	10 km	3 months	Men	Bicycle, rickshaw, motorcycle, Chhakda	Daily
Bandh	Fetched	Ditch at the settlement	½ km	½ month	Women	walk	Daily
	Purchased	Narmada Canal	9 km	3 ½ months	Men	Bicycle	Daily
Jilasan	Fetched	--	–	–	–	--	--
	Purchased	Piped water from Chikhli	10 km	4 months	Men	Bicycle, rickshaw, motorcycle, Chhakda	Daily

Cont... 31

Temporary settlement	Fetched / purchased by settlers	Source of drinking water	Distance to the source of water (km)	Duration in months for which the settlers depend on this source	Who fetches water to the settlement	Mode of transporting water to the settlement	How often is water fetched
Mulvadar	Fetched Purchased	Ditch at the settlement Piped water from Juna Hanjiyasar	½km 4km	1 month 3 months	Women Men	Walk Bicycle, rickshaw, motorcycle, Chhakda	Daily Daily
Nagavadi	Fetched Purchased	Ditch at the settlement Piped water from Nava Hanjiyasar	½km 3km	1 month 3 months	Women Men	Walk Bicycle, rickshaw, motorcycle, Chhakda	Daily Daily
Boda	Fetched Purchased	Ditch at Boda Pond at Kodgaon settlement	½km 2 – 7 km	½ month 3 ½ months	Women Men	Walk Bicycle, rickshaw, motorcycle, chhakda	Daily Daily
Jogan	Fetched Purchased	Ditch at Boda Pond at Kodgaon settlement	1 km 4km	1 month 3 months	Women Men	Walk Bicycle	Daily Daily
Aejar	Fetched Purchased	– Well from Aejar wadi	– 10km	– 4 months	– Men	– Jeep, Chhakda	– Daily
Kupeni	Fetched Purchased	Ditch in Kupeni pond at Kupengaon	½km 5km	4 months 4 months	Women Men	Walk Bicycle	Daily Daily
Tikar	Fetched Purchased	Ditch at the settlement A tanker visiting the settlement	1 km 2km	20 – 25 days 3 months	Men and women Men and women	Walk Walk	Daily Daily
Tundi	Fetched Purchased	Ditch at Tundi Pond in Kandagaon	½km 4 – 5 km	½ month 4 months	Women Men	Walk Bicycle	Daily Daily

Source: Interviews with ANANDI team and representatives of communities sampled

Once the ditch dries up, men and women travel up to 12 km to fetch water. It was observed that women walked to fetch water when the source was nearly two km from the settlement. However, when water had to be fetched from farther distances, the prawn harvesters purchased it from men who fetched it on bicycles, jeeps, chhakda[8] etc. Often the prawn harvesters are denied access to water bodies at nearby villages since the villagers perceive them to be 'unclean'[9], thus necessitating the purchase of water essential for living. The water vendors often are members of the Miyana community who are economically relatively better off, are not involved in prawn harvesting and stay at the base village even during the prawn harvesting season. Often the poorer families that do not have access to modes of transport need to buy drinking water from the vendors (Table 4.2).

[8] Chhakda: a hybrid vehicle popular in rural Gujarat that uses a motorcycle engine to pull along a tractor trolley and is used for transporting persons and goods in rough, uneven terrain.

[9] At times the prawn harvesters take along their nets and gear to the water body that serves as a source of drinking water for the village or use the same water for bathing near the water body . This is resented by the villagers who believe these practices to be unhygienic and polluting.

Table 4.3: Source of Drinking Water for Temporary Settlements

Temporary Settlement	Source of drinking water			Total
	Pond /ditch	Buy water	Hand pump / Tap water from village	
Anjar, Tundi	7	3	1	11
Bandh	16	--	--	16
Boda	14	--	--	14
Jilasan	8	1	--	9
Jogan	3	--	--	3
Karadiya	8	10	--	18
Kupeni	1	9	--	10
Mandaraki	17	1	--	18
Mulvadar	9	2	--	11
Nagavadi	15	27	--	42
Surajbari	2	1	41	44
Tikar	8	43	--	51
Venasar	41	--	--	41
Total	**149**	**97**	**42**	**288**

Source: Interviews with ANANDI team and representatives of surveyed communities

The data collection for the study was conducted within two months of the prawn harvesters' migration to the temporary settlement and at the time of the study, 52% (149/288) of the households were using ditch water for drinking purposes; 15% (42/288) used piped water/water from a hand-pump from a nearby village and the rest 34% (97/288) reported purchasing water from the water vendors (Table 4.3). Of the 42 households that reported access to piped drinking water, 41 were from the Surajbari settlement. It was observed that irrespective of the source of water, the water that prawn harvesters used in the temporary settlements was not potable. An exploration carried out by PVK and ANANDI between September and December 2008, found that the water used by residents at only two of the selected settlements (Karadiya and Venasar) was potable (PVK and ANANDI, unpublished).The ditch water especially was observed to be muddy with solid contaminants such as leaves and plants and in addition, the cattle also drank from it. The source of drinking water and economic status of the respondent households as represented by the quartile for income from prawn harvesting and combined indicator were associated (income from prawn harvesting: chi square, p=0.017, df 6; combined indicator: chi-square, p=0.006, df=4) (Table 4.4).

Table 4.4: Economic Status and Source of Drinking Water at Temporary Settlements

	Source of Drinking Water			
	Pond /Ditch	Buy Water	Hand Pump / Tap Water from Village	
Per capita income from prawn harvesting - quartiles (1 - 4: low - high)				
1 (n=68)	38 (56%)	25 (37%)	5 (7%)	chi square, p=0.017, df =6
2 (n=74)	44 (60%)	18 (24%)	12 (16%)	
3 (n=75)	40 (53%)	25 (33%)	10 (13%)	
4 (n=64)	21 (33%)	28 (44%)	15 (23%)	
All (n=281)*	143 (51%)	96 (34%)	42 (15%)	
Economic status of the household (calculated from per capita income at base village and during prawn harvesting season)				
Poorest (n=58)	40 (69%)	14 (24%)	4 (7%)	chi-square, p=0.006, df=4
Poor (n=174)	90 (52%)	61 (35%)	23 (13%)	
Less poor (n=42)	13 (31%)	20 (48%)	9 (21%)	
All (n=274)	143 (52%)	95 (35%)	36 (13%)	

**Analysis based on valid cases only*
Source: Survey data

On an average, the households spent about Rs 50/- (median, range 10 - 500) per day on purchasing drinking water. To understand the financial burden that this placed on the households, the approximate expenditure for two months was calculated as a proportion of income from prawn harvesting reported for the year preceding the study. It showed that households spent about 15% (median, range 1% - 180%) of their seasonal income on the purchase of drinking water. The burden was higher for those from the lowest quartile of the income categories (Kruskal-Wallis test, p=0.000). (Table 4.5). Most of the respondents reported filtering water through a cloth (98%, 281/288), only two households reported boiling water before drinking.

Table 4.5: Financial Burden of purchasing Drinking Water at Temporary Settlements

Per capita income from prawn harvesting - quartiles (1 - 4: low - high)	Expenditure on Drinking Water for Two Months as a Proportion of Income from Prawn Harvesting (calculated)			
		Minimum	Maximum	Median
1.00	(n=25)	6%	180%	27%
2.00	(n=18)	8%	36%	16%
3.00	(n=25)	3%	40%	14%
4.00	(n=28)	1%	120%	11%
All*	(n=96)	1%	180%	15%

**Analysis based on valid cases only*
Kruskal-Wallis Test, p=0.000
Source: Survey data

Food and Nutrition

Bajra roti, wheat roti, plain rice, dal, spiced rice cooked with prawns, curry of small fish, eggs and poultry and occasionally fresh vegetables - mostly onions, potatoes, tomato, brinjal (other vegetables for example cabbage, are available in the market but the community does not like to eat these) are the constituents of their everyday diet. Milk, curds, buttermilk too are consumed. Information about the availability and consumption of dairy products, poultry and vegetables was gathered through field observations by the researchers and is contrary to the information gathered through group discussions in the initial phase of the study. Excerpts from researchers' notes about field visits are presented below (Box 4.2).

Distant location of the temporary settlements from adjoining villages and lack of transport prevents the settlers from frequently accessing markets for fresh vegetables and fruits. However, shop owners at the settlement (two to three at each settlement) buy essentials like onions, potatoes, tomatoes, brinjals and chillies (and occasionally other fresh vegetables) during their weekly visits to market places and sell these at the settlement. All Miyana households own poultry and goat and about half the households own one or two buffaloes. The families take poultry and milk producing animals to the temporary settlements and rely on these for eggs, meat, milk and other dairy products such as buttermilk. Families that do not own goats (extremely rare situation) or cattle, purchase milk from other settlers at Rs. 2.50 for 125 grams. A key informant at Nagawadi said that five- six households at this settlement sold milk. Consumption of milk (in moderate quantity) and curds and buttermilk by adults is a common practice among the prawn harvester families. Fish caught along with prawns also form an important part of their diet when they are in the temporary settlements. Families also salt and sundry larger fish for later use. In addition to vegetables, the small shops at the settlements sell essentials like rice, dal, biscuits, chocolates, soap, and oil (Obervation and informal discussion with a key informant at Nagavadi, October 2010).

Box 4.2: Food cooked at the Temporary Settlement

...we visited Nagawadi at around 11 am. Along the way, we met some young girls carrying pitchers on their heads. When asked, they said they were carrying buttermilk to sell it to the residents in the settlement. They had to walk almost three kilometres to reach the settlement.

Lunch was being prepared in many households. Vegetables like brinjals and potatoes were being cooked in some households. Food in other households comprised spicy fish curry and roti. Some children were seen eating rice. Women from one household were cleaning and salting large fish. They said that these were dried and used in leaner times.

A group of women we spoke to said that if the women were busy, they cooked prawn-rice; otherwise, they cooked roti, curry, rice (sometimes) and vegetables (once or twice a week. The men take rice, spices and a stove to make prawn-rice with the fresh catch while at the estuary.

A group of women we spoke to mentioned using ghee for cooking. They also said that each household had enough milk for all the children and adults too consumed milk and other dairy products.

(Observations on the day of visit to Nagavadi, October 2010)

Fuel

In the absence of electricity, the prawn harvesters depend on kerosene lamps for light at night and firewood for cooking as well as for boiling prawns. Except for the two households from Surajbari that reported using LPG for cooking, the rest used firewood for cooking as well as for boiling prawns. While the majority used firewood the household members collected from the forest, some reported purchasing firewood for cooking (17%, 48/288) and for boiling prawns (25%, 71/288). Purchase of firewood was associated with the economic status of the households (Chi-square=20.608, p=0.000, df=2) (Table 4.6).

Table 4.6: Purchase of Firewood and Economic Status of the Households

Whether buy firewood for cooking and or boiling prawns	Economic status of the household (calculated from per capita income at base village and during prawn harvesting season)			Total (n=274)*
	Poorest (n=58)	Poor (n=174)	Less poor (n=42)	
Buy	6 (10%)	42 (24%)	21 (50%)	69 (25%)
Collect from forest (Do not buy)	52 (90%)	132 (76%)	21 (50%)	205 (75%)

**Analysis based on valid cases only*
Chi-square=20.608, p=0.000, df=2

Source: Survey data

At Nagavadi, one of the relatively larger shops had a solar energy powered small generator and used this to provide services for charging mobile phone batteries for a fee. (Observation and informal discussion with a key informant at Nagavadi, October 2010).

Hygiene and Sanitation

The settlements do not have toilets and facilities for the management of solid and liquid waste. Open defecation is a common practice in the settlements. Lack of water and closed spaces for toilets together account for poor hygiene , especially poor reproductive hygiene among women. This contributes to reproductive tract infections among the female population in the settlements.

Absence of solid waste management services results in a filthy and unhygienic living and working environment for the residents at the temporary settlements. All 288 households included in the study reported dumping household and prawn-processing waste in the vicinity of the huts, though these are thrown at two different sites. The prawn-processing waste at the temporary settlement includes wastage/residues after boiling and cleaning prawns and small fish caught inadvertently in the nets while catching prawns. In a season with a good catch of prawns, the prawn harvesters separate and discard the fish that fetch much less after processing and drying, a mere Rs. 40/- per kg as compared to Rs. 250/- or at times, Rs 500/- per kg of processed prawns, if sold directly in the open market. However, in a lean season, the catch is sorted and the small fish too are processed and sold. The prawn-processing residue/waste is also donated at the local mosque as 'zakah' of earnings. This is then sold by the mosque management to the dealers who in turn sell it to the fertiliser manufacturing units.

The fish and prawn residue dumped around and in the close vicinity of the huts attracts flies and provides breeding places for mosquitoes, which spread a number of major diseases including malaria. Degradation of the biological waste in the hot environment creates a stench and noxious fumes, thus making the environment further unsuitable

for living. The women, children, the unwell and disabled are left behind at the settlements and are therefore more exposed to this unhealthy environment as compared to men (and some women), who venture to the estuary for prawn harvesting.

Access to Basic Amenities

The remote location of the temporary settlements deprives residents of most basic amenities like the public distribution system, schools and health care facilities. The prawn harvesters from the temporary settlements need to travel long distances to access the market place and grocery shops. The distance to the market place ranged from 5 km- 60 km, while the nearest public distribution system shop was at a distance of 5 km-33 km. The settlers have to travel 21 km-90 km to access a public sector health care facility including a DOT centre for treatment of tuberculosis. The lack of, traversable roads, transport facilities, especially public transport services make it all the more difficult to commute to nearby villages(Table 4.7). Services from the ANM, ASHA, MPW and Gram Sewak were available only at the base village.

Temporary settlements except Tikar do not have access to schools. Schools are located at the base villages, at distances that range from 4 km to 150 km. Children from Tikar access school easily as it is located about one km from the temporary settlement.

Profiles of the Temporary Settlements are presented in Annexure 7.

Table 4.7: Distances to Health Services and Public Distribution Services for the Residents of Temporary Settlements

Name of Settlement Area	Access to Health Services				Drinking Water		Market		Religious Place		PDS and Grocery	
	Public	Distance (km)	Private	Distance (km)	Village from where they fetch drinking water	Distance (km)	Villages where prawn harvesters access market	Distance (km)	Villages with religious places accessed by the prawn harvesters	Distance (km)	Village from where the prawn harvesters access PDS and grocery	Distance (km)
Surajbari	Maliya	25	Morbi, Maliya	70 25	Surajbari khiari, Narmada river	0.5	Shamkhayali Maliya	25	Surajbari, Cheravadi	4	Maliya	25
Venasar	Jetpar	28	Khakhrechi Jod Morbi	13 28 48	Venasar Village	1-3	Khakhrechi	9	Khakhrechi Khakhrechi Venasar Village	9 9 1	Maliya	25
Mandarki	Jetpar	15	Ghatila, Khakhrachii, Morbi	15 31 65	Mandarki, Narmada Canal	12	Ghatila	15	Tikar Maliya	20 60	Ghatila Maliya	15 60
Karadiya	Maliya	25	Jetpar, Maliya, Morbi	21-76	Chikhli	10	Maliya Chikhli Kajeda	8 5 8	Khakhrechi	8	Kajeda Khakhrechi	30 5
Bandh	Jetpar	12	Ghatila, Morbi	12-63	Narmada Canal	9	Ghatila Maliya	12 60	Khakhrechi Maliya	27 60	Maliya, Nava Hanjiyasar	60
Jilasan	Maliya	21	Jetpar, Maliya, Morbi	21-76	Chikhli	10	Maliya Chikhli Kajeda	8 5 8	Khakhrechi	8	Kajeda Khakhrechi	30 5
Mulvadar	Maliya	20	Maliya, Morbi, Jetpar	5-55	Juna Hajiyasar	4	Maliya	15	Juna Hanjiyasar	2	Maliya	15
Nagavadi	Maliya	15	Maliya, Morbi	15-50	Naya Hajiyasar	3	Maliya	18	Nava Hanjiyasar Maliya	6 18	Maliya, Nava Hanjiyasar	18 6

Cont... 38

Name of Settlement Area	Access to Health Services				Drinking Water		Market		Religious Place		PDS and Grocery	
	Public	Distance (km)	Private	Distance (km)	Village from where they fetch drinking water	Distance (km)	Villages where prawn harvesters access market	Distance (km)	Villages with religious places accessed by the prawn harvesters	Distance (km)	Village from where the prawn harvesters access PDS and grocery	Distance (km)
Boda	Halvad	25	Halvad, Ajitgad	25	Boda and Kodgaon	2-7	Halvadd Khod	25 7	Halvad	25	Halvad	25
Jogan	Halvad	25	Halvad, Ajitgad	25	Boda	4	Halvad	25	Halvad	25	Halvad Tikar	25 25
Aejar,	Halvad	90	Dhangadra, Kuda	75	Aejar wadi	10	Aejargaon Halvad	10 33	Halvad	33	Halvad	33
Tundi	Halvad	95	Dhangadra	25	Kandagaon	4-5	Kupenigaon	5	Dhangadra	25	Kupeni Dhangadra	5 25
Kupeni	Halvad	90	Dhangadra	25	Kupengaon	5	Kupenigaon	5	Dhangadra		Kuda Dhangadra	21
Tikar	Halvad	21	Tikar, Halvad	15-21	Buy water at settlements throughout the season	2	Tikar	15	Tikar	15	Tikar	15

Source: Discussion with field workers from ANANDI

Households

Socio-demographic-economic Profile

All households except ten of the 288 households that formed the sample for the study were Muslims (Miyanas). Though officially categorised under Other Backward Castes, most Miyana respondents (99%, 274/278) were not aware of this. Six respondents, two Hindu households and four Miyana households, identified themselves as members of Backward Castes. Sixteen percent of the households (45/288) did not have a ration-card and of the rest, 56% (135/243) reported having a below-poverty line ration-card (Table 4.8). Data on per capita monthly income at the base village was available for 281 of the 288 households. In the case of 102/281 households, there was inconsistency between the reported income and type of rationcard. More than one third (38%, 92/245) of the households with a reported monthly income below the poverty line had 'above poverty line' ration cards and 28% (10/36) of the households that reported income above the poverty line also reported owning below the poverty line ration cards. About 12% (27/245) of the households who reported income below the poverty line and 33% of the (12/36) households that reported income above the poverty line did not have ration cards. (Table 4.9)

Table 4.8: Socio-economic Profile of the Households

Sociolo-economic profile of the sample households	Number of households
Religion	**(n=288)**
Muslims	278 (97%)
Hindu	10 (3%)
Social group identity	
Muslims	(n=278)
Other Backward Castes (OBC)	4 (1%)
Do not know	274 (99%)
Hindu	(n=10)
Other Backward Castes (OBC)	2 (20%)
Do not know	8 (80%)
Monthly per capita income at base village	(n=288)
≤ Rs. 502 (Below Poverty Line - BPL)	245 (85%)
>Rs. 502 (Above Poverty Line – APL)	36 (13%)
Information not available	7 (2%)
Ownership of rationcard	(n=288)
Have a BPL ration card	135 (47%)
Have an APL ration card	108 (38%)
Do not have a ration card	45 (16%)

Source: Survey data

Table 4.9: Type of Ration Card and Monthly Income at the Base Village

Type of ration card	Monthly per capita income at the base village#			
	≤ Rs. 502 (Below Poverty Line - BPL) (n=245)	>Rs. 502 (Above Poverty Line – APL) (n=36)	Total (n=281)*	
Below Poverty Line - BPL	123 (50%)	10 (28%)	133 (47%)	Chi-square, p=0.002*
Above Poverty Line - APL	92 (38%)	14 (39%)	106 (38%)	
Do not have a ration card	27 (12%)	12 (33%)	42 (15%)	

**Analysis based on valid cases only*
 # Calculated by dividing reported household income by household size
Source: Survey data

The household size (number of persons in the household) ranged from two to thirteen (mean=7). Fifty-eight percent (166/288) of the surveyed households were nuclear families comprising parents and children, 42% (120/288) were joint families with parents staying with their children's families and two households reported extended families where other members from kinship shared the hearth with a family. Number of children (persons aged 0 - 14 years) per household ranged from 0 - 8 (mean and median =3).

On an average, the households had four earners (median, minimum 1 to maximum 10), both men (median 2, range: 0 - 7) and women (median 2, range: 1 - 6 for female earners) were engaged in income generating activities in this community. Four of the 288 households reported only female earners (Table 4.10). A profile of households with only female earners is presented in Box 4.3.

Box 4.3: Women headed Households of Prawn Harvesters

Three of the five households with only women earners belonged to the poorest economic strata and one each to the poor and less poor categories. Two households had only one earner, two had three earners and one had four women earners. None of the five had child-earners. All five households owned at least one minor asset. Additionally, two households also owned major assets.

Information on activities in which women engaged while at the temporary settlement was available for three of the five women heads, all of whom engaged in cleaning and processing prawns and in household chores.

All except one household reported a monthly income of Rs. 1500/- or less at the base village. Net income from prawn harvesting ranged from a loss of Rs 1500/- to a profit of Rs 10,000/- for the season previous to data collection.

All except 19 households had children less than 15 years of age. Child-earners were reported in 85/288 households; of these 34 households reported male child earners while 63 households reported female child earners. Whether children from the household contributed to income generation was not associated with the economic status of the household. (Table 4.10)

Table 4.10: Distribution of Households with Child Earners over Economic Status Categories

Earners per household	Economic status			Total (n=274)*
	Poorest (n=58)	Poor (n=174)	Less poor (n=42)	
Male earners				
Median	1	2	2	2
Minimum - Maximum	0 - 6	0 - 7	5-Jan	0 - 7
Adult male earners				
Median	1	2	1.5	2
Minimum - Maximum	0 - 6	0 - 6	4-Jan	0 - 6
Male child earners				
Median	0	0	0	0
Minimum - Maximum	0 - 2	0 - 3	0 - 2	0 - 3
Female earners				
Median	2	2	2	2
Minimum - Maximum	5-Jan	6-Jan	5-Jan	6-Jan
Adult female earners				
Median	1.5	2	1	2
Minimum - Maximum	4-Jan	6-Jan	4-Jan	6-Jan
Female child earners				
Median	0	0	0	0
Minimum - Maximum	0 - 3	0 - 2	0 - 2	0 - 3
Total earners				
Median	3	4	4	4
Minimum - Maximum	10-Jan	10-Feb	8-Feb	1 – 10
Total adult earners				
Median	3	4	3	3.5#
Minimum - Maximum	10-Jan	9-Feb	6-Feb	1 – 10
#50% households had 3 or fewer earners.				
Total child earners				
Median	0	0	0	0
Minimum - Maximum	0 - 3	0 - 4	0 - 3	0 - 4
Number of child earners per household				
None	43 (74%)	122 (70%)	26 (62%)	191 (70%)
One or more child earners	15	52	16	83
Chi-square=1.764, df=2, p=0.414				
Households with male and female earners				
At least one male earner	55 (95%)	173 (99%)	42 (100%)	270 (99%)
Only female earners / No male earner	3 (5%)	1 (1%)	0	4 (1%)

**Analysis based on valid cases only*
Source: Survey data

Ratio of non-earners to earners per household was calculated and used as a proxy indicator of economic burden. The ratio ranged from 1.0 to 6.0; however, with large household size, on average, each earner supported two non-earners (mean 1.87, median 1.69).

Monthly per capita income at the base village (calculated as household monthly income divided by household size) showed extreme variation with a minimum of Rs. 73/- to a maximum of Rs. 1,875/- (median=Rs. 300/-). On an average, each earner earned Rs 500/- per month at the base village. (Table 4.11)

Table 4.11: Income at the Base Village and at the Temporary Settlement

		Monthly Income at base village (Rs)	Monthly income per earner at base village (Rs)	Monthly per capita income at base village (Rs)	(Gross Sale) Earning of Last season from fishing (Rs)	Income from prawn harvesting per earner (Rs)	Per capita income from prawn harvesting (Rs)
(n)*		281	281	281	281	281	281
Mean		2246.6192	610.3449	353.7422	20023.8434	5251.6706	2995.1642
Median		2000	500	300	18000	5000	2692.3077
Minimum		500	133.33	72.73	1000	333.33	166.67
Maximum		15000	3750	1875	90000	22500	15000
Percentiles	25	1500	333.3333	200.0000	12000.0000	3162.5000	1775.0000
	50	2000.0000	500.0000	300.0000	18000.0000	5000.0000	2692.3077
	75	3000.0000	750.0000	428.5714	25000.0000	7000.0000	3888.8889

**Analysis based on valid cases only*
Source: Survey data

Income from prawn harvesting for the year preceding the survey too showed a wide variation. The gross income from sale ranged from Rs.1,000/- to Rs. 90,000/- with half the households reporting an income less than Rs. 18,000/- (median). On an average, in the season, each earner earned about Rs. 5,000/- (median, range: Rs. 333 - Rs. 50,000/-) and per capita monthly income from prawn harvesting (assuming the season lasted for four months) was Rs. 673/-. (Table 4.11). A ten-fold increase in the earnings of each earner over the prawn harvesting season explains the reason for seasonal migration despite the hardships at the temporary settlement.

Almost two-thirds (64%, 180/288) of the households reported having taken loans/advance from agents. The advance amount ranged from Rs. 1,000/- to Rs. 50,000/-, with half of the households reporting an advance of Rs. 3000/- or less (median). Among those who reported taking an advance, the proportion of households from lower economic status was significantly more than those from the higher economic status (chi-square=12.576, df=2, p=0.002*). Average expenditure at the temporary settlements was reported to be Rs. 10,000/- (median, range: Rs. 2000/- to 60,000). Average net income after deducting the loan/advance and expenditure from the reported income from sales was Rs. 8,000/- (median) (Table 4.12). Ten percent (27/281) of the households reported loss the previous season, another two percent broke even (no loss - no profit) and 89% (249/281) reported profit from the prawn harvesting activities during the year preceding the survey (Table 4.13). However, this data needs to be regarded with caution, as the details regarding expenditure and income were not examined thoroughly.

Group discussions with members of the community highlighted the complex links between poverty,lack of access to cash and assets and indebtedness. Migration to temporary settlements and preparing for prawn harvesting is an expensive affair for the community members. Households usually borrow from the local moneylenders to meet the

expenses of transit to the temporary settlement, repair of equipment including repair of boat/s, fishing net, and purchase of new equipment for prawn harvesting. The arrangement for repayment is such that the indebted households are forced to sell their season's catch to the same 'agent' who then deducts the loan amount from the sale for the catch, and in the process also controls the price of the catch thus making sure that the need for loans is not alleviated. Generally, these families are unable to save any money from the season's harvest, thus necessitating their dependence on the money lenders for preparing for the next year's season. This traps the people into the situation that they struggle to break through--indebtedness. The participants of the group discussion stressed that only those households that own assets such as boats and other equipment essential for the trade of prawn harvesting manage to stay free from the snare of indebtedness. The savings from the season are then spent on festivals, marriages, jewellery or electronic items such as television sets, radios and so on.

Table 4.12: Advance taken, Expenditure and Net Income from Prawn Harvesting (Year before the Survey)

	Advance / loan (n=180)*	Expenditure at temporary settlement (n=283)*	Net income (n=281)*
Minimum	1,000	2,000	-20,000
Maximum	50,000	60,000	50,000
Median	3,000	10,000	8,000

**Analysis based on valid cases only*
Source: Survey data

Table 4.13: Advance/Loan taken before the Prawn Harvesting Season (Year before the Survey)

	Economic status (combined) - recoded			Total (n=274)*
	Poorest (n=58)	Poor (n=174)	Less poor (n=42)	
Loans / advance				
Did not take loan /advance	13 (22%)	65 (37%)	24 (57%)	102 (37%)
Took advance loan / advance	45 (78%)	109 (63%)	18 (43%)	172 (63%)
Chi-square=12.576, df=2, p=0.002*				
Net income from prawn harvesting (Rs.)				
Loss/break even	7 (12%)	25 (14%)	0 (--)	32 (12%)
Profit	51 (88%)	149 (86%)	42 (100%)	242 (88%)
Chi-square, df=2, p=0.022				

**Analysis based on valid cases only*
Source: Survey data

As with cash income, the households varied greatly in terms of ownership of assets. Only 14% of the (39/288) households owned agricultural land. Of these 39, four households owned less than five acres (marginal farmers) and six owned 20 acres or more (large farmers) of land. The rest of the 29 households owned between 10-20 acres of land. Except for two households, all reported that the land was non-irrigated (Table 4.14). There was no association between the size of land holding and economic status (Table 4.15).

Table 4.14: Ownership of Land at the Base Village

Ownership of land	Number of households
Whether own land	(n=278)
Own land	39 (14%)
Do not own land	249 (86%)
Size of landholding (acres)	(n=39)
Less than 5	4 (10%)
5 – 9	14 (36%)
10 – 19	15 (38%)
20 or more	6 (15%)
Irrigated or non-irrigated land	(n=39)
Irrigated (partial land holding is irrigated)	2*

**Of the two respondents who reported irrigated land, one has less than 5 acres and the other has 5 – 9 acres of land, of which only part is irrigated. Exact size of irrigated area is not available.*

Table: 4.15: Distribution of Households by Size of Landholding and Economic Status

	Economic status (combined) - recoded			Total (n=288)
	Poorest (n=58)	Poor (n=174)	Less poor (n=42)	
No land	48	155	32	235
Own some land	10	19	10	39*
Less than 5 acres	3	1	0	4
5 – 9 acres	3	7	4	14
10 -19 acres	4	6	5	15
20 or more acres	0	5	1	6

**Chi-square, p=0.053. Chi-square not calculated for size of landholding.*
Source: Survey data

More than three fourth of the households (86%, 247/288) reported animal rearing[10] as one of their main sources of income. Though fewer households from the third and fourth quartile of per capita income at the base village reported animal rearing, no clear association was seen between economic status at base village and animal rearing as one of the main sources of income for the household. Information on ownership of cattle/goats and number of animals owned was not available in the survey data. However, discussion with a group of women from one of the temporary settlements (October 2010) revealed that all Miyana households owned four to five goats and some hens. More than half the households owned buffaloes and those higher up in the community hierarchy owned four or five buffaloes. The prawn harvesters take the milk producing animals along when they migrate to the temporary settlement, the rest are left behind in the base village with the charvahs who are paid Rs 200/- per month for looking after the cattle.

[10] Whether this reflects ownership or service was not explored in the survey. Data not presented in the report.

Table 4.16 presents information on ownership of boat (mechanised or non-mechansied), dhori (site/land in the temporary settlement), fishing license, cold storage box, katar (net), gunja (a type of net) which are important for prawn harvesting (Box 4.4 explaining role of each of these in the process of prawn harvesting).Based on the group discussions with community representatives and representatives of the fisher folk's cooperative and communication with ANANDI representatives, the assets were categorised into 'essential' and 'desirable'. Gunja, katar, and boat (non-mechanised) are included as essential assets, whereas dhori, mechanised boat, fishing license and cold storage box are grouped into desirable assets. Distribution of ownership of assets over economic status showed a statistically significant relationship between ownership of dhori, cold storage box and boat (non-mechanised) with economic status (Table 4.16). Ownership of fishing license was not associated with income categories. Distribution of households by ownership of essential and desirable assets is presented in Table 4.17. In some settlements, a higher proportion of households owned desirable assets and were economically relatively better off than the others (Figure 2).

Box 4.4: Essential and Desirable Equipment

Essential equipment
Boat, Katar (net), Gunja are essential for prawn harvesters to venture out on their own. Lack of any of these means that they need to partner with others for going out for a catch.

Even those who work as labourers with other prawn harvesters must own gunja to be able to participate in the prawn harvesting activities. The labourers usually participate in fishing, loading and unloading the catch from the boats.

Desirable equipment
Mechanised boat, cold storage box, ownership of place at the temporary settlement and boat license are not essential but desirable as their ownership can significantly increase the quantity of catch (mechanised boats, license, place at temporary settlement) as well as fetch a better price for the catch (cold storage box).

Eleven of the 288 (4%) sample households did not own any of the above mentioned assets. Of the rest, most (92%, 266/277) owned gunja, and only three households reported ownership of mechanised boats.

Table 4.16: Distribution of Households by Assets owned and Economic Status Categories

	Economic status				Chi-square
	Poorest (n=58)	Poor (n=174)	Less poor (n=42)	Total (n=274)^	
Ownership of desirable assets					
Do not own desirable assets	29 (50%)	75 (43%)	17 (41%)	121 (44%)	Chi-square=1.112, df=2, p=0.573
Own at least one desirable asset	29 (50%)	99 (57%)	25 (60%)	153 (56%)	
Desirable equipment ***Mechanised boat***					
Yes	--	2	1	3	Not calculated
No	58	171	40	269	
No response	--	1	1	2	
Fishing license					
Yes	29 (50%)	82 (47%)	20 (48%)	131 (48%)	Chi-square=0.120, df=2,
No	29 (50%)	91 (53%)	22 (52%)	142 (52%)	p=0.942
Boat license					
Yes	29 (50%)	82 (47%)	20 (48%)	131 (48%)	Not calculated
No	29 (50%)	91 (53%)	22 (52%)	142 (52%)	
Dhori					
Yes	--	20 (12%)	5 (12%)	25 (9%)	Chi-square=7.394, df=2,
No	58 (100%)	154 (88%)	37 (88%)	249 (91%)	p=0.025*
Cold storage box					
Yes	7 (12%)	49 (28%)	16 (38%)	72 (26%)	Chi-square=9.391, df=2,
No	51 (88%)	125 (72%)	26 (62%)	202 (74%)	p=0.009*
Essential equipment ***Boat (non-mechansied)***					
Yes	32 (55%)	101 (58%)	33 (79%)	166 (61%)	Chi-square=6.871, df=2,
No	26 (45%)	73 (42%)	9 (21%)	108 (39%)	p=0.032*
Katar					
Yes	25 (43%)	80 (46%)	24 (57%)	129 (47%)	Chi-square=2.160. df=2,
No	33 (57%)	94 (54%)	18 (43%)	145 (53%)	p=0.340
Gunja					
Yes	53 (91%)	159 (91%)	40 (95%)	252 (92%)	Chi-square=0.717, df=2,
No	5 (9%)	15 (9%)	2 (5%)	22 (8%)	p=0.699

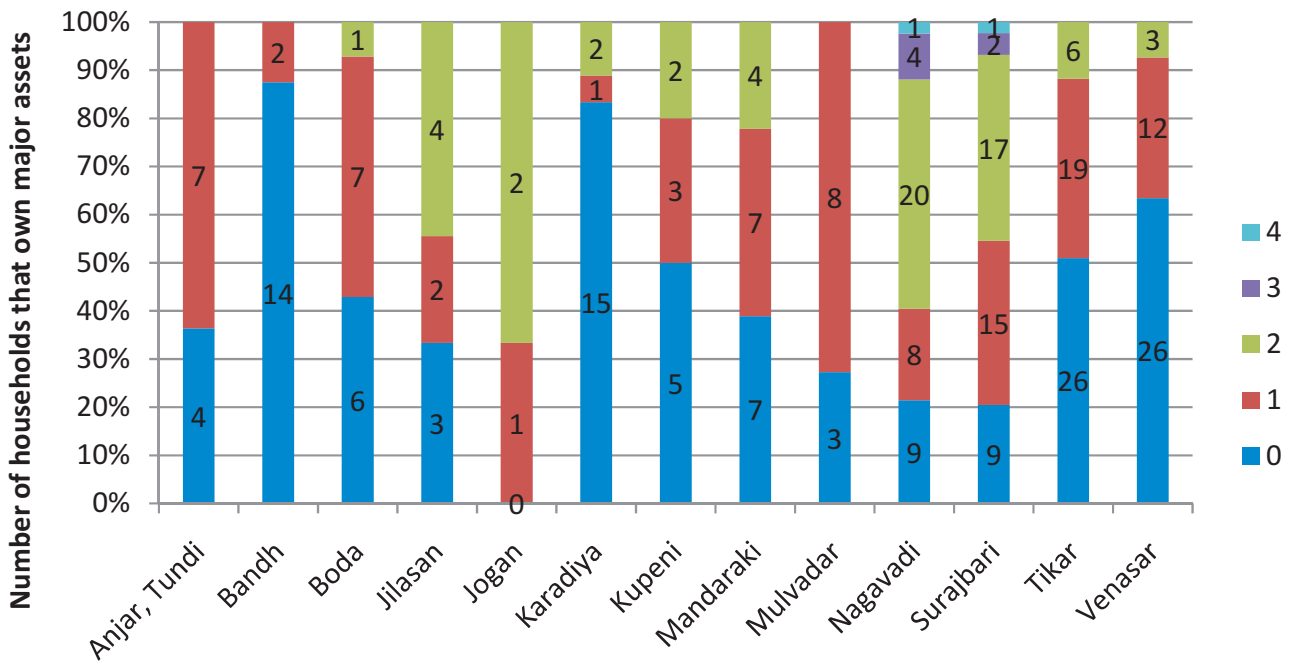
^ Analysis is carried out on valid cases only
**The Chi-square statistic is significant at the 0.05 level*
Source: Survey data

Table 4.17: Distribution of Households by Ownership of Essential and Desirable Assets

Number of desirable assets	Number of essential assets				Total (n=288)
	0	1	2	3	
0	11 (4%)	52 (18%)	28 (10%)	36 (13%)	127 (44%)
1	2 (1%)	17 (6%)	25 (9%)	48 (17%)	92 (32%)
2	--	14 (5%)	26 (9%)	21 (7%)	61 (21%)
3	--	--	3 (1%)	3 (1%)	6 (2%)
4	--	--	1 (<1%)	1 (<1%)	2(1%)
Total	**13 (5%)**	**83(29%)**	**83 (29%)**	**109 (38%)**	**288 (100%)**

Percentages calculated on table total of 288.
Source: Survey data

Figure 2: Ownership of desirable assets

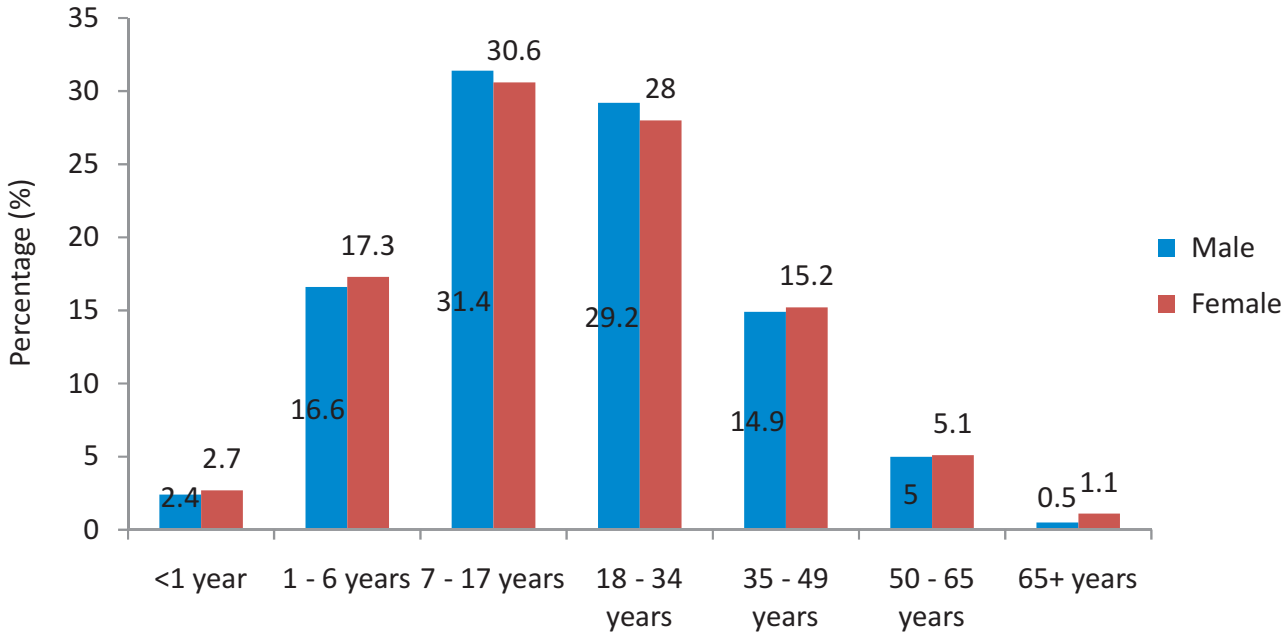


Source: Survey data

Individuals

The survey collected data on 2017 persons (1028 men and 989 women) from the 288 sample households. Persons in the reproductive age-group, 15-49 years accounted for 52% (1058/2017) of the sample population (Figure 3). Six percent of boys/men (37/633) less than 21 years of age and two percent of girls/women (9/501) less than 18 years of age were married at the time of the survey (Table 4.18).

Figure 3: Age and Sex-wise Distribution of the Sample



Source: Survey data

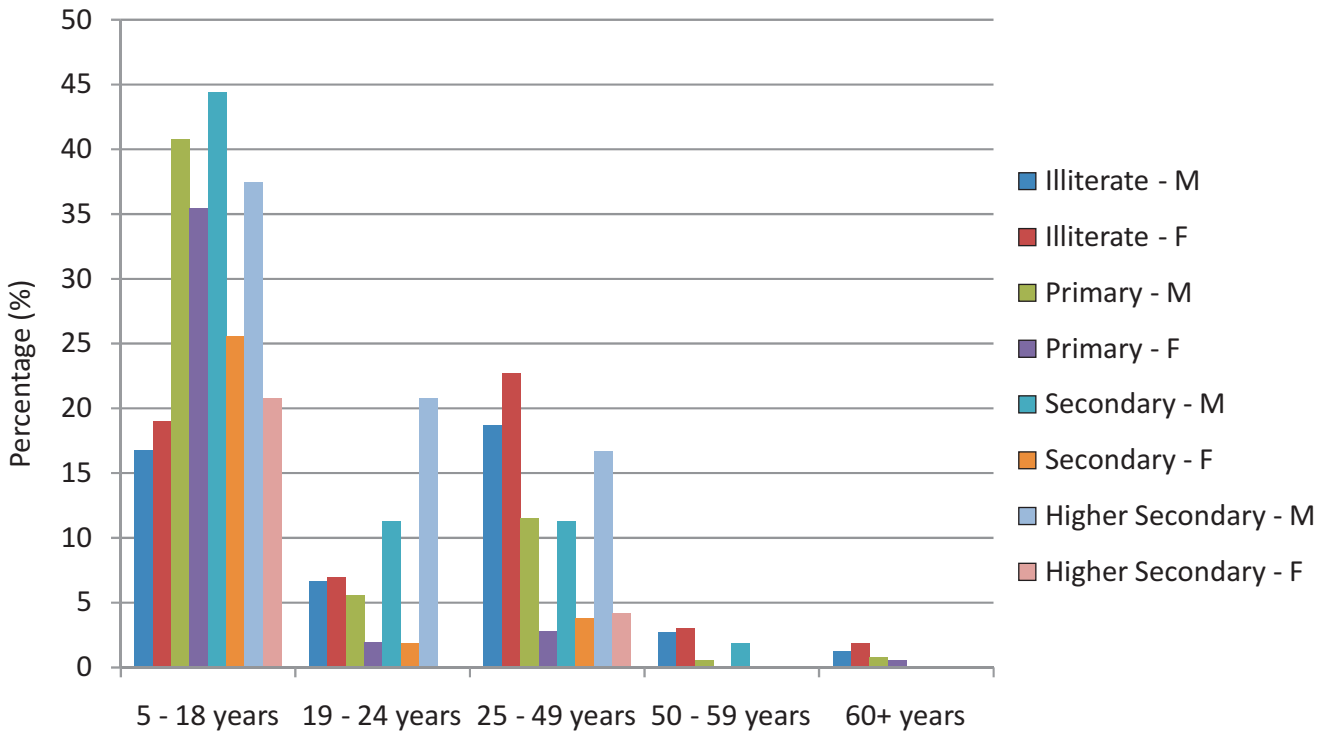
The literacy rate was 38% for men and 24% for women. The proportion of persons who had more than seven years of schooling was more among the younger age groups, 2% (5/217) for 19-24 years as compared to the older age group, and 0% for those more than 60 years of age. Fewer women as compared to men reported having higher education, that is eighth to tenth standard (Figure 4). Almost half (45%, 142/313) of the boys and a little over one-third (37%, 110/200) of the girls in the age group of 7-17 years reported being students.

Table 4.18: Profile of the Sample

	Number of persons (%)
Household size	
	(n=2017)
Mean (Minimum – Maximum)	7 (2 -13)
Type of family	
	(n=288)
Nuclear	57
Joint	42
Extended	1
Sex	
	(n=2017)
Male	1028 (51)
Female	989 (49)
Sex ratio	
	(n=2017)
Total	962
0 – 6 years	1010
Age (years)	
	(n=2017)
Less than one	52 (3%)
1 – 6	342 (17%)
7 – 17	626 (31%)
18 – 34	577 (29%)
35 – 49	303 (15%)
50 – 65	101 (5%)
More than 65	16 (1%)
Marital status	
	(n=2017)
Never married (includes children and adults)	1179 (59%)
Married (includes children and adults)	797 (39%)
Divorced / separated / widow / widower	41 (2%)
Married before legal age	
	(n=2017)
Men – aged less than 21 and married	37 (n=532, 6%)
Women – aged less than 18 and married	9 (n=501, 2%)
Educational status (completed education)	(n=1734)*
1 – 4 years	358 (21%)
5 – 7 years	160 (9%)
8 – 10 years	24 (1%)
Employment status	
	(n=1605)*
Employed	1198 (74%)
Unemployed	148 (9%)
Engaged in household chores	1 (<1%)
Student	258 (16%)

**Analysis based on valid cases only*
Source survey data

Figure 4: Educational Status for Men and Women



Seventy-four percent (1198/1605) of the population reported being engaged in gainful employment at the time of the survey (Table 4.18). Animal rearing, fishing and menial labour (at salt pans or farms) were reported as sources of income and the main occupations at the base village. A little less than three-fourth (72%, 1159/1605) of the persons had a secondary occupation (Table 4.19). During the prawn harvesting season, the families were primarily engaged in prawn harvesting and related activities. Fifteen students who reported studying as the main activity and two persons who were unemployed at the base village too engaged in prawn harvesting related activities at the temporary settlements. The main and secondary occupations for adult and child earners are presented in Table 4.20.

Table 4.19: Distribution of Persons over Main and Secondary Occupations

Main Occupation	Secondary Activity											Total
	No Secondary Occupation	Labour	Farming	Fishing	Business	Salary Job	Animal rearing	Household duties	Unemployed	Student	No response	
labour	3	23	1	134	–	1	28	–	–	–	–	190
Farming	3	–	–	5	–	–	5	–	–	–	–	13
Fishing	19	381	1	37	20	–	9	1	6	7	–	481
Business	–	–	–	14	3	1	2	–	–	–	–	20
Salary Job	–	–	–	–	–	1	2	–	–	–	–	3
Animal rearing	12	102	1	6	–	–	364	–	3	3	–	491
Household duties	1	–	–	–	–	–	–	–	—	–	–	1
No work	112	–	–	2	–	–	–	–	34	–	–	148
Student	9	6	–	3	–	–	6	–	211	23	–	258
No response	–	–	–	–	–	–	–	–	–	–	1	1
Total	**159**	**512**	**3**	**201**	**23**	**3**	**416**	**1**	**254**	**33**	**1**	**1606**

Source: Survey data

At the base villages where the community spends about eight months of the year, most households have small land holdings. Poor quality of soil due to salination of land, polluted water sources, dependence on monsoon, which often is inadequate for cultivation and poor irrigation facilities allow for only one crop per year, and the resultant produce is not enough to support the household throughout the year. Bajra (sorghum), cotton, sesame, and a few varieties of legumes are the main crops in this area. The community also grows vegetables for household consumption and the local market.

Table 4.20: Main and Secondary Occupations

Occupation	Male		Female		Total	
	Main	Secondary	Main	Secondary	Main	Secondary
Age more than 14 years (Adult earner)						
	(n=604)	(n=588)*	(n=565)	(n=547)*	(n=1168)	(n=1135)*
Labour	132 (22%)	335 (57%)	49 (9%)	156 (29%)	181 (15%)	491 (43%)
Farming	6 (1%)	2 (<1%)	6 (1%)	1 (<1%)	12 (1%)	3 (<1%)
Fishing	384 (63%)	161 (27%)	67 (13%)	29 (5%)	451 (39%)	190 (17%)
Business	18 (3%)	23 (4%)	1 (<1%)	0	19 (2%)	23 (2%)
Salaried jobs	1 (<1%)	3 (<1%)	2 (<1%)	0	3 (<1%)	3 (<1%)
Animal rearing	6 (1%)	9 (2%)	410 (72%)	334 (61%)	416 (36%)	343 (30%)
Household chores	–	–	1 (<1%)	1 (<1%)	1 (<1%)	1 (<1%)
Unemployed	29 (5%)	48 (8%)	11 (2%)	21 (4%)	40 (3%)	69 (6%)
Students	27 (5%)	8 (1%)	18 (3%)	4 (1%)	45 (4%)	12 (1%)
Age upto 14 years (Child earner)						
	(n=216)	(n=148)*	(n=224)	(n=166)*	(n=440)	(n=314)*
Labour	6 (3%)	18 (12%)	3 (1%)	3 (2%)	9 (2%)	21 (7%)
Farming	–	–	1 (<1%)	–	1 (<1%)	–
Fishing	27 (13%)	8 (5%)	3 (1%)	3 (2%)	30 (7%)	11 (4%)
Business	1 (<1%)	–	–	–	1 (<1%)	–
Animal rearing	5 (2%)	3 (2%)	70 (32%)	70 (42%)	75 (17%)	73 (23%)
Unemployed	58 (27%)	102 (69%)	50 (23%)	83 (51%)	108 (25%)	185 (60%)
Student	119 (56%)	16 (11%)	94 (42%)	5 (4%)	213 (49%)	21 (7%)

**Only those who reported a secondary occupation are included for analysis*
Soure: Survey data

Though not reported in the survey, the field observations and informal interactions with key informants (October 2010) from one of the temporary settlements (Nagawadi) revealed some small income sources for the prawn harvester families. These include selling milk and milk products at the temporary settlement, making and selling quilts and cattle herding at the base village. However, whether these were specific to the settlement visited or whether this was a common pattern at other settlements as well was not verified.

Heath Status

The harsh weather, lack of sanitation and hygiene, inadequate nutrition and lack of access to curative services at the temporary settlements result in high morbidity among the community. The study explored general, maternal and occupational morbidity among the sample households. A history of morbidity at the time of interview, within 15 days immediately preceding the interview (acute illnesses) and illnesses that lasted more than three months (chronic

conditions) were recorded. Conditions such as heart, kidney diseases and neuro-psychiatric conditions including epilepsy have been included under chronic conditions. Episodes of acute exacerbation of chronic conditions were not reported separately. Women respondents reported morbidity for the men from the household. Women were probed for reproductive morbidity. Data on occupational morbidity were separately collected from one man and one woman representative from each of the sample households. The methodology may have influenced the rates and hence the data cannot be generalised.

Box 4.5: Indicators used to report morbidity

- *Acute illness (Illness during the 15 days preceding the day of survey)*
- *Chronic illness (illness during three months preceding the day of survey as well as conditions of heart, kidney, cancer, etc)*
- *Reproductive illness (reported as acute or chronic and probed for details)*
- *Occupational health conditions (health conditions that respondents believed to be caused by activities related to prawn harvesting)*

Burden of illhealth

Acute conditions

Almost one-fourth (24%, 481/2017) of the sample reported being ill at least once in the 15 days preceding the day of interview. The poorest households reported significantly higher morbidity (chi-square, p=0.005). There was no difference in the proportion of men and women reporting morbidity (chi-square=0.868, p=0.362 for all men and women; p=0.0.876 for men and women from the poorest category) (Table 4.21). Duration of illness reported by the respondents ranged from one day to twenty days, with half of those who reported illness reporting a duration of more than seven days (median = 7 days).

Table 4.21: Reporting of Illness during the 15 Days Preceding the Survey

		Reported illness in 15 days preceding the survey		Chi-square, df, p (Singnificance)
		Yes	No	
Economic status (Households)				
Poorest	(n=58)	57 (98%)	1 (2%)	Chi-square=11.018, df=2,
Poor	(n=174)	148 (85%)	26 (15%)	p=0.005
Less poor	(n=42)	32 (76%)	10 (24%)	(Significant)
Total	(n=274)*	237 (87%)	37 (14%)	
Sex				
Male	(n=1028)	234 (23%)	794 (77%)	Chi-square=1.358, df=2,
Female	(n=989)	247 (25%)	742 (75%)	p= 0.244
Total	(n=2017)	481 (24%)	1536 (76%)	(Not significant)
Economic status (Poorest) and sex				
Male	(n=237)	60 (25%)	177 (75%)	Chi-square=0.024 df=1, p=0.876
Female	(n=239)	62 (26%)	177 (74%)	(Not significant)
Total	(n=476)	122 (26%)	354 (74%)	

**Analysis based on valid cases only*
Source: Survey data

Fever was the most commonly reported condition; reported by 70% (312/449) of the persons who reported an acute illness during the 15 days preceding the survey. Other illnesses in the order of frequency were skin problems such as itching, boils, rashes etc (10%, 45/449), and symptoms related to the gastro-intestinal system such as loss of appetite, constipation, dysentry and pain in the abdomen (8%, 37/449). Distribution of symptoms by sexof the ill person is presented in Table 4.23.

The prawn harvesters believed that the weather (havamaan), prolonged contact with water and contaminated drinking water were responsible for ill health (Table 4.22).

Table 4.22: Perceived causes of illness

Reasons	Symptoms									Total
	Respiratory System	Musculoskeletal System	Frequent headache	Mental Health	Skin Disease	Digestive System	Fever	Reproductive Health Problem	Other	
	(n=4)	(n=28)	(n=26)	(n=9)	(n=38)	(n=30)	(n=290)	(n=7)	(n=3)	(n=407)*
Contaminated drinking water	--	2 (7%)	3 -12%	-- --	4 (11%)	4 (13%)	38 (13%)	--	--	47(12%)
Food/diet	--				1 (3%)	6 (20%)	10 (3%)	--	--	15 (4%)
Most of the time work in water	--	11 (39%)	7 (27%)	3 (33%)	6 (16%)	11 (37%)	43 (15%)	1 (14%)	--	77(19%)
Carrying Weight	1 (25%)	4 (14%)	3 (12%)	--	--	1 (3%)	17 (6%)	1 (14%)		23 (6%)
Weather	2 (50%)	10 (36%)	14 (54%)	2 (22%)	28 (74%)	9 (30%)	230 (79%)	1 (14%)	2 (67%)	281 -69%
Over work (more than 12 hrs)	1 (25%)	--	2 (8%)	2 (22%)	--	--	--	2 (29%)	1 (33%)	5 (1%)
Other--	--	--	--	--	--	--	2 (29%)	--	1 (<1%)	--
Fell down	--	--	1 (4%)				1 (<1%)	--	--	2 (1%)
Old age				2 (22%)	--	--	--		--	2 (1%)
Don't know	--	1 (4%)	--	--	--	--	--	--	--	1 (<1%)
Accident	--	4 (14%)	--	--	--	--	--		--	4 (1%)
Due to herbal medicine				--	1 (3%)	--	--	--	--	1 (<1%)

**Analysis based on valid cases only*
Source: Survey data

Box 4.6: Perceptions of causes of diarrhoea

Diarrhoea which is a common problem among adults, children, men and women is believed to be because of consumption of 'hot food' such as fish or by eating stale food - "raatki cheej subah me khanese" or because of drinking too much water which leads to vomiting which then leads to diarrhoea. The women believed that vomiting causes diarrhoea and therefore anything that causes vomiting causes diarrhoea. When asked whether flies are responsible for any illness, one of the women promptly said, "Flies are harmless, just another creature that the God has made. They move around here and there, but they are not harmful. Neither are the spiders that keep descending from the Babul trees. The hairy worms from the Babul tree are harmful."

When asked what happens if a fly sits on a food item that one is eating, two of the women said that if the fly sits and then flies away, nothing happens. One woman said that if it falls into the food one is eating, then one starts vomiting and has diarrhoea. This is what she had experienced. The other woman, however, said that if a fly falls into her food, she just takes it out and continues to eat and nothing happens to her.

Diarrhoea is treated with home remedies. Since it is believed to be caused by 'hot foods', the person suffering from it is given 'cold foods' like curds and lime sarbat (juice). The diet then consists of plain rice and curd, wheat roti, soup of moong ("mag no paani"), moong daal and roti and food without spices. For diarrhoea with blood in the stools, the person is given black tea with alum which is a sure-shot remedy for the illness.

(Source: Discussion with a group of women, Nagawadi, October 2010)

Table 4.23: Symptoms/conditions suffered during the 15 days preceding the Survey

Symptoms	Sex		Total (n=449)*
	Male (n=219)	Female (n=230)	
Fever	147 (67%)	165 (70%)	312 (70%)
Skin problem, rash, itching, patches, sweating, pimples and	23 (10%)	22 (10%)	45 (10%)
Loss of appetite, constipation, stomach ache, dysentry	23 (11%)	14 (6%)	37 (8%)
Frequent headache	10 (5%)	21 (9%)	31 (7%)
Body ache (due to walking, moving, bending, holding)	18 (8%)	10 (4%)	28 (6%)
Reproductive Health Problem	--	8 (3%)	8 (2%)
Problem with sleeping and concentration, palpitation, anxiety, mood swing, rage etc, always feel tired	5 (2%)	4 (2%)	9 (2%)
Respiratory and Breathing trouble	3 (1%)	1 (0.4%)	4 (1%)
Eye/Ear problem	1 (1%)	2 (1%)	3 (1%)
Weakness	--	2 (1%)	2 (0.4%)

**Analysis based on valid cases only*
Source: Survey data

Ninety percent (402/449) of persons sought treatment for an illness they had reported during the 15 days preceding the survey. Treatment seeking did not vary over the sex of the person and economic status of the household, but it was significantly higher (chi-square, p=0.000) for fever. Discussion with community representatives showed that fever is considered a serious symptom which is perceived to need the immediate attention of a doctor (Box 4.7) (Table 4.24).

Box 4.7: Summary of Discussion with Community Representatives about Fever

In 2004 Maliya experienced an epidemic of falciparum malaria. Persons would develop high fever, start vomiting, develop delirium and become unconscious. Many who reached the level of unconsciousness succumbed to the disease. The death toll was high, almost every household lost a kin. This epidemic left a lasting fear of fever in the minds of the communities here. Their experiences told them that if treated early at an allopathic facility, fever may not be a serious condition. Even six years down the line, the community seeks prompt treatment for fever.

Fever according to the women, including RH, an ASHA worker, is a serious condition and needs timely intervention. If untreated, "fever goes to the brain. Then the patient starts gasping, becomes unresponsive, does not talk, loses consciousness and can be saved only by giving 'bottles' (IV fluids) at the Morbi hospital". Fever is more common among men because they stand for long periods in water and are exposed to the harsh sun and cold water. Fever is one of the symptoms for the illness that is common among younger men who go out fishing. In addition to fever, these men also report pain in the limbs (bodyache), headache, giddiness and this illness lasts for weeks together.

(Source: Discussion with three women from the community, October 2010)

Table 4.24: Treatment seeking by Demographic Characteristics

		Sought treatment		Chi-square, df, p
		Yes	No	
Sex				
Male	(n=218)	194 (89%)	24 (11%)	Chi-square=0.133, df=1, p=0.716
Female	(n=231)	208 (90%)	23 (10%)	
Total	(n=449)	402 (90%)	47 (11%)	
Economic status				
Poorest	(n=114)	101 (89%)	13 (11%)	Chi-square=1.466, df=2, p=0.480
Poor	(n=261)	234 (90%)	27 (10%)	
Less Poor	(n=54)	51 (94%)	3 (6%)	
Symptoms / conditions				
Fever	(n=312)	290 (93%)	22 (7%)	Chi-square=12.735, df=2, p=0.000(*)
Other	(n=137)	112 (82%)	25 (18%)	

Analysis based on valid cases only
Source: Survey data

Besides seeking formal help for illnesses, the prawn harvesters also tried traditional home remedies for common health conditions. Fever, since it was considered serious, was promptly treated with salt-water fomentation as well as other 'cold' substances like onion juice, buttermilk and neem leaves. The respondents also reported practising religious customs for getting relief from the illness. According to the participants of group discussions, this often included drinking or sprinkling water blessed by the priests from the base villages. A summary of traditional home remedies reported by the respondents is presented in Box 4.8.

Box 4.8: Home Remedies reported by the Respondents

Fever

- *Place cloth soaked in salted water on the forehead*
- *Apply lime-stone to the forehead*
- *Apply balm to the forehead*
- *Sprinkle water on the head*
- *Drink lemon juice, water boiled with neem leaves*
- *Apply onion juice to the body/soles of feet/palms*
- *Apply buttermilk to the soles of feet*
- *Eat bajra roti (cool foods)*
- *Perform religious practices/rituals*

Headache

- *Drink black tea*
- *Apply balm to the forehead*
- *Apply wheat flour paste to the forehead*

Cold

- *Drink black tea*
- *Apply balm*

Stomachache

- *Take a mixture of dried ginger powder and jaggery or a mixture of ghee and jaggery*
- *Chew fennel seeds*
- *Drink lemon juice*
- *Religious customs*

Loss of appetite, other problems of digestive system

- *Drink water with jaggery*
- *Take Kayam Churna and dried figs*

(Source: Survey data)

Information on source of treatment was available for 400 of 402 persons who reported having sought treatment.The private health care sector seemed to be the preferred source of treatment. A little over three-fourths of those who sought treatment had consulted private clinics (76%, 304/400), and three persons had accessed both private clinics as well as the government hospital for treatment (Table 4.25). Preference for the private sector did not vary over sex, however, the private sector care providers (private clinic) were consulted for all infants and most children under five years of age who had an illness during the 15 days preceding the survey (see Table 4.26). Data for distances travelled to access a health care provider were not collected; however, from information about distances of health care facilities from the settlements (presented in Table 4.7) it was gathered that the prawn harvesters travelled 5km - 76km to access a private sector health care provider, and 12km-90km to access a public sector health care service.

Information on the mode of transport used to access a health care provider was available for 391 of 402 persons who reported having sought treatment. More than three fourths (78%, 305/391) used chhakda rickshaw, 10% (40/391) used motorcycle and another 5% (18/391) used their own four wheelers to reach the health care facilities. Only one person reported having walked to the health care facility and three were transported by 108 emergency ambulance service.

Table 4.25: Preferred Health Care Providers

Source of treatment recorded	Sex		Total (n=400)
	Male (n=193)	Female (n=207)	
Home remedies, local shop	6 (3%)	14 (7%)	20 (5%)
Govt. health worker*	7 (4%)	3 (1%)	10 (3%)
Govt. Hospital**	30 (16%)	33 (16%)	63 (16%)
Pvt. Clinic***	150 (78%)	154 (74%)	304 (76%)
Govt. hospital and private clinic	--	3 (1%)	3 (1%)

**Includes one respondent who accessed local shop and government health worker*
***Includes one respondent who accessed local shop and government hospital*
****Includes one respondent who accessed government health worker and private clinic*

Source: Survey data

Table 4.26: Preferred Health Care Provider for Age Categories

Source of treatment recoded	Population categories based on age			Total (n=400)
	Infant (n=12)	Child (n=63)	Other (n=325)	
Home remedies, local shop	--	3 (5%)	17 (6%)	20 (5%)
Govt. health worker*	--	3 (5%)	7 (2%)	10 (3%)
Govt. Hospital**	--	10 (16%)	53 (16%)	63 (16%)
Pvt. Clinic***	12 (100%)	47 (75%)	255 (78%)	304 (76%)
Govt. hospital and private clinic	--	--	3 (1%)	3 (1%)

**Includes one respondent who accessed local shop and government health worker*
***Includes one respondent who accessed local shop and government hospital*
****Includes one respondent who accessed government health worker and private clinic*

Source: Survey data

Fever

Since almost two thirds of the respondents reported fever, these cases were analysed separately to gain insights. The details are provided in Table 4.27. A similar proportion of men (14%, 147/1028) and women (16%, 165/989) reported fever in the reference period. Only 33% of the households did not report fever; in 42% households, one person suffered from fever while in 25% of the households, more than one person reported fever. The adult population in the age group,18-59 years, accounted for almost half of the people who reported fever (43%, 134/312) followed by children in the 6-17 years age group (33%, 102/312). Most of the respondents attributed fever to the 'weather', the intense heat, and constant contact with water to which the respondents are exposed while at the temporary settlement. The distribution of cases of fever over age group supports this notion.

Table 4.27: Distribution of Persons who were ill with fever during the 15 days preceding the Survey

Number of fever cases reported per household	
	(n=288*)
No case of fever	95 (33%)
One person	121 (42%)
Two persons	39 (14%)
Three persons	23 (8%)
Four persons	6 (2%)
Five persons	4 (1%)
Sex	
	(n=312)
Male	147 (48%)
Female	165 (52%)
Age	
	(n=312)
<1 year	9 (3%)
1 – 5 years	59 (19%)
6 – 17 years	102 (33%)
18 – 59 years	134 (43%)
>= 60 years	8(2%)
Main occupation	
	(n=236)
Labour	15 (6%)
Farming	2 (1%)
Fishing	65 (28%)
Business	2 (1%)
Salary Job	1 (<1%)
Animal rearing	82 (35%)
No work	22 (9%)
Student	47(20%)
Duration of fever (Days)	
Median (Minimum –Maximum)	7 (1-20)
Whether Treatment sought	
	(n=312)
Yes	290 (93%)
No	22 (7%)
Source of treatment	
	(n=288)**
Home remedies, local shop	11 (4%)
Govt. health worker[1]	1 (<1%)
Govt. Hospital[2]	40 (14%)
Pvt. Clinic[3]	234 (81%)
Govt. hospital and private clinic	2 (1%)

**Number of households **Only valid cases included for analysis*

[1] Includes one respondent who accessed the local shop and government health worker

[2] Includes one respondent who accessed the local shop and government hospital

[3] Includes one respondent who accessed the government health worker and a private clinic

Source:Survey data

Hospitalisation

Eleven percent (11%, 43/402) of the persons who reported illness during the 15 days preceding the survey needed hospitalisation. Majority (72%, 31/43) were hospitalised for only fever or for fever with other symptoms (Table 4.27). The economic status of the household was not associated with a person's hospitalisation (Chi square p=0.232; data not presented here).

Table 4.28: Conditions for which Persons were hospitalised during the fifteen days preceding the Survey

Whether hospitalised	
	(n=402)*
Yes	43 (11%)
No	359 (89%)
Conditions for which hospitalised	
	(n=43)*
Fever with or without other symptoms	31 (72%)
GI problems with or without other symptoms	4 (9%)
Skin problem	3 (7%)
Respiratory problem - with or without other symptoms	2 (5%)
Body ache and head ache	1 (2%)
RH symptoms with or without other symptoms	1 (2%)
Weakness	1 (2%)

** Analysis based on valid cases only*
Source: Survey data

Expenditure on Health Care

Information on costs incurred on treatment of acute illnesses was available for 364 persons. Expenditure on health care ranged from Rs. 5/- to Rs. 20,000/- (the high cost when a person was hospitalised for a condition). Average (median) expenditure on health care was significantly higher for fever with or without other conditions and in the case of hospitalisation (Table 4.29).

Sources of finances for meeting the expenditure were available for 382 persons who reported illness during the fifteen days preceding the survey. Two-thirds (67%, 254/382) used personal savings, 28% (105/382) borrowed money from friends and/or relatives for meeting the cost of health care. Of the remaining, three percent each borrowed money from prawn agents or pawned household assets. The source of finance was associated with the amount incurred, with people being forced to borrow or pawn items to meet the relatively higher costs of care (Table 4.30).

Table 4.29: Expenditure on Health Care for Acute Illnesses

	(n)*	Expenditure on health care (Rs.)	
		Minimum – Maximum	Median
Average (median) expenditure on health care			
Fever with or without other conditions	312	5 - 20000	250
Other conditions Mann-Whiteney Test, p=0.025	137	5 - 16000	185
Hospitalised	40	20 – 20000	775
Not hospitalised	324	5 - 5000	200
Total	364	5 - 20000	230
Mann-Whiteny Test, p=0.000			
Source of finances for treatment expenses for illnesses reported during the period of 15 days preceding the survey			
Personal savings	254	5 - 5000	190
Borrowed from friends and neighbours	105	12 - 20000	300
Pawned household assets	10	550 - 5000	920
Borrowed from prawn businessmen	12	100 - 800	220
Other	1	600	--
Total	382	5 - 20000	230
Kruskal-Wallis Test, p=0.000, df=4			

** Analysis based on valid cases only*
Source: Survey data

Table 4.30: Source of financing Health Care by Hospitalisation and Economic Status

		Source of financing health care		
		Personal savings	Borrowed from family / friends / agents	
Whether hospitalised				
Yes	(n=42)	21 (50%)	21 (50%)	Chi-square 5.761, p=0.016, df=1
No	(n=340)	233 (69%)	107 (31%)	
Economic status*				
Poorest	(n=98)	68 (69%)	30 (31%)	Chi-square 8.646, p=0.013, df=2
Poor	(n=223)	136 (61%)	87 (39%)	
Less poor	(n=46)	38 (83%)	8 (17%)	

** Analysis based on valid cases only*
Source: Survey data

Chronic Conditions

Illnesses that were prevelent for three months during the time of the survey were recorded as chronic illnesses. Additionally, respondents/persons suffering from chronic conditions (for example, heart, kidney related conditions, cancers, stroke, mental illness) were also considered to be suffering from chronic conditions. More than ten percent (17%, 348/2017) of the prawn harvesters surveyed reported one or more chronic illnesses (300/348 reported one condition and 48 reported two conditions.) More women (23%, 231/989) as compared to men (11%, 117/1028) reported chronic conditions (Chi-square, p=0.000) (Table 4.31). Persons from the working age group of 18-45 years reported a significantly higher proportion of chronic illnesses (p=0.000)

Table 4.31: Age and Sexwise Distribution of Persons who reported Chronic Illness/es

Whether suffering from chronic illness		
	(n=2017)	
Yes	348 (17%)	
No	1669 (83%)	
Sexwise distrubution of person who reported chronic illness		
	(n=348)	
Male	117 (33%)	Chi-square, p=0.000
Female	231 (66%)	
Age (years) of person who reported chronic conditions		
	(n=348)	
1 – 12	18 (5%)	Chi-square, p=0.000
13 – 17	10 (3%)	
18 – 45	280 (81%)	
46 – 59	25 (7%)	
>59	15 (4%)	

Source: Survey data

Average duration[11] of a chronic illness reported was 24 months (2 years) and it was longer for men (0 -540 months, median=36 months) than for women (1-600 months, median=24 months). Reproductive health problems accounted for 81% (188/231) of the chronic illnesses among women. Respiratory conditions including tuberculosis, conditions of the musculoskeletal system including joint pain, skin diseases and mental illnesses were the other commonly reported chronic health conditions (see Table 4.32).

[11] Duration of illness was not available for two persons.Minimum duration of zero and one month is a result of respondents reporting illness such as TB and heart condition.etc of recent onset

Box 4.9: Women's Perceptions of the cause for pathri (stone disease)

Another health problem common at the settlement is "painful micturation and passing red urine", which one woman said was because of "pathri". The woman said that a doctor had explained it to her when one of her sons suffered from it. There was some discussion on what pathri meant - the unanimous explanation was that when one eats grains that have small stones in them (uncleaned grains) and drinks water, the stones which are ground while eating re-form in the body and cause pathri. The women also wondered how it was possible, but accepted the explanation since they could not find another explanation for 'how a stone could enter the body'. This illness, though seen among both men and women, was reported to be more among men.

(Source: Excerpts from field notes, Discussion with a group of women, Nagawadi, October 2010)

Mental illnesses ranked fourth among the chronic conditions reported by the respondents. However, community representatives who participated in the initial group discussions had mentioned that mental illnesses were very common in the community, especially among men. The participants had mentioned persons (mostly men) getting seizures (kheench) or experiencing a state of disorientation (not aware of what s/he is doing) during the episode. However, details could not be obtained at that point. Since the reported chronic conditions did not show such a pattern, this issue was again explored with the community at the Nagavadi temporary settlement during the field visit in October 2010. Since the descriptions of 'mental illnesses' by the participants of group discussions involved 'fits and disorientation', it was unclear as to whether these were neurological or psychiatric conditions, and researchers wanted to gain some clarity on the issue. Again, narratives were collected but records of treatment could not be verified since the prawn harvesters said they had left important papers back at the base village. One interview was conducted at the base village and some case records were studied. However, it appears that psychiatric and neurological/physiological conditions might have been termed as 'mental illnesses' by the respondents. Three case stories are presented here (Box 4.10).

Table 4.32: Symptoms reported by those who reported Chronic Illnesses

Reported chronic conditions	Number of Persons								
	Sex		Age of person reporting chronic illness						Total
	Male (n=117)	Female (n=231)	<18 years (n=11)	(n=17)	18 - 45 years (n=79)	(n=201)	>45 years (n=27)	(n=13)	(n=348)
Reproductive Health problem[1]	–	188 (81%)	–	–	–	184 (80%)	–	4 (2%)	188 (54%)
Musculoskeletal System[2]	18 (15%)	12 (5%)	1 (1%)	2 (1%)	11 (9%)	8 (4%)	6 (5%)	2 (1%)	30 (9%)
Skin diseases[3]	15 (13%)	10 (4%)	3 (3%)	6 (3%)	11 (9%)	4 (2%)	1 (1%)	–	25 (7%)
Mental Illness[4]	13 (11%)	8 (4%)	1 (1%)	1 (<1%)	10 (9%)	7 (3%)	2 (2%)		21 (6%)
Respiratory System	13 (11%)	8 (4%)	1 (1%)	1 (<1%)	10 (9%)	6 (3%)	2 (2%)	1 (<1%)	21 (6%)
Digestion problem[5]	11 (9%)	7 (3%)	–	–	10 (9%)	5 (2%)	1 (1%)	2 (1%)	18 (5%)
TB	9 (8%)	7 (3%)	1 (1%)	–	6 (5%)	6 (3%)	2 (2%)	1 (<1%)	16 (5%)
Disability by accident[6]	7 (6)	3 (1%)	1 (1%)	1 (<1)	4 (3%)	1 (<1)	2 (2%)	1 (<1)	10 (3%)
Headache	3 (3%)	5 (2%)	–	–	2 (2%)	5 (2%)	1 (1%)	–	8 (2%)
Heart problem	4 (3%)	3 (1%)	–	1 (<1%)	2 (2%)	1 (<1%)	2 (2%)	1 (<1%)	7 (2%)
Fever	2 (2%)	2 (<1%)	–	–	2 (2%)	2 (1%)	–	–	4 (1%)
Other[7]	27 (23%)	21 (9%)	4 (3%)	5 (2%)	14 (12%)	15 (7%)	9 (8%)	1 (<1%)	48 (14%)

Multiple responses.
Presentation based on grouping of reported conditions.
[1] Conditions included here are presented separately in Table 4.33
[2] Includes joint pain and cracks in the bones
[3] Includes skin diseases, boils on head (presumably eruptions on scalp) and pus in the head (interpreted also to be pustules on scalp, included here since reported as a chronic and not acute condition)
[4] Includes mood swings, insomnia, etc
[5] Includes loss of appetite, diarrhoea, vomiting, pain abdomen etc
[6] Includes reported injuries resulting from accidents, disabilities resulting from accidents and two cases of other injuries / wounds with pus
[7] Other conditions include non-specific symptoms such as fever, headache, weakness, problems of eye, ear, cancers and other conditions

Source: Survey data

Box 4.10: Mental illness -Some Case Stories

RH, the ASHA worker at Nagavadi talked about her neighbour, a young 15-16 year old male. According to her he suffers from mental illness and does not go fishing. He keeps talking excessively and keeps roaming around at night. He has been treated at Gandhidham. We spoke to his sister. According to the sister, he has had two episodes till now. The first time it was about four or five years ago and he was admitted to a private hospital at Morbi. The family spent Rs. 16,000/- on treatment. He was alright till he had another episode in April 2010. He went rigid ("kheencha") - had something like a 'fit' and then became violent. It took four grown up persons to control him. The family called 108 and he was taken to the civil hospital at Rajkot. He was admitted for 16 days and the doctors "took out fluids from his spine (peeth me se paani nikala)". This time the family spent on travel and food but did not incur any expenses towards procedures or treatment. The doctor at the Civil Hospital told the family that he had the episodes because of 'water in his back' and it would happen again when the water accumulated. (The respondent could not give any more details, and the case papers were not available at the temporary settlement.)

Another person, 42 year old RM suffers from frequent "magaj ka zatka" (seizures/fits). According to his wife, when he gets the attacks, he shouts loudly and his body starts trembling, and he also makes choking sounds. He often becomes "difficult to control" during these attacks. His wife has sought treatment for him at a number of places, and according to her to no avail. Initially, he was taken to Gandhidham to a private clinic where the doctor charged Rs. 1000/- to 1500/- per visit, later on for six months the family consulted a doctor frm Dhangadhra and spent Rs 3000/-, treatment at Ahmedabad Paldi cost Rs 7500/- and at Viramgam, the treatment cost Rs 15000/- for two years. The family also spent Rs 5500/- on four months of treatment at Morbi. Then the family took recourse to desi medicines . When the family ran out of resources, the treatment was discontinued for two years. And for the past six years, the family has been consulting a psychiatrist in Gandhidham whose clinic they visit once a week.

Thirty-eight year old NS looked pale, stressed and weak as she spoke about her daughter's death due to "jahri malaria" about six years ago. After minimal interaction, she lapsed into silence. When asked about her condition, her husband said that she has been stressed ever since their daughter's death. She is always unwell, suffers from severe headaches and fever, rarely communicates with her family and is scared of strangers. He said that she has "magaj ni bimari" and occasionally gets "anchki", a seizure. After an episode, he called the mobile emergency service (108 ambulance) and took her to the Morbi CHC. According to NS, the doctor there refused to treat her as he did not have any resources. She was taken to a private hospital , but here too they refused to treat her saying that she did not have any mental illness. Her husband took her to a private psychiatrist in Morbi who hospitalized her overnight, counseled her and started her on medication. The doctor told NS that she had "magaj na bimari" - conversion disorder and stress as reported on her case papers. The hospitalization and one time treatment cost NS Rs 5000/-. Details about ongoing treatment were not available. Despite her illness, NS continues to contribute to the household chores, cleaning and processing prawns and looking after her grandchildren. According to her husband, the work leaves her exhausted, exhaustion results in loss of appetite which then results in weakness and more exhaustion.

(Source: Field notes, Nagawadi, October 2010 supported by data from survey)

Reproductive Health

Reproductive health problems were explored for respondents, only women in the 17-50 year age group. Eighty-one percent (188/231) women respondents reported reproductive tract illnesses. Lower backache (37%, 69/188), excessive vaginal discharge (23%, 44/188) and pain in lower abdomen (11%, 20/188) were the most reported conditions. (Table 4.33)

Table 4.33: Reproductive Health Conditions reported by Women

Reproductive illness reported	Female (n=188)*
Low backache	69 (37%)
White discharge from vagina	44 (23%)
Pain in lower abdomen	20 (11%)
Pregnancy Induced	19 (10%)
Swelling/lump in breast	13 (7%)
Menstruation related problems	12 (6%)
Spontaneous Abortion	5 (3%)
Frequent/painful passage of urine	3 (2%)
Itching over vulva/groin/vagina	2 (1%)
Uterus Prolapsed	1 (1%)

**Reproductive health was explored among women only.*
Source: Survey data

Treatment sought for Chronic Conditions

Data on whether treatment was sought for the chronic illness at the base village was available for 91% (316/348) persons, including 100 men and 216 women. A little less than a third (31%, 107/316) of those who reported a chronic illness had not sought treatment at the base village. The proportion of women (56%, 121/216) who received treatment at the base village was significantly lesser than the proportion of men who reported having sought treatment (88%, 88/100) (Chi square, p=0.000) (Table 4.34). Similarly, adults in the age group 18-45 years were least likely to have sought treatment at the base village. Sixty two percent (160/262) of the persons from this age group reported having sought treatment at the base village as compared to all (100%, n=19) younger persons aged less than 18 years and 86% of persons older than 45 years (n=35) (Chi-square, p=0.000). (Table 4.35)

Table 4.34: Treatment for Chronic Conditions

	Male	Female	Total	
At the base village				
	(n=100)	(n=216)	(n=316)*	
Treatment sought for all illnesses	86 (86%)	104 (48%)	190 (60%)	Chi-square, p= 0.000
Treatment sought for one of the two illnesses	2 (2%)	17 (8%)	19 (6%)	
Treatment not sought for any of the illnesses	12 (12%)	95 (45%)	107 (34%)	
At the temporary settlement				
	(n=117)	(n=94)	(n=211)*	
Treatment sought for all illnesses	78 (67%)	32 (34%)	110 (52%)	Chi-square, p=0.000
Treatment sought for one of the two illnesses	3 (3%)	28 (30%)	31 (15%)	
Treatment not sought for any of the illnesses	36 (31%)	34 (36%)	70 (33%)	

** Analysis based on valid cases only*
Source: Survey data

Table 4.35: Treatment sought for Chronic Illnesses and Age of Person ill

	Age			Total	
	<18 years	18 - 45 years	>45 years		
Treatment of chronic illness at base village					
	(n=19)	(n=262)	(n=35)	(n=316)*	
Treatment sought for all illnesses	19 (100%)	141 (54%)	30 (86%)	190 (60%)	Chi-square, p=0.000
Treatment sought for one of the two illnesses	--	19 (7%)	--	19 (6%)	
Treatment not sought for any of the illnesses	--	102 (39%)	5 (14%)	107 (34%)	
Treatment of chronic illness at temporary settlement					
	(n=28)	(n=147)	(n=36)	(n=211)*	
Treatment sought for all illnesses	21 (78%)	71 (48%)	18 (50%)	110 (52%)	Chi-square, p=0.002
Treatment sought for one of the two illnesses	--	30 (20%)	1 (3%)	31 (15%)	
Treatment not sought for any of the illnesses	7(25%)	46 (31%)	17 (47%)	70 (33%)	

** Analysis based on valid cases only*
Source: Survey data

Of the 211 persons for whom information on treatment was available at the temporary settlement, 67% (141/211) reported taking treatment. Though there was no difference in the proportion of men and women who sought treatment for at least one condition, the proportion of women seeking treatment for all or both conditions was significantly less (Chi-square, p=0.000). As with the base village, there was a significant difference in treatment seeking between the age groups (chi-square, p=0.002). The proportion of adults in the 18-45 year age group, who did not seek treatment was lesser at the temporary settlements (31%, 46/147) than at the base villages (39%, 102/262).

Information on the status of treatment at both the base village and the temporary settlement was available for 57% (179 of 316) of the persons who reported a chronic illness. Migration to temporary settlements had a more severe effect on the health seeking behaviour of women suffering from chronic health conditions. The proportion of men and women who reported having sought treatment for all chronic health conditions at both the base village and temporary settlements was 53% (53/100) and 22% (17/79). Two percent of the men (2/100) and 14% women (11/79) did not seek health care at the base village as well as at the temporary settlements. (see Table 4.36)

Table 4.36: Treatment for Chronic Conditions at the Base Village and Temporary Settlement

	Male (n=100)	Female (n=79)	Total (n=179)*
All treated at base village and temporary settlement	53 (53%)	17 (22%)	70 (39%)
All treated at base village and some at temporary settlement	1 (1%)	11 (14%)	11 (6%)
All treated at base village and none at temporary settlement	33 (33%)	16 (20%)	49 (27%)
Some treated at base village and at temporary settlement	2 (2%)	11 (14%)	12 (7%)
Some treated at base village and none at temporary settlement	2 (2%)	6 (8%)	7 (4%)
None treated at base village and all at temporary settlement	10 (10%)	4 (5%)	14 (8%)
None treated at base village and some at temporary settlement		2 (3%)	2 (1%)
None treated at base village and at temporary settlement	2 (2%)	11 (14%)	13 (7%)

** Only valid cases included for analysis*
Souce: Survey data

Sources of Treatment

Base Village: Information on the source of treatment was available for 166 persons. As for acute conditions, private practitioners were the preferred source of treatment for chronic conditions. At the base village, 77% (128/166) persons had sought treatment from private practitioners, 11% (19/166) from the government hospital and 2% (3/166) from the government health worker. The rest had tried home remedies, herbal medicines or had accessed local shops or faith healers or dai for treatment.

Temporary Settlement: Information on source of treatment was available for 145 persons. The proportion of those who accessed private clinics, government hospitals and government health workers was similar to that at the base village (95%, 8% and 2% respectively).

Reasons for discontinuing treatment/not seeking treatment at the temporary settlement were explored. Of the 60 persons who gave reasons for not seeking treatment at the temporary settlement, 50 (83%) mentioned lack of services; 7 (12%) did not perceive the condition to be serious enough, 5 (8%) lacked financial resources and 2 persons (3%) reported feeling shy as reasons for no-treatment. (see Table 4.37)

Table 4.37: Source of Treatment for Chronic Conditions

Source of treatment	Base village			Temporary settlement		
	Male	Female	Total	Male	Female	Total
	(n=63)	(n=103)	(n=166)*	(n=78)	(n=67)	(n=145)*
Home remedy	--	2 (2%)	2 (1%)	--	3 (5%)	3 (2%)
Faith healing	--	1 (1%)	1 (1%)	--	--	--
Natural medicine (herbal)	1 (2%)	4 (4%)	5 (3%)	1 (1%)	1 (2%)	2 (1%)
Dai	--	--	--	--	1 (2%)	1 (1%)
Local shop	3 (5%)	5 (5%)	8 (5%)	1 (1%)	2 (3%)	3 (2%)
Government health worker	1 (2%)	2 (2%)	3 (2%)	1 (1%)	2 (3%)	3 (2%)
Government hospital	6 (10%)	13 (13%)	19 (11%)	7 (9%)	5 (8%)	12 (8%)
Private clinic	52 (83%)	76 (74%)	128 (77%)	69 (89%)	69 (103%)**	138 (95%)

** Analysis based on valid cases only*
***Multiple response.*
Data presented for all chronic health conditions reported.

Occupational Health

One woman in the reproductive age group, 18-50 years, and a man each from the households included in the sample were asked about their health conditions, which they felt were caused by activities related to prawn harvesting. They were asked to report on ailments they had at the time of the interview.

Details of activities women carried out during the prawn harvesting season were available for 191 women. All except two women (189/191) for whom information on activities was available, reported being engaged in processing prawns only or with various other activities. More than two-thirds of these (69%, 132/191) carried out household chores and prawns processing. Skin diseases (63%, 123/191), posture related aches and pains (46%, 87/191) and headaches (27%, 52/191) were the most reported health problems among women.(Table 4.38)

Ninety percent (258/288) of the men reported at least one occupational health problem. Data on activities was available for 258/258 men and information on health problem and activities was available for 257 men. Nearly all (97%, 251/258) of them reported being involved in catching prawns/prawn harvesting only or along with other activities. As with women, skin diseases (66%, 168/257), posture related aches and pains (53%, 135/257), and weakness (23%, 58/257) were the most commonly reported health problems (see Table 4.39).

Table :4.38 Activities and Illnesses reported by Women

Activities reported by women - combined	Total	Occupational health problems									
		Posture related problems	Respir-atory	Dige-stive	Eye problems	Skin disease	Fever	Headache	Heart / liver / kidney diseases	Weakness	Reproductive health conditions
Processing prawns	18	6	–	–	–	8	4	3	–	2	2
Household chores	2	1	–	–	–	–	1	–	–	–	–
Preparing for sea trip + processing + HH chores	1	–	–	–	–	1	–	1	–	–	–
Catching prawns + processing	2	2	–	–	–	–	–	–	–	–	–
Catching prawns + preparations for processing	1	–	–	–	–	1	–	–	–	–	–
Catching + preparations for processing + processing + HH cho	1	1	–	–	–	1	–	1	–	–	–
Unload + preparations for processing + process	1	1	1	–	–	–	–	1	–	–	–
Unload + preparations for processing + process + HH chores	2	1	–	–	–	–	–	–	–	2	–
Preparations for processing + process	12	7	–	–	1	1	3	9	–	1	–
Prepations for processing + process + HH chores	13	7	–	–	–	2	2	9	–	2	1
Prepations for processing + HH chores	3	1	–	–	–	1	–	1	–	2	–
Preparations for processing + processing + marketing + HH ch	2	1	–	–	–	–	–	–	–	1	–
Preparations for processing + processing + marketing	1	–	–	–	–	–	–	1	–	1	–
Processing + HH chores	132	59	2	2	–	108	6	26	1	25	5
Total	191	87	3	2	1	123	16	52	1	36	8

Source: Survey data

Table :4.39 Activities and Illnesses reported by Men

Activities reported by men - combined	Total	Occupational health problems								
		Posture related problems	Respir-atory	Dige-stive	Skin disease	Accident	Fever	Headache	Heart / liver / kidney diseases	Weakness
Catching prawns	147	110	6	2	96	–	12	14	1	32
Unloading catch from the boat	2	–	–	–	1	–	–	–	1	–
Processing prawns	1				1					
Household chores	2	1	–	–	2	–	–	1	–	1
Preparing for sea trip + catching + marketing	3	–	–	–	3	–	2	1	–	1
Catching prawns + processing	16	4	–	–	13	–	–	9	–	3
Catching prawns + preparations for processing	2	–	–	–	2	–	–	–	–	1
Prepations for processing + process + HH chores	1	1	–	–	–	–	–	–	–	–
Catching prawns + marketing	1	–	1	–	–	–	1	–	–	–
Catching + processing + marketing	2	–	–	1	1	–	1	–	–	–
Preparing for a sea trip +catching + unloading	2	–	1	–	2	–	1	1	–	1
Catching + unloading +marketing	1	1	–	–	1	–	–	–	–	–
Catching + unloading	3	2	–	–	1	–	–	1	–	–
Preparing for a sea trip + catching	5	–	1	–	3	–	1	1	–	2
Catching + unloading +processing	51	12	1	–	33	–	–	17	–	10
Preparing for a sea trip + catching + processing	1	–	–	–	1	–	–	–	–	–
Preparing for a sea trip + catching + processing + HH chores	1	–	–	–	–	–	–	–	–	1
Unloading + processing	1	–	–	–	–	1	–	1	–	–
Catching + marketing + HH chores	2	1	–	–	–	–	1	1	–	1
Catching + unloading + preparations for processing	3	–	–	–	3	–	–	2	–	1
Catching + preparations for processing + processing	2	–	–	–	1	–	–	–	–	2
Catching + processing + HH chores	2	–	–	–	1	–	1	2	–	–
Catching + HH chores	2	1	–	–	1	–	–	–	–	1
Marketing + HH chores	1	1	–	–	1	–	–	–	–	–
Preparing for a sea trip + catching + marketing + HH chores	2	1	1	–	–	–	–	–	–	1
Preparations for processing + processing	1	–	–	–	1	–	–	1	–	–
Total	257	135	11	3	168	1	20	52	2	58

Source: Survey data

Maternal Health

Key informant interviews revealed that traditionally early marriages were the norm in this community, however, there has been a gradual change and age at marriage for girls as well as boys has increased to 16-18 years and 18-20 years respectively. This is apparent from the survey data as well.

The reported age at marriage ranged from 13- 25 for the 288 respondent women, with a median of 18 years. Minimum age at marriage has increased marginally over the last 20 years, from 13 among the older women (>35 years) to 17 for the age group of less than 18 years (Table 4.40). There was no difference in the age at marriage over the economic categories (Table 4.41).

Table 4.40: Age at Marriage by present Age of the Respondents

Age at marriage (years)	Age of the Responent				Total
	Less than 18 Years	18-24 Years	25-34 Years	35+Years	
Count	1	33	117	137	288
Minimum	17	16	14	13	13
Maximum	17	20	25	22	25
Mean	17	18.21	18.52	17.9	18.18
Median	17	18	18	18	18
Mode	17	18	18	18	18

Source: Survey Data

Table 4.41: Age at Marriage by Economic Status of the Respondent's Household

Age at marriage	Economic status (combined) - recoded			Total
	Poorest	Poor	Less poor	
Count	58	174	42	274
Minimum	15	13	15	13
Maximum	20	22	20	22
Mean	18.27	18.1	18.1	18.14
Median	18	18	18	18
Mode	18	18	18	18

Source: Survey Data

The number of total pregnancies reported by the respondents ranged from 0 - 13 with a median of 4. The number of living children ranged from 1 to 11 (median 4). The average (median) number of surviving male and female children was 2 (range: 0-9) and 1 (range: 0-7) respectively. The number of surviving children and the number of daughters were higher for the lowest economic group (number of surviving children: Kruskal-Wallis Test, p=0.00; number of daughters: Kruskal-Wallis Test, p=0.000). The number of sons did not vary over the economic groups (Kruskal-Wallis Test, p=0.045). For the sample population, the sex ratio among surviving children was 841 (522 daughters and 621 sons).

Eighty-four (29%) of the 288 respondents reported having lost one or more children. Of these 48 (57%) women had lost one child, one woman reported having lost eight children. The number of children reported dead ranged from 0 - 8 (mean 0.5, median 0). Whether a family experienced loss of one or more children was not found to be associated with the economic status of the respondent's family.

One fourth (25%, 71/288) of the respondents reported one or more abortions (range: 0 - 7). Almost three-fourth (73%, 52/71) of the respondents had experienced one abortion, and one respondent reported seven abortions. The number of abortions experienced or whether women had not experienced an abortion was not associated with economic status (p=0.612). However, the double burden of prawn processing and household chores appeared to be associated with higher reporting of abortions. (Table 4.42)

Table 4.42: Reported number of Abortions and Involvement in Activities at the Temporary Settlement

Abortion reported	Engagement in prawn harvesting – processing activities			
	Not involved in prawn harvesting activities (n=96)	Engaged in some prawn harvesting activity or household chore (n=59)	Processing and household chores (n=133)	Total (n=288)
None	79 (82%)	49 (83%)	89 (67%)	217 (75%)
At least one	17 (18%)	10 (17%)	44 (33%)	71 (25%)

Chi-square, p=0.008

Source: Survey Data

Utilisation of contraception was low; two-thirds of the respondents (66%, 189/288) did not use contraception (Table 4.43). Oral contraceptive pills and Copper T were the most preferred methods with 42% (42/99) and 39% (39/99) women reporting these respectively. The use of contraception was highest in the 25-34 years age group with 42% (49/117) women reporting the use of contraception (Table 4.44). None of the women who did not have a living son had opted for terminal methods however, there was no association between whether or not women had living sons and acceptance of contraception (chi-square, p=0.69) (Table 4.45).

Table 4.43: Ever use of Contraception by Number of Surviving Children

Ever used contraception	Total number of surviving children												Total
	0 (n=11)	1 (n=21)	2 (n=52)	3 (n=43)	4 (n=48)	5 (n=42)	6 (n=34)	7 (n=23)	8 (n=8)	9 (n=3)	10 (n=2)	11 (n=1)	(n=288)
Yes	1 (9%)	7 (33%)	19 (37%)	12 (28%)	20 (42%)	21 (50%)	10 (29%)	5 (22%)	2 (25%)		2 (100%)		99 (34%)
No	10 (91%)	14 (67%)	33 (64%)	31 (72%)	28 (58%)	21 (50%)	24 (71%)	18 (78%)	6 (75%)	3 (100%)	–	1 (100%)	189 (66%)

Source: Survey Data

Table 4.44: Use of Contraception and Age of Respondent

Ever used contraception	Age of the Responent				Total
	Less than 18 Years (n=1)	18-24 Years (n=33)	25-34 Years (n=117)	35+ Years (n=137)	(n=288)
Yes		8 (24%)	49 (42%)	42 (31%)	99 (34%)
No	1 (100%)	25 (76%)	68 (58%)	95 (69%)	189 (66%)

Source: Survey Data

Table 4.45: Method of Contraception and Number of Surviving Sons

Numnber of surviving children (Sons)	Method of contraception					Total
	Sterilization (n=12)	IUD/Copper T (n=39)	Oral Pill (n=42)	Condom (n=2)	Natural Method (n=4)	(n=99)
None	--	8 (21%)	4 (10%)			12 (12%)
1	1 (8%)	5 (13%)	10 (24%)	2 (100%)		18 (18%)
2	3 (25%)	13 (33%)	14 (33%)		1 (25%)	31 (31%)
3	5 (42%)	11 (28%)	5 (12%)		2 (50%)	23 (23%)
4	2 (17%)	2 (5%)	4 (10%)		1 (25%)	9 (9%)
5	1 (8%)		4 (10%)			5 (5%)
9			1 (2%)			1 (1%)

Source: Survey Data

The number of births at the temporary settlements during the five years preceding the survey were explored. Of the 288 respondents, 37 (13%) reported having delivered one or more children while at the temporary settlement. Details regarding ante-natal care received and place of delivery were documented for 44 births (to 37 women) during the five years preceding the survey. For 80% (35/44) of births women reported having received some ANC; for 28 deliveries, the respondents reported having taken TT injection/s (However, information on number of injections and time during pregnancy when these were administered is not available). Only one woman had received IFA tablets and TT injection during pregnancy at the temporary settlement (Table 4.46).

Only one third (32%, 14/44) of the births took place in a hospital and four of these were instrument assisted deliveries. Of the 30 deliveries that took place at home, only four (13%) were attended to by a trained dai (ASHA worker) and the rest were assisted by untrained dais or women from the family. All 44 children born at the temporary settlement were reported to be alive and healthy and only in two cases, the mothers were reported to be 'alive but sick' after delivery.

Deliveries at the temporary settlements presented multiple perils for the women. Not only did they not receive adequate ANC, they often were denied the access to safe delivery. Twenty-four year old R had delivered her second child two weeks before the survey. When the labour started, R's family tried to get a nurse to conduct the delivery at home. According to R, the nurse did not come despite a phone call and subsequent requests by R's family who went to the nurse's home to accompany her to the temporary settlement. Finally, R delivered on the way while being taken to a private clinic at Morbi.

Additionally, the component of post-partum care was found to be totally lacking at the temporary settlement. Thirty-two year old JV said that she comes to the temporary settlement to cook and serve food for her husband, and four days after the delivery of her second child a daughter, she resumed her duties. JV complained of headaches and neck pain for which she had not sought treatment.

Table 4.46: Child birth at the Temporary Settlement

Child birth at the temporary settlement	
	(n=288)
Yes	37 (13%)
No	251 (87%)
Antenatal care received	
	(n=44)
Any ANC received	35 (80%)
Received iron – folic acid tablets	5 (11%)
Received at least one TT injection	28 (64%)
Received syrup	1 (2%)
Place of delivery	
	(n=44)
Home	30 (68%)
Hospital / Institutional	14 (32%)
Home delivery attended by -	
	(n=30)
Trained dai / ASHA	4
Untrained dai	12
Women from the family	14
Type of delivery	
	(n=44)
Normal	40 (91%)
Instrument assisted / Caesarian	4 (9%)
Status of child	
	(n=44)
Alive and healthy	44 (100%)
Status of mother	
	(n=44)
Alive and healthy	42 (96%)
Alive and sick	2 (5%)
Birth registration	
	n=44)
At base village	23 (52%)
At temporary settlement	9 (21%)

Source: Survey Data

Experiences with Health care Delivery System

(Information from key informant interviews and case stories narrated by the respondents)

The survey pointed to the issues of inaccessible inadequate public sector health services. These issues were then further probed during discussions with the key informants, the women representatives of the community (in October 2010). ZA's and BH's case story as reported by RH, BH's grandmother and the local ASHA worker highlights the plight of women and children at the temporary settlement. BH is the grand-daughter of an ASHA worker, RH from Nagawadi settlement and the third child of her parents, AH and ZA. RH's family has had a mixed experience with

public and private health services. On the one hand, RH an ASHA worker firmly believes and advocates for institutional deliveries, and on the other, her daughter-in-law ZA tries to avoid any contact with the public health care system. ZA's fears root from her own as well as her sister-in-law's experiences - while ZA delivered two of her older children at home, who have grown to be healthy girls, her sister-in-law who was taken to a hospital at the insistence of RH, lost her first child at the time of delivery. Hence, when she was pregnant with BH, ZA wanted a home delivery. RH however decided to take her to Maliya PHC and called for 108 when ZA's labour started. RH's identity as an assertive health worker ensured that the 108 reached the settlement without delay.

Since it was ZA's third delivery, RH was confident that there would be no complications and therefore decided to accompany ZA herself and did not take AH along with her. BH was born a healthy child weighing 3200 gm at birth. It was a vaginal delivery. However, the placenta was not delivered as soon as it should have been. The nurse on duty administered an injection to hasten the delivery of the placenta. After this injection, according to RH, ZA experienced severe contractions and the uterus was expelled - turned inside-out - along with the placenta. This was also accompanied by excessive bleeding. ZA was in acute pain and her condition deteriorated. At this point, the nurse panicked. RH took her to task and asked her to refer ZA to Morbi. RH managed to get ZA into a 108 ambulance only after threatening the driver with complaints to Gandhinagar if he did not do his duty. ZA was bleeding heavily along the way and as RH put it, "...almost died, she had rolled her eyes and was unconscious. The doctor in the ambulance tried to start IV but could not find the vein. I told him to stop fumbling, she was already losing blood and he was drawing more of her blood. There was so much blood that it spilled out of the ambulance and on to the road...".

At Morbi, a hospital a doctor examined ZA, wrote a note and told RH that the surgeon was not available and ZA needed to be transferred to the Rajkot Civil Hospital. Again RH called for a 108. The driver asked for Rs 400/-. Stressed with the situation and worried sick for the life of her daughter-in-law, RH agreed to pay for the charges. She also told the driver to "...do whatever is needed as per the rules and later on if I find out that you have not followed the rules, I will complain to the highest authorities." Other staff at the hospital too supported RH in her arguments with the 108 driver and finally the driver agreed to take ZA to Rajkot Civil Hospital. He reached Rajkot in 40 minutes. At this time BH was left behind in Morbi in care of RH's sister and her daughter-in-law who happens to be ZA's sister.

At Rajkot, the doctor who examined ZA, took a look at the note from the doctor at the Morbi hospital and was furious with RH, "What have you done here? You do home deliveries and this happens...". RH explained the chain of events and stressed that it all happened at the hospital at Maliya, but he was angry and he said that he wouldl try his best but also told RH that ZA may not live. The doctor "fitted the uterus back into the abdomen" but ZA remained unconscious for four days.

Meanwhile BH, who was left with her aunt at Morbi on day one, was called to Rajkot on the second day. Since her mother could not feed her she was fed top milk. She kept crying all the time. A couple of days later RH took her to the paediatric department of the Civil Hospital in Rajkot. The paediatrician who examined her declared her healthy. Fifteen days later, after ZA was discharged from the hospital, the three of them came back to the village.

RH gave conflicting stories about how BH's health deteriorated. At one point during the interview she said that in the two weeks that the baby was at Rajkot with ZA in the Civil Hospital, she rapidly lost weight from 3200 gm to one kilo. RH not too subtly implied this to be an effect of the baby being fed by her aunt. ZA (who had joined the discussion by this time) did not seem to agree with this. However, when questioned about this, RH and ZA both said that BH was "fine" for the first two months and then took seriously ill and has remained ill since then.

At two months of age, BH had an episode of diarrhoea and her abdomen was distended to such an extent that according to RH "...her intestines could be seen...". They took her to the hospital and she was alright for a while. After that she has been admitted on two occasions to the Nutritional Rehabilitation Centre at Rajkot for nine and ten days respectively. However, according to RH, the "treatment" only had a temporary effect. BH would take ill as soon as they brought her home. The doctors at the government hospital gave medicines for about four days and asked RH to follow up every 15 days which she found extremely inconvenient. Frustrated with the public sector health services' failure to offer a long term solution, RH sought treatment at a private clinic in Morbi and at the time of the interview, the child was in the care of a private paediatrician. The prescribed medicines that RH showed the researchers were a tin of Amul Spray (powdered milk), Bournvita, and a number of multivitamins, calcium supplements and a preparation to help digestion.

At eight months of age, BH, though playful and responsive looked extremely stunted -she actually looked smaller than her two month old cousin. When asked about her diet, RH said that she was fed one bowl of milk (prepared from two spoonfuls Amul Spray mixed with one bowl of hot water and one large spoon of sugar) four times a day. When asked about solid foods, RH said that BH got diarrhoea with khichdi and hence she was not fed that. Sometimes RH made sago kheer for her. But she was not given any solid food on a regular basis.

During the course of the one hour long interview, BH who was playing placidly became agitated and cranky and showed obvious signs of hunger but RH who was looking after the child insisted that she was not hungry but plain cranky. She tried to amuse her with a number of objects (like shreds of plastic bag, a plasic dropper etc which had been lying about and exposed to the dirt and innumerable flies) which the baby readily put into her mouth and sucked. When a researchers brought a bowl of milk, a visibly happy BH readily drank it up.

BH has received BCG and polio doses but not DPT as she has been ill and the doctor said that such children are not to be given the injection.

Commenting on her experiences at the Nutrition Rehabilitation Centre at Rajkot, RH talked about the corruption at the facility and exploitation of the patients admitted in the centre. At the centre, the babies are given only milk - the quantity is inadequate - even for BH who takes only small quantities at one time. The milk is given only once a day and the carers are required to store it such that it can be used throughout the day. If the baby needs more milk or if the milk given by the hospital goes bad, the family is rudely asked to buy it from outside the hospital. "...it is not that there is no milk. It is there. You can see large vessels of milk in the pantry. The doctors on duty the nurses and the other staff boil it and drink it - either just like that or in tea. This happens throughout the day. But if a patient's relative asks for more milk for the baby, s/he is asked to spend money and buy it from the private shop. Same with the khichdi for mothers. You can see that there is a lot. But patients/mothers get what remains after every staff member has packed it in their lunch boxes and many others have had full meals. They are not concerned if it is not adequate for the women for whom it is meant..."

Other Issues

Though RH managed to get 108 service for transporting ZA, that is not the case with all others. Often the ambulance refuses to come up to the Nava Hanjiyasar village. They (the ambulance staff) also do not come if they perceive it to be a 'minor' problem. To give an example, a woman who was three months pregnant developed acute pain in the abdomen. She had to be taken to a hospital and her family called 108. The ambulance staff asked whether it was a case of delivery and when they were told that it was not and that the woman was three months pregnant, they refused to come to the village. The family was asked to come to the main road which was about five kilometres away from the village where the ambulance picked up the patient and her family. The woman received treatment and could continue her pregnancy.

When asked why her own experience was different than that of the others, RH said that it was because she threatened the ambulance staff that she would complain to the highest authorities. And the staff at the local health services knew that she really would follow up on her threat. RH with her confrontation with the staff has created a position for herself - "...the 108 staff starts trembling, they miss a heartbeat when they hear my name...that is what they feel about me. They know I will not hesitate to complain to Gandhinagar. But not everyone can do that."

RH's experience with Maliya PHC is similar. She has a good relationship with one of the two nurses posted there. This nurse is cooperative and receives and looks after the patients RH takes to the PHC. The other nurse however dreads interaction with RH as she feels that "every case (RH) brings along has a complication". When asked about 'complications', RH laughed it off saying that the nurse is a weak hearted person, she feels there are complications and wants to refer everyone to Morbi.

The prawn harvesters' experience of public sector health care is similar for conditions other than delivery. Commenting on her experiences with the government hospital, a young woman shared her experience regarding her father's illness. Her father who was suffering from advanced tuberculosis was taken to Rajkot Civil Hospital. He was frail and serious, but according to the respondent the staff at the hospital ignored him - "all the doctors would flock around a man who was not at all serious. In fact, was faking an illness but none of them bothered to come and attend to my father. He was serious, he was dying and they did not do anything for him; neither did they release him from the hospital. They shaved his head ...Finally I brought him home. If they (government hospital staff) had not allowed me to, I would have torn them to pieces...so what if I had to go to jail for tha?". When asked whether she would take her brother who suffers from fits to a government hospital, she spat out "Never! I would rather he dies here."

Another woman the researchers spoke with during their visit to Nagawadi in October 2010 said that her adult son had fever for which he had been taking medicine from the Maliya PHC which did not help. He however felt better after switching to a private sector practitioner (Source: Interaction with women from Nagawadi, October 2010).

The narratives reflect the users' perspective of the health care services and though it may differ from those of the providers' and administrators',, there are important issues that need urgent attention.

The experiences of BH and others with the public health system need to be analysed against the background of the community that was until recently criminalised and therefore shied away from everything related to the government. Interaction with the ANANDI team encouraged them to access public health care.Negative experiences like those narrated here are deterrents to the people's access to health care.

Use of threats or 'strong language' mentioned by the respondent for ensuring cooperation from the staff at health care facilities as well as the ambulance drivers, is a reflection on the public health system and the strong possibility of exploitation of the hapless villagers.

Even when the prawn harvesters accessed the public sector facility, the quality of care remained less than satisfactory They faced indifference, lack of response or delayed response, illtreatment, disrespect, and were even blamed for the condition of the patient, as in the case of BH's mother, or suffered from the inability of the health care providers to communicate with the patients and their family about the condition and prognosis of the patients as in the case of the woman whose father died of TB. Yet, after the recent fever epidemic, the prawn harvesters have come to trust the public sector for at least treatment of fever. Engagement of one of the community women as ASHA too has encouraged women to opt for hospital deliveries.

Discussion

Literature and research reveal that prawn harvesters from the LRK are a neglected group. There is little written about the living and work conditions of the fishing community engaged in seasonal prawn harvesting in the LRK. The first ever reference about this largely invisible community is that they are an illiterate, indebted people who live in unhygienic conditions without access to basic amenities and in poor health (Rao 1983). Unfortunately, almost three decades later, this study has exactly the same findings to report.

The prawn harvesters from LRK are an impoverished community from both the income and human development points of view. With only 38% of men and 24% of women reporting any education, the study population has literacy rates (31% for total population) lower than the state and district average of 70% and 60% respectively (Census, 2001). Female literacy for the study population (24%) is lower than the low district average of 49% (Census, 2001). These figures suggest that education for this community is a luxury. The compulsion to earn a living is high, as reflected in the high rate of work participation (59% of study population was gainfully employed) as compared to the state (NFHS 2005-2006) and other fisher communities. Children from almost one third (30%) of the households were reported to be engaged in income generating activities. The demand for working hands is more during seasonal prawn harvesting which is a low technology trade. Six percent of the children who attended school at the base village had to contribute to the household income when the families migrated to the temporary settlement. This pressure for entire families to contribute to income generation activities has been reported for other migrant communities as well (Borhade, 2007).

The economic poverty of the population is apparent from the income earned and assets owned by the households. Only 14% of the households owned land, the land holdings were small and none was irrigated. Salinity ingress and reducing water tables, a generalised problem for the state of Gujarat (Hirway, 1997), makes agriculture impossible and has forced the prawn harvesters to rely on other occupations for a living. Fishing, animal rearing, agricultural and salt pan labour are the main sources of income at the base villages. However, the average per capita monthly income of Rs 300/- earned from these occupations is too meagre to meet the basic survival needs of the households. Prawn harvesting yields a relatively better income (Rs 673 per capita per month), but since it depends on a number of natural parameters, there is no certainty about it.

The income from prawn harvesting also depends on a number of human related factors including ownership of essential and desirable equipment required for capturing prawns and the price for the catch, which is controlled by the agents from large commercial processing units. This survey found that four percent of the households did not own any equipment essential for prawn harvesting. Only one household owned all the essential and desirable equipment - mechanised boat, license, gunja, katar, cold storage box -for prawn harvesting - thus indicating a fair control over earnings. The prawn harvesters have a complex relationship with the agents who at times act as social support/security for the prawn harvesters by extending loans in times of need, mainly to prepare for the season. The prawn harvesters sell their catch to the money lender agent at a price lower than the market price, which is the pre-condition for the loans and this arrangement is likely to trap the prawn harvesters into poverty. This study found that almost two-thirds (63%) of the households, and 78% of the poorest households had taken a loan to prepare for migration and seasonal prawn harvesting. Nearly one-fifth of the households had either incurred losses or had just managed to break even. This predicament of the prawn harvesters from the LRK is shared by most migrant and

fishing communities engaged in small scale fishing in India. This marginalization of the fishing communities is a result of the complex interaction between poverty-exploitation by agents,-poor health-poor development opportunities (Karmarkar, 2009; Vijayan, 1996; Leenamma, 1996; Nayak, 1996).

Studies from the late 1990s report that coastal fishing villages from most parts of India are deprived of basic amenities (Vijayan, 1996; Leenamma, 1996), despite being located under the revenue list (Nayak, 1996). Even two decades later, despite schemes launched by the Indian Government's Department of Agriculture, Animal Husbandry and Fisheries for 'development of model fishermen villages' (GOI, 2009; http://agri.gujarat.gov.in/hods/commi_fisheries/donwload/book.pdf), the situation remains unchanged for many. The situation for those like the prawn harvesters from the LRK who are located far away from the revenue limits is far worse and government schemes and services rarely reach them (ATREE, undated). Though this study did not explore the sample population's access to government schemes, key informants were asked about access to basic amenities. Respondents reported that they had to travel upto 10km to access drinking water. The residents of temporary settlements travelled 5km - 60km to a market place, 1km - 60km to a PDS shop for purchasing groceries, and 2km - 60km to reach a religious place (mosque/dargah). These distances make the market places and grocery shops practically inaccessible to persons from the temporary settlements, , especially in the monsoon when the LRK converts into a wetland with muddy flats and knee deep water. Yet, the distance prawn harvesters cover to reach public sector health care facilities are the farthest. Distances to health care services range from 5 km for residents of Mulvadar to 76 km for those from the settlements of Kradiya and Jilsan!

The unhygienic environment with stagnant water, flies and mosquitoes, stench of degenerating fish coupled with lack of sanitation and absence of proper disposal of waste from the processing activities, reported as common features of fishing villages from other parts of India (Vijayan, 1996; Leenamma, 1996; Nayak, 1996), were seen at the temporary settlements of prawn harvesters as well. Unhygienic living conditions, exposure to a harsh environment and lack of access to health care services are reflected in the high morbidity rates among the prawn harvesters. The proportion of ailing population (PAP an indicator for assessing morbidity in the community during a given reference period) was higher for the prawn harvesters (213 per 1000 men and 232 for 1000 women) compared to that reported by the Scheduled Tribes (ST) from rural Gujarat (51 per 1000 men and 61 per 1000 women) in the 60th round of the National Sample Survey (NSS). High morbidity among women from fishing communities has been noted in other parts of India (Vijayan, 1996; Leenamma 1996; Pushpangadan and Murugan, 2000). Along with aches and pains due to activities related to prawn processing, headaches because of exposure to harsh sunlight, fire and smoke from burning wood, women reported reproductive health complaints which accounted for most (81%) of the reported chronic morbidity. One in every four women (25%) reported one or more abortions. None of the women who delivered a baby while at the temporary settlements had received complete ante natal care and post natal care. Most of the deliveries were conducted at home with help from women from the households. Given the distance to the public sector health services, the prawn harvesters preferred private practitioners or chose to consult a practitioner of folk medicine. Inability to access health care also resulted in their discontinuing treatment even for diseases like tuberculosis and psychiatric conditions after moving to the temporary settlements.

This exploration did not include gathering information on the quality of water accessed by the study participants nor is published data available on this. However, literature shows that groundwater contamination is a common problem in coastal states in India and Gujarat is one of the more severely affected states. In addition to the lack of personal and envitonmental hygiene, the high proportion of skin diseases and kidney stones among the study population could be a result of intake of water with high salinity. Similar phenomena are noted by researchers in other communities from coastal Gujarat. Groundwater polluted with high salinity, high nitrate and fluoride contents has adverse effects on health and this burden of illhealth is the most for those from the lowest economic strata of society. (Indu et al, 2010; Indu and Krishnan, 2008;Shah and Indu, 2008). Though there is lack of conclusive evidence, global evidence

points towards an association between high nitrate levels in drinking water and spontaneous abortions, intra-uterine growth restriction and various birth defects (Maanssaram et al, 2006). Though Rajkot and Surendranagar do not feature in the list of districts with high ground water pollution with nitrates, iron, arsenic and fluorides, possibility of these contaminations resulting in musculoskeletal disabilities should also be explored.

Poor reproductive health reported in the study needs to be explored against the available evidence on the effects of occupational environment on women's reproductive health, especially during pregnancy. Research from developed countries has conclusively shown that women engaged in heavy menial work such as forestry, farming, mining etc have a higher risk of giving birth to low birth weight babies (Ahmed and Jaakkola, 2007). Similarly, squatting, bending and prolonged work hours as involved in prawn processing activities are shown to have adverse effect on pregnancy outcomes (Bonzini et al, 2009). The sea-food dominant diet that the prawn harvesters are required to rely on while at the temporary settlement too may affect pregnancy outcomes as noted by a study conducted in England and France. The Europe based study found consumption of shell fish to be associated with "decreased fetal growth" and consumption of fish with "increased gestation period" (Guldner et al, 2007). Use of firewood for cooking and prawn processing too could be contributing to the poor reproductive outcome. Air contamination resulting from smoke too is known to be associated with adverse pregnancy outcomes (Hossain and Westerlund Triche, 2007).

Respiratory problems including difficulty in breathing reported by the respondents needs to be screened for asthma which along with skin rashes, and non-specific allergies is known to be a common effect of prolonged association with fish and fish products (Jeebhay et al, 2000). A review of occupational seafood allergy by Jeebhay et al (2001) notes that "aerosolisation of seafood and cooking fluids while processing" are occupational situations with the potential of resulting in asthma among workers. The researchers also note that non-use of protective gear or direct contact with sea food especially crustaceans results in contact dermatitis among workers (Jeebhay et al, 2001).

This study did not explore the prevalence of malnutrition, another strong indicator of poverty. However, field observations and interactions with community representatives indicated regular consumption of fish, prawn, poultry and dairy products along with wheat/barja roti or rice; and occasional intake of vegetables. The prawn harvesters differ from other coastal fishing communities in this regard. Their better reported nutrient consumption is a result of their remote location that allows them to tend to goats, cattle and poultry unlike their counterparts from areas closer to urban centres where land is in short supply.

However, lack of access to health care services has an adverse impact on health. The long distances, lack of transport to reach health care facilities as well as the poor state of government health care services make people resort to care in the private sector which drains them of their meagre resources. In 2007-08, around the time when the study was conducted, less than half the villages from Rajkot and Surendranagar districts across which the temporary settlements are located had sub-centres within the village, and only half of the subcentres had a labour room and only half the primary heath centres (PHC) had medical officers and less than half the PHCs were equipped to provide 24 hour service (DLHS-3 Gujarat).

The plight of the prawn harvesters of the Little Rann of Kutch is similar to that of many other seasonal migrant communities in India. It has been long acknowledged that migration - especially migration within country, seasonal and cyclic migration - plays a key role in the survival of the most disadvantaged of the populations and is often a way of coping with extreme poverty for the chronically poor residents of resource-poor tribal and rural areas (Deshingkar 2009; Nair and Sen, 2006; Gumbar 2002; Bird and Deshingkar, 2001). It is also known that along with this positive effect on helping survival, and occasionally ensuring cash gains and therefore improvement in the

standard of living, seasonal migration has negative effects too and hinders development by denying access to education, health care and exposes migrants to life threatening risks and exploitative work situations (Deshingkar, 2009). Labelled a criminal tribe, the prawn harvesters, largely from the Miyana community have been one of the most disadvantaged groups for the past century. Deprived of livelihood opportunities because of the deteriorating quality of the land they once cultivated, the community has been forced deeper into poverty and has over the years, come to rely on seasonal prawn harvesting as their main source of income. However, the community pays a price for this as they camp in an area facing harsh environmental conditions without even basic amenities like safe drinking water. At times, the migration with its inherent costs, health and life risks and uncertainties associated with seasonal prawn harvesting counters the purpose of migration - to escape poverty (Bird and Deshingkar, 2001).

Though their situation is similar to that in most migrant communities, the case of prawn harvesters from the LRK stands out because it is an example of the uneven development in India's fourth most developed state that boasts of rapid economic growth and reduction in the incidence of poverty (HDR, 2004). It also stands out because the prawn harvesters are an important part of the fisheries sector in India's largest fish producing state. Estuarine fishing is an important part of inland fishery. Inland fishery, which was practically unknown in Gujarat till the 1960s accounted for about 10% of the state's total (marine and inland) catch in 1994 (Vijayan and Nayak, 1996). Thre is a near absence of any mention of prawn harvesters from LRK in literature, be it government, scholarly or popular.

The prawn harvesters share the same geographical space with the salt pan workers, in fact, some of the prawn harvesters work as salt pan labour during the rest of the year. Recently, a number of researchers and non-governmental organisations working on the issues and rights of the marginalized groups have raised awareness about the difficult work-life conditions of the salt pan workers from the LRK (SEWA 2000, Agariya Heet Rakshak Manch, http://agariyawelfarecentre.com/lrk.html); Malekar, 2009; Dasgupta 2009). This advocacy has resulted in positive results, - appropriate technology being developed for the salt farmers by government and other agencies (http://www.thaindian.com/newsportal/india-news/low-cost-windmill-for-saltpan-workers-in-kutch_100149543.html; http://www.livemint.com/2010/09/16221429/Salt-pan-workers-seek-switch-t.html?atype=tp), mobile clinics, schools and chreches for children at the site of salt farming provided by the collaboration of government and non-government agencies (SEWA, 2000) and the establishment of Sabras Processing and Marketing (Private) Ltd, a producers' company with about 40 members, owned by the marginalized saltpan workers of Gujarat (http://www.hotfrog.in/Companies/Sabras-Procesing-And-Marketing). A description of the working and living conditions of salt pan workers, though sketchy, is found in government documents (http://labour.nic.in/ss/WorkingandLivingConditionsofSaltWorkersinIndia.pdf). Though they share the same space and face similar hardships, the prawn harvesters as an occupational group, however have remained neglected and invisible.

Since most of the prawn harvesters belong to the Miyana community, which post 2002 riots, has started demonstrating a clear Muslim identity, this neglect / lack of visibility also needs to be explored in the context of marginalization of religious minorities (Kashif, 2007; ESCR,2007). This is particularly important since there is evidence to show that migration is higher among Muslims in states where the religious group is socially excluded and chronically poor (Bird and Deshingkar, 2009).

Conclusion

This study was an attempt to document the health status of the prawn harvesters from the LRK in the context of their work-life situation. The study highlights the lack of access to basic amenities such as potable water, sanitation, health care, transportation, education and public distribution system for the prawn harvesters from the LRK. Prawn harvest that is greatly controlled by a number of natural conditions and a vicious circle of indebtedness to the

agents has resulted in poverty for the community. The higher-than-state-average proportion of morbidity seen among the prawn harvesters is largely a result of this deprivation. The women from the community who bear the double burden of household chores and prawn harvesting related activities have higher morbidity rate than that of men. The workload and poor work conditions result in higher reproductive morbidity among women. A near total lack of ante-natal and post-natal care further contributes to the poor reproductive health. The findings underline the urgent need for provision of basic amenities that could improve people's lives and help them escape poverty.

After the preliminary findings of this study were shared with the government officials from the area, a team from the PHC visited some of the temporary settlements to conduct a health camp. On observing the fish waste, swarms of flies and general unhygienic conditions, the medical officers from the PHC advised women on cleanliness and sanitation. The difference in the cleanliness was apparent during the visit by the ANANDI and CEHAT researchers. This is the evidence of how provision of information and services can help change a community's living conditions.

Recommendations

Though exploratory in nature, the study points towards issues that need to be further explored and addressed.

- Lack of access to basic amenities such as safe drinking water is a major problem for the prawn harvesters at the temporary settlements. There is need for detailed investigation into the problem to identify feasible solutions. Screening of residents of the temporary settlements for adverse effects of consumption of water with high salinity is essential. If found necessary, facility for limiting the adverse effects of consumption of polluted water should be mobilized for this population.
- As with children of salt pan workers, mobile schools should be started for the children of prawn harvesters. Parents need to be sensitised to allow children to continue school even at the temporary settlement.
- Mobile health services are necessary. There should be advocacy for a weekly mobile clinic and health education for improved sanitation and hygiene.
- Access to PDS at the temporary settlement should be facilitated.
- Steps should be taken towards freeing the prawn harvesters from the trap of indebtedness by strengthening the cooperative and enabling them to negotiate the marketing processes.
- Most of the health problems are a result of complex interactions between the environment and work conditions of the prawn harvesters. This calls for a more scientific exploration of their impact on the health of the people.

These insights can be translated into effective interventions for improving the quality of life of these populations.

Learnings from the Collaboration

Introduction

The present study was a collaborative effort of CEHAT – a Mumbai based NGO with extensive experience in research on health issues and rights of the marginalized and ANANDI, a Gujarat based NGO with a history of successful interventions for development of marginalized groups through community participation and empowerment of community women. This study was 'research for advocacy' that was undertaken to respond to the lack of data on the health status of the Miyana prawn harvesters from the Little Rann Kutch. Though CEHAT has over the years used research findings to influence health policies at various levels, the collaboration with a physically distant primarily activist NGO for conducting 'research for advocacy' was a relatively new experience. Therefore, the process as well as the outcome of the collaborative research need to be examined in the context of 'research for advocacy'.

Our understanding of some key terms

Research: Research encompasses any gathering of data and subsequent analytical processes to enable the user to draw informed inferences. Research can be a powerful advocacy tool as it provides policy makers with facts, which they can rely on for developing policies and legislations. (http://www.npaction.org/article/articleview/87/1/240)

Advocacy: Advocacy is the action of delivering an argument to gain commitment from political and social leaders and to prepare a society for a particular issue. Advocacy is an act of social mobilisation, of creating awareness and gaining the commitment of decision-makers for a social cause. People's rights are central to advocacy. (de Jong D, **Advocacy for Water, Environ mental Sanitation and Hygiene:**Thematic Overview Paper, 2003

Research for Advocacy: Research for advocacy has a specific objective – that of providing evidence of the need for a certain policy or program. It has a narrow focus and specific objectives; may not contribute to the understanding of the issue but highlights findings that can contribute to advocacy on specific issues. (**Efroymson D, Using media and research for advocacy, Health Bridge, 2006)**

Research is known to be a powerful tool for advocacy (Efroymson, 2006). Since research based interventions are known to be effective in influencing local and national policies, by sensitising the local implementing agencies as well as by advocating for national policy level changes, there is an increase in partnerships between activist and research NGOs (Sudarshan, 1999). NGOs advocating for the issues of the marginalized often rely on their extensive and close interactions with the people they work with. However for successful advocacy, it is also essential to obtain an objective assessment of the situation. A collaboration with research NGO can meet this specific need.

The present study and the collaboration, despite some weaknesses was a learning process for both the partners. The roles of the partner NGOs in this collaboration were in keeping with their respective strengths, and this is an important factor in the success of a collaboration (Sudarshan, 1999). The study would not have been possible without ANANDI's strong community presence and CEHAT's experience of conducting research on health issues of the marginalized.

ANANDI's biggest strength was its thorough knowledge of the community and key issues the residents faced which provided a background for shaping the study. The ANANDI team's rapport with the prawn harvesters, and representatives of Miyanas working with the ANANDI team proved to be a great help in reaching the potential respondents. The prawn harvesters who trust ANANDI to work for their welfare and act in their favour, transferred the same faith towards CEHAT researchers, sharing their experiences and stories. ANANDI's familiarity with the lives and trade of the prawn harvesters and the role of various actors in the processes from catching to selling the catch provided a solid background for the study.

Through this study process, the strength of working with investigators who were members of the community being studied was realised. The ANANDI team members from the Miyana community at first found the concepts of research, alien to their culture and were also not convinced about the need for such an exercise as they felt that these problems are known and they have to just work towards eliminating these problems and improve their conditions. The process of research seemed too lengthy, time consuming and seemed to take away priorities from organizing and action. ANANDI staff took a lot of efforts in instilling faith in the research process amongst the field workers. A two-day training was done with the survey team to ensure that there was an understanding of the tools and methods of survey. This investment paid off in the end, as the quality of data in the questionnaires was found to be reliable. The Miyana investigators found need for written consent alien to their culture and were initially reluctant. This was one of the issues discussed during the training programme. Had the investigators not abided by the rules and requirements regarding informed written consent, the entire exercise would have been considered unethical and therefore rendered useless. However, the investigators by themselves found out a solution to this situation. The investigators split the process of seeking consent into parts. Before initiating the interview, they shared information about the purpose of the study and areas of enquiry with the respondents and sought verbal consent for the interview. After completing the interview, they read out the interview to the respondent and asked whether it was recorded appropriately and then signed the consent forms themselves stating that they had conducted the interview and recorded the information as reported. The respondents were then asked to sign the consent forms to support the investigators' statement about performing their duties. This process resulted in all but nine households providing written consent for the study.

Consent for the study was first sought from the community leaders and then from individual respondents. This ensured that the community leaders were informed about the process and they supported the survey albeit with the hope that the results would benefit the community and improve their lives. Support from the community leaders helped in accessing the individual households who were not open to outsiders and also in creating conducive environment during field work.

Because of its active involvement in the research process, ANANDI could share the preliminary findings of the study with the district level government officials, which in turn brought about changes at the level of temporary settlements. When looked at from the research point of view, there appear to be weaknesses in the study. Considering that community workers from ANANDI who have limited experience of data collection, were to act as research investigators, the study was designed primarily as a quantitative study. A considerable portion of the data was collected through a 'survey' of the households. A few group discussions and interviews with key informants (identified by ANANDI) too were affected by the language barrier. These were not designed to conduct indepth studies into the issues concerned; but were more exploratory in nature and provided a background for the study rather than shed light on the 'whys' of the issues that emerged.

The choice of methodology had limitations and in the absence of probing and qualitative information to support quantitative data, the survey findings do not throw sufficient light on the determinants of poor health of the prawn

harvesters. To enable smooth data collection and to minimise investigator bias the tool did not use any probes for eliciting information on severity of health conditions. As a result data on episodes of illnesses, length of each illness episode, acute exacerbations of chronic conditions, perceived seriousness of the symptoms, rationale help seeking behaviour and effect of any illness episode or health condition on work and life routine of a person were not documented. The morbidity recorded by this study therefore might not be an accurate representation of the health status of the sample population. Absence of probes also resulted in the study's failure to highlight the severe impact that the lack of amenities had on the lives of prawn harvesters. Though in a collaborative situation, the research NGO is expected to play a key role in ensuring the quality of data, because of the physical distance and the non-familiarity with the language and cultural context, CEHAT had a limited role in monitoring the quality of data. This was therefore left to ANANDI staff which had different priorities at the organisational level.

Language barrier limited the CEHAT researchers' role in collecting qualitative data. In-depth interviews and group discussions were carried out through intermediaries who translated the questions into local dialect and answers into English for the CEHAT researchers. This inability of the researchers to engage directly with the respondents and participants severely affected the quality of qualitative data. It also resulted in a gap in exploration of causes of morbidity and mortality. The gaps had to be later filled through discussions with ANANDI team members and some members of the community. The process of filling in the gaps took almost a year after the data collection phase and contributed to delay in completion of the study. This could have been better planned and executed by CEHAT.

Despite its weaknesses the study successfully contributed towards improvement of health condition of the prawn harvesters. This partnership has increased ANANDI's outreach work from six sites to over thirteen sites, having mapped all the sites for establishing the sample. The report itself becomes a kind of base line study of the community, increasing the confidence of the team to articulate the extent of deprivation. The process has led to the community's taking the initiative to improve its living conditions, besides engaging with the government at the district level to increase access to public services and invest in water and sanitation at the worksites. Another spin-off was the understanding built among the male team members on women's reproductive health, and the confidence with which they were able to discuss and articulate RCH concerns with the health department and community.

Engagement of the community representatives in the research process can be considered a step in the process of awareness about one's rights and therefore empowerment. Globally, a number of disadvantaged communities have been successful in being heard by the policy makers by collaborating with civil society organisations and through research aimed at advocacy (Langille et al, 2008). We hope the present study will have a similar effect on the community of prawn harvesters.

The usefulness of the study is evident from the immediate impact that sharing of preliminary results has had on the temporary settlements. Firstly, the study gave visibility to the community of migrant fishers, their specific locations and health services needs to the local district and block health deoartnebt, This ledto visits to the site by the Primary Health Care centre medical officer, adding services through a mobile dispensary at the temporary settlements and increasing access to EMOC and ambulances. Health education imparted to women about child care, and to community men and women about cleanliness and hygiene have resulted in noticeable cleanliness in at least one settlement. One of the key informants of the study, Rahmatben Movar who is also a local community health worker was motivated to be the first member from the community who stood and won elections for the local self government body with the mandate to improve the living conditions of fishers at work-sites and home. This is an encouraging experience and a testimony to the power of participatory research as a tool for advocacy in the hands of the community to foster change.

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Annexure 1

Steps used in deciding on a sample size

The plan of sample selection as proposed at the beginning of the study

1. Listing of households at all temporary settlements
2. Since the community of prawn harvesters was believed to be a homogeneous one, following formula (Yamane, 1967 pp 886) was used to arrive at a sample size for 95% confidence level and precision of 0.05.

$$n = \frac{N}{1 + N\,(e)2}$$

Where,
n = desired sample size
N= population from which a sample is to be drawn
1= desired confidence level
e= desired level of precision

For the present study, the approximate number of households at the 13 settlements was known to be 3000. Hence the sample size for the study as given by the above mentioned formula was -

$$n = \frac{3000}{1 + 3000\,(0.0025)2}$$

$$= 353 \text{ households}$$

3. To ensure random selection, every eighth household of the 3000 households at the settlement was to be included in the sample.

This method of sample selection had to be abandoned since there were very few households in some of the settlements due to delayed monsoons. Alternatively, the following methodology which was acceptable to both CEHAT and ANANDI was worked out .

1. One person from the ANANDI team visited the settlement and did mapping and listing of the settlement where each household was marked on a map of the settlement along a central street passing from one end of the settlement to the other. Names of the household members were not recorded at this point.
2. Ten percent of the households at the settlements were selected as sample from the total households marked on the map.
3. The process followed for selection of sample households from the map is presented below -
   a. If 100 households (HH) are located or drawn on the map at the settlement then sample size will be 10% of 100 HH, i.e. 10 households from that settlement.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21……N									

How to Calculate Interval:

- Distance between 1-11th household is called interval of 10.
- Select 1st hh from the map
- Then add 1+10=11 --- take 11th household for sample
- 11+10=21 and so on……..till will reach 100.

b. After including 10 household in a particular settlement, move to another settlement and follow the same process which was done in selecting HH form for first settlement.
c. It would not vary though the settlement size is large or small; follow the same rule (10 percent of the total household) for each settlement.
d. If sample is drawn from all 12 settlements in the above mentioned manner and 300 households are not identified; go back to the first settlement and use the same map for selecting more households from the same settlement.
e. In second round of selecting household, start the household from next to the first household which was selected in the first round. Keep the same interval between each household for that settlement.

For Example:

1	2	3	4	5	6	7	8	9	10	11
12	13	14	15	16	17	18	19	20	21	

22……N

- Then add 2+10=12
- 12+10=22 and so on……..till will reach 100.

f. In second round of selecting households from the first settlement, if Prawn harvesters have gone back to the village then move to the settlement where Prawn harvesters are still there.

Annexure 2

Main Data collection tool

Household and Health Survey of Prawn Harvesters from the Little Rann of Kutch

Details of Household and Respondent:

1. Identification Number (Household Number):
2. Date of Interview (dd/mm/yy) _____/_____/_____
3. Name of Adult member / Senior member of the Household:
   _____
4. Name of the base Village: _____

   Name of the Settlement: _____
5. Details of Respondent: _____

   Name of the Respondent _____

   a. Age ☐☐

Research Investigator Code: ☐

Research Investigator's Name: _____

Signature: _____

Checked by (Supervisor): _____ on date: _____/_____/_____

Signature: _____

Section-I Socio-Economic Status

Socio-Economic and Health details of all household members

Sr. No.	Name of the household members	Present living Place Base Village=1 Temp Settlt=2	Sex Male=1 Female=2	Age	Relation with the respondent	Marital status	Educ-ation	Main Occup-ation	Secondary Activity	Received vaccination doses for the children age less than 6 years at temporary settlement 1=Yes 2=No	ill within 15 days 1=yes 2=no
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
01											
02											
03											
04											
05											
06											
07											
08											
09											
10											
11											
12											
13											
99= Not applicable						**98= No response**					

Col 5: Write '0' for children less than 1 year, for all age write in completed years.

Col 6: Relation with the Respondent

01 = self	02 = spouse	03 = parent/in-law
04 = brother/sister	05 = son/daughter	06 = son/daughter in law
07 = grandchildren	08 = uncle/aunt	09 = nephew/niece
10 = Share house	11=other (specify)	_____

Col 7: Marital Status

1= Never Married	2=Married
3=Divorced/Separated	4=Widowed/Widower

Col. 8: Education

0=Illiterate	2= 1-12 years of schooling	3=other specify

Col. 9: Main Occupation

1= labour	2=Farming
3=Fishing	4=Business
5=Job	6= Animal raring
7=Household duties	8=Unemployed
9= Student	10=other specify

Col. 10: Secondary Occupation
See Col. 9 codes.

2. What is your religion?

1=Hindu	2=Muslim
3=Others _____ (Specify)	

3. Which social group do you belong to?

1= Scheduled caste	2= Scheduled tribe
3= Backward caste	4= don't know

Base Village: ☐

4. Do you have a Ration Card?

1=BPL	2=APL
3= Antyoday	4=Annapurna
5=No ration card	

☐

5. What is your monthly income at the base village

Rs. ☐☐☐☐☐

6. Do you own any agricultural land at base village?
Units-Vigha (1 acer=2.5 vigha)

1= irrigated
2= Non-irrigated
3= Total
4=No

☐
☐
☐
☐

Temporary Settlement:

7. What are the livelihood assets you own for prawn harvest?

Sr. No	Assets	Yes/No	Number
1	Mechanised boat		
2	Boat		
3	Dhori (site)		
4	Katar (net)		
5	Boat Licence		
6	Gunja(kgs)		
7	Cycle		
8	Cold storage box		
9	Any other		

8. How much you had earned (gross sale) in last season from prawn harvest?

   i. Prawn Gross sale Rs. ☐☐☐☐☐

   ii. Total expenditure Rs. ☐☐☐☐☐

   iii. Loan/Advance Rs. ☐☐☐☐☐

9. What is the source of drinking water? ☐

   1= Pond /ditch 2= buy water
   3=Hand pump 4= other _____

10. If purchase, how much do you pay for drinking water in a day?

    Rs. ☐☐☐☐☐

11. Is the water treated before drinking?

    1=Yes 2=No

12. If yes, type of water treatment?

    1= Boiling 2=Cloth Screen
    3= Chlorination 4= filtration
    5= Other Specify _____

13. What is the main source of fuel for cooking and processing prawns?

    Cooking= ☐
    Treating prawns= ☐

    1=Wood from forest 2=coal/charcoal
    3=Kerosene 4=Liquid Petroleum gas (LPG) 5=Buy wood/energy
    6=other specify

14. What is the method of disposing household and fishing wastes? ☐

    1 = burn 2 = bury
    3 = throw in a river/pond/lake/sea 4 = throw in open garbage ☐
    5=other specify

Section II: General Morbidity Pattern

1. If 'ill within 15 days' give the details of illness of each person reported in section I column 12.

Ind. ID from HH table	Name of the person **(refer section-I household table column 12 if yes)**	Describe the illness/ health problem	Since when (Days)	Reasons of Illness/ health problem?	Treatment taken 1=yes 2= no	From where?	Hospit - alized? 1=Yes 2=No	Mode of Transp- ortation	Transport expense	Over all Expenses Including transport and Medicine	How did you arrange money? **(Write all if more than one response)**	Any specific Problems faced during seeking treatment? **(write in brief)**	If no treat- ment Rea- son
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)

99= Not applicable **98= No response**

Probe list for Col. 3:

1=Respiratory and Breathing trouble
2=Body pain (due to walking, moving, bending, holding)
3=Frequent headache
4= Feel tired all the time
5=Trouble with eating and drinking (not feeling hungry, constipation or loose motions, cramps)
6=Skin problem, rash, itching, patches, sweating, pimples and boils
7=Problem with sleeping and concentration
8=Palpitation, anxiety
9=Mood swing rage irritability
10=Backache
11=Stomach pain
12=Fever

Col. 5: Reasons of Illness:

1=contaminated drinking water	2=food/diet	3=Most of the time work in water
4=Carrying Weight	5=Weather	6= Over work load more than 12 hrs
7=other specify _____		

Col.7: Type of treatment

01=home remedy	02=faith healing
03= natural medicine (herbal)	04= Dai
05= Local shop	06= govt. health worker
07= govt. hospital	08= private doctors at settlement
9= private clinic	10= no treatment

Col 9: Mode of Transportation

1=108	2=Motorcycle	3=Cycle
4=any four wheeler	5=Rickshaw	6=Tempo
7=Walking	8=other specify _____	

Col. 12: Arrangement of money

1 = personal savings	2= from relatives/ neighbours
3 = pawned household assets	4= sold household asset
5= from prawn business men	6= Mahila Mandal/SHG Mandal
7=other specify _____	

Col. 14: Reasons for no treatment

1= not serious	2 = no money
3= no transport facility	4= no service available
5 = other (specify)	

2. If any traditional treatment practices (1-5 option) please write in brief (Specify the person who is ill)

_____

_____

3. Details of chronic illness of the Household members.

Id from HH	Name of the person	Describe the illness/ health problem	Duration of illness/ health problem? **(in months)**	Treatment taken 1=yes 2= no		Type of Treatment	If no treatment at temporary settlement Reasons
				Village	Continuing in Temporary settlement		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)

Col. 3: Illness/ health problems
1=Mental Illness
4= Asthma
6=other specify _____

99= Not applicable
2=Joint pain
5=Heart/ Cancer/ Liver problem

98= No response
3= T.B

Col.7: Type of treatment

01=home remedy
02=faith healing
03= natural medicine (herbal)
04= Medical shop
05= govt. health worker
06= govt. hospital
07= private mobile doctors
08= private clinic
9= no treatment

Col. 8: Reasons for no treatment

1= not serious
2 = no money
3= no transport facility
4=No service at temporary settlement
5= no reason
6 = other (specify)

Section III: Women's Reproductive Morbidity and Maternal Health

1. What is your age at marriage?
   Years= ☐☐
2. Child Birth History of the women:
   i. Number of Surviving children
      Sons= ☐☐
      Daughters= ☐☐
      Total= ☐☐
   ii. Number of abortion had (both ☐☐ spontaneous as well as induced)
   iii. Number of children dead
      Male= ☐☐
      Female= ☐☐
3. Have you ever used any contraception?
   1=Yes 2=No
4. If yes, what are the methods have you used?
   1=Sterilization 2=IUD/Copper T
   3=Oral Pill 4=Condom
   5=Natural Method 6=other specify
5. Did any of your child's birth take place at the temporary settlements in last five years?
   1= Yes 2= No ☐

1. If 'yes' give details of the birth:

Children id from HH table	Mother's name	Received ANC? 1=Yes 2=No	If 'Yes' What type of ANC service received?	Name of the Child	Place of delivery 1= home 2=hospital	Reasons of choice of selecting delivery place.	Sex of child 1=boy 2=girl	Birth registration 1= Base village 2=Temp settl 3=no	Has the delivery 1=normal, 2=c-section, 3=assisted by instrument.	Status of child 1=alive and healthy 2=alive and sick 3=alive and disabled 4=dead	Status of mother 1=alive and healthy 2=alive and sick 3=dead	Immuni-sation received? 1=Yes 2=No
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)

99= Not applicable **98= No response**

CODES: **Col. 4:**
1=IFA tablet 2=TT Injection 3=Syrup 4=other specify

7. If 'home delivery' who attended the delivery? (For all children record separately)

1=Trained Dai (ASHA)	2=Untrained Dai	
3=Women in the family	3=Neighbour	
5=other specify		

8. Reason for not registering Birth?

_____ _____

_____ _____

9. Do you face any of the following reproductive health problems during the stay at the temporary settlement?

Describe the illness/ health problem	Since when		Reasons of Illness/ health problem	Treatment taken 1=yes 2= no	From where?	If no treatment give, Reason	Mode of Transp-ortation	Over all Expenses Including transport and Medicine	From where you have arranged money?	any specific Problems faced during treatment **Write in brief**
	days	months								
(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

CODES: 99= Not applicable **98= No response**

Col. 1: Health Problem

1=Itching over vulva/groin/vagina	2=Boils/ulcers around vulva
3=Pain in lower abdomen	4=Low backache
5=Frequent/painful passage of urine	6=White discharge from vagina
7=Swelling/lump in breast	8=Pregnancy Induced
9= Change in menstrual cycle	10= Spontaneous Abortion
18=other specify _____	

Col. 5: Type of treatment

1=home remedy	2=faith healing
3= natural medicine (herbal)	4= Dai
5= Medical shop	6= govt. health worker
7= govt. hospital	8= private mobile doctors
9= private clinic	10= no treatment

Col. 6: Reasons for no Treatment

1= not serious	2 = no money
3= no transport facility	4= no reason
5 = other (specify) _____	

Col 7: Mode of transportation

1=108	2=Motorcycle	3=Cycle
4=any four wheeler	5=Rickshaw	6=Tempo
7=Walking	8=other specify	

Col. 8: Arrangement of money

1 = personal savings	2 = from relatives
3 = from neighbours	4 = pawned household assets
5 = pawned jewellery	6 = sold household asset
7 = sold jewellery	8= mortgaged land
9 = sold land	10 = sold prawns
11 = from money lender	12= Azad Mahila Machhimar Co-operative
13=other specify _____	

10. If any traditional treatment practices (1-5 option) please write in brief.

_____

_____

_____

Section IV: Details of Occupational Health due to involvement in the Prawn Harvest

1. Do you face any health problem due to your involvement in the prawn harvest?

   1=Yes 2=No

2. If 'Yes' give details.

Indiv. Id	Name	Male/Female 1=Male 2=Female	Activities related to prawn harvest	Health problem (Write all if more than one response)	Treatment taken 1=yes 2=no
(1)	(2)	(3)	(4)	(5)	(6)

99= Not applicable **98= No response**

Code: Col. 4: Activities related to prawn harvest:

Sr. No	Men		Women
1	Built temporary huts at the settlement	8	Preparation for going to the settlement
2	Go in the sea for catching prawns	9	Help in preparing hut at the settlement
3	Repair the boat	10	Sewing of the Sadh
4	Repairing of the net	11	Put the nets in the boat going for catching prawns
5	Purchase boat and net	12	Bring the prawns catch from the boat to the ground
6	Fitting accessories to the boat	13	Cleaning of the prawns catch
7	Bargaining of the rate of the prawns/fish catch with the middlemen	14	Boiling, Cooking, drying and cleaning of the prawns catch
		15	Look after the family, children and do all the household work

Col. 5: Probe List:
Posture
Skin disease
Respiratory
Accident (drowning fracture)
Eye infection

Annexure 3

Selected Key Informants Interview from the Temporary Settlement

Confidential for Research Purpose only

1. Name of the settlement
2. Name of respondent _____
3. Respondent id
4. Position in the community/settlement _____
5. Reason for selecting as key informant _____
6. Age
7. Sex

   1=male
   2= female

8. Occupation

9. What is the religion of the community (Caste , social group)

10. Do the community members hold ration cards, if yes what type of ration card they have?

11. What is the ownership pattern of the land/house at temporary settlement?

12. Socio-cultural practices (festival, marriages, death rituals and other celebrations)
    - Family size, nuclear or joint
    - Men and women involvement in the household work
    - Male and female education
    - Decision making power in the household
    - Festival
    - Marriages
    - Customs

- Religious beliefs (worship practice)
- Traditional practices

13. History of the Miana's in the temporary settlement
    - Since when migrating to this settlement
    - Settlement formation
    - Group formation (known as different groups in different settlements)
    - Reasons of migration
    - Generational change in the occupation and migration

14. Does the whole family migrate to the temporary settlement?
    - What happens to the old, children, pregnant women, people suffering from chronic illness?

15. Since when people in this settlement are involved in prawn harvesting?

16. How many households are involved in this occupation?
    - Male (adult and older)
    - Female (adult and older)
    - Children
    - Gendered division of work

17. What is the procedure of prawn harvesting (preparation for prawn harvesting till selling of prawns)?

18. What is the alternate source of income at base village?

19. Has there been any increase or decrease in the prawn harvest? Give reasons why?

20. What are the technical improvements occurred in the procedure of prawn harvesting over the years?

21. How the Mahila Macchhimar Co-operative formed in the prawn industry?

22. Has ever been any community organization/sangathan formed before the Mahila Machhimar Co-operative?
    - If not why?
    - If yes elaborate

23. Why people thought to make this sangathan for prawn harvesting?

24. Have men ever thought of such sangathan/ Co-operative? If yes, was any sangathan formed? If not what are the reasons?

25. Have you noticed any changes in the prawn harvesting industry due to this sangathan?

26. If yes, what are they (both positive and negative)?

a._____ b._____
c._____ d._____

27. Did any occupational health hazard happen since last 5 years in this settlement, if yes report the details?
    - Accidental hazards
    - What are the minor illnesses people suffer from, due to the living condition and nature of work in your settlement? **Report illness for male and female and children separately.**
    - What are the major illnesses people suffer from, due to the living condition and nature of work in your settlement? **Report illness for male and female and children separately**

28. Where do people generally go for the minor/major health problems?

29. Availability and use of basic services at temporary settlement.

Sr. No.	Services	Available 1=Yes 2=No	Do you use these services? 1=Yes 2=No	Distance	If not using give reasons?	If not available from where you get these services
1	Anaganwadi					
2	Anganwadi worker					
3	ANM					
4	ASHA					
5	MPW (for fumigation)					
6	DOTs centre					
7	Gram Sewak					
8	PDS (Ration Shop)					
9	Medical shop					
10	Grocery shop					
11	Traders					
12	Sellers					
13	Public transport					
14	Primary School					

30. Does any health worker visit in this settlement for provisioning the essential services?

- Immunization
- Polio
- ICDS
- Malaria treatment
- ANC/PNC services
- JSY Scheme

31. Where women go for ANC/PNC services in your settlement?

32. Have you noticed any changes occurred over the years in the people's health status/health problems in this settlement?

33. What are the major problems faced by this community?

Annexure 4
Introduction Letter

CEHAT,
Centre for Enquiry into Health
and Allied Themes, Anusandhan Trust
Sai Ashray, Aram Society Raod,
Vakola, Santacruz (East)
Mumbai-400054
Ph: 02-226673154/ 226673571

ANANDI,
Area Networking and
Development Initiatives
B 4/1, Sahajanand Towers
Jivraj Park Cross Rds,
Ahemdabad-380 051
Ph. 91 79 26811802

Dear Madam/ Sir,

Greetings!

My name is……., I am a member of the research team from the Centre for enquiry Into Health and Allied Themes (CEHAT), Mumbai.

About the organizations conducting the study:
CEHAT, Centre for Enquiry into Health and Allied Themes, believes in socially relevant and rigorous academic health research and health action for the well-being of the disadvantaged masses, for strengthening people's health movements and for realizing right to health care.

ANANDI, Area Networking and Development Initiatives, bases its work with rural poor women and tribal communities to establish a just and equitable society by local women in seven blocks. Today ANANDI collaborates with Sangathan for planning, monitoring, and review of the works, advocacy with government and movements to mainstream gender concerns. ANANDI's mission is to bring rural women's concerns in the centre of all development processes to establish a just, equitable and peaceful society. ANANDI is a group working with women in five districts of Gujarat.

CEHAT in collaboration with **ANANDI** proposes to undertake a study to provide evidence on the socio-economic and living condition of prawn harvesters at temporary settlement in the Little Rann of Kutch (Miyana community) and its impact on the health status of these workers involved in such unorganised types of work.

About the study:
This study focuses attention on seasonal migrant's right to basic services, Reproductive Health Problems in women, occupational health risks and availability of health care services. The information gathered through this study will be used to put forward the perceptions and aspirations of the people to the policy makers. This study is being conducted in Temporary settlements of the Prawn Harvester migrated from villages of (Maliya and Halvad) Rajkot and Surendranagar districts of Gujarat.

This study will be shared with the local Mahila Machhimar Cooperative and also it will be used for advocacy with different departments- Health, Fisheries, Gujarat Water Supply & Sewerage Board and Women & Child for essential services that must be provided to the families at the temporary settlement where we spend more than a quarter of the year.

Reason for conducting this study:
As ANANDI has been working with the community for many years, it has been realized that the Miyana community is marginalized and the living conditions, health etc. has taken a toll and there has been no commitment from the govt. to improve their socio-economic condition and health services at the temporary settlement. Hence, to document and produce an evidence and to create awareness amongst the community of their right to health and dignity, this community has been chosen.

For any clarification:
In case you need any further information or clarification on any issues, you can contact the Research Team members. The contact details have been mentioned at the beginning of this form.

CEHAT : Tayyaba Shaik, Nidhi Gupta
ANANDI : Sejal Dand, Sumitraben, Ramesh

Annexure 5
Consent form

CEHAT,
Centre for Enquiry into Health
and Allied Themes, Anusandhan Trust
Sai Ashray, Aram Society Raod,
Vakola, Santacruz (East)
Mumbai-400054
Ph: 02-226673154/ 226673571

ANANDI,
Area Networking and
Development Initiatives
B 4/1, Sahajanand Towers
Jivraj Park Cross Rds,
Ahemdabad-380 051
Ph. 91 79 26811802

I have read/been explained about the objective of the study and organizations conducting the study and my queries have been answered to my satisfaction. I agree to participate in the study voluntarily and to respond to the questions. I understand the purpose, nature, and length of my involvement in the study. I understand that there will be no monetary benefit for participation in the study. I understand that my identity will remain confidential while sharing information given by me and the report will not mention any names or identities. I understand that I may choose not to participate at the beginning of the project or at any time during the project without penalty.

I am aware that in case I need any further information or clarification on any issues, I can contact the addresses at the top of this form.

I consent to participate in this project voluntarily.

_____ _____
Date Signature of Respondent

In case of Verbal consent ☐

I, the undersigned, have explained to the volunteer in the language he understands, the procedure to be followed in the study, and the risks and benefits involved.

_____ _____
Date Signature of Research Investigator

_____
Name of the Research Investigator

Annexure 6

Deriving economic category for the sample households

			Monthly per capita income at base village - quartiles (1 - 4 : lo - hi)				
			1.00	2.00	3.00	4.00	Total
Per capita income from prawn harvesting - quartiles (1 - 4: lo - hi)	1.00	Count	16	15	20	17	68
		col %	20.50%	22.40%	30.80%	26.60%	24.80%
	2.00	Count	27	14	18	15	74
		col %	34.60%	20.90%	27.70%	23.40%	27.00%
	3.00	Count	23	22	17	10	72
		col %	29.50%	32.80%	26.20%	15.60%	26.30%
	4.00	Count	12	16	10	22	60
		col %	15.40%	23.90%	15.40%	34.40%	21.90%
Total	Count		78	67	65	64	274
	col %		100.00%	100.00%	100.00%	100.00%	100.00%

Pink = Poorest (Combined economic status index)

Green = Poor (Combined economic status index)

Blue = Less poor (Combined economic status index)

The economic categories of Poorest, Poor and Less poor were arrived at after considering the per capita income at base village as well as from prawn harvesting. A combined indicator was used to account for uncertainties of income from both occupations at base village as well as from prawn harvesting - since the reference year for prawn harvesting income had reported a low landing.

Annexure 7

Profiles of temporary settlements

1. Aejar Tundi and Kupeni:

- Found 116 households settled there, 11 hh selected for survey-Aejar Tundi
- 106 families, selected 10 hh for the survey-Kupeni
- Both Aejar Tundi and Kupeni are very close to (2 km), has similar characteristics
- This coast is 10 kms from Ajar village, people come from Choti Khandeki, Halvad, Nava Hanjiyasar, Kajeda, Kuda, Venasar, Wankaner, Maliya and Datar
- It has kachcha road, babul tree around and is under a century. Private vehicles like auto, chhakada, are available; there is no potable water facility, drink from a small pond which has dirty water.
- This place is safe due to its shallowness; people come for fishing from past 40 yrs on this coast
- In the village only 2 hh own land (non-irrigated) in the village where as rest of them do not hold any land, non of the households own all assets required for prawn harvest, few have boat, net and Gunja, , own no license for fishing.
- People get very less price for the fish, they get Rs. 150/- for 10-12 kg thru agent, which actually should be 400-500 rupees.
- The monthly income of the people in the base village varies between 1500-4000, family members in the hh minimum 5 to maximum 7.
- People mainly engage in fishing, labour in saltpan and others and animal raring in the village, literacy level among people is very low
- This coast is nearby to the desert, people don't process the prawns, sell the row material, hence, there is less prawn waste around their huts and mosquitoes and files are less compare to other shores. People mainly suffer from boils in leg, get nail (due to babul tree) bite.
- For the treatment people visit Maliya and Morbi which is 21-25 km away from the settlement

2. Karadiya:

- No. of families: 178, 18 hh were selected randomly for the survey
- People come from Maliya, Datar na jhaad, Bholi area, Bholi/ Paat area, Chikhli, Maliya cross roads, Khirai, Rakhodia, Nava hajiyasar, Kajeda villages to the settlement. The distance between base villages and the settlement varies 15-30 km
- In the village only 3 hh own land (non-irrigated) in the village where as rest of them do not hold any land, 60% hh have boat, 50% hh have net and Gunja, very few hh own cold storage box, non of the hh have any type of vehicle.
- The monthly income of the people in the base village varies between Rs.700-4000, family members in the hh minimum 3 to maximum 7, 40% joint and 60% nuclear family
- People mainly engage in fishing and labour in salt pan, literacy level among people is very low
- During monsoon, to reach to Karadiya Sea sore from Chikhali, one has to walk thru water, which is so difficult.
- There is a small rough path (not concrete) for walking, the fishing community brings prawns into small boat on the sea shore and fill up boxes to sale the buyers there.
- The water left out after boiling the prawns, there was much dirtiness, due to which there were density of flies, mosquitoes are very high
- There is a small pond near the sea shore and the water remains in the pond up to 1.5 month. Later people go to Chikhli village for potable water, many purchase water for drinking use.
- Diseases like fever, cold, skin diseases, etc. are common here. For general illness, people don't take medicines but in sever health problems, diseased are taken to Jetpar clinic. People greatly follow bhuva/bapu and do believe in superstition.
- For the treatment people visit Maliya and Morbi which is 21-25 km away from the settlement

3. Nagawadi: large settlement

- There are 428 families of which 42 were selected
- Nagawadi is 15kms from Maliya block, it has a kachcha road for transportation during monsoon the road gets absolutely muddy, there are private auto vehicles available to reach to the coast, people stay here for 4 months

- People come from Maliya, Datar , Bholi, Bhagadia area, Navahajiyasar and Kajeda, distance ranges between 6-18 km
- 40% joint and 60% nuclear family, minimum 2 members maximum 7 members in hh. Their monthly income Rs. 700 to 15,000 at the base village, very few people are literate till primary
- People does fishing, labour, business and animal raring at the base village
- 20% hh own land (non-irrigated), 1 hh has Mechanized boat, 60% own boat, 25 % own place at the settlement, most of the hh have some or the other kind of assets at the settlement requires for prawn harvest
- Navahanjiyasar village which is 6 kms away from this place has a school. People take their children who are studying along the coast during monsoon, leaving a gap of 3-4 years in children's education, they made the demand for the temporary school at the settlement but no temporary schools are opened by the govt.
- it has a pond half a kilometer away from this coast from where people drink water, even for animals and for boiling prawns, this water is used, and the water is very dirty, due to which many diseases occur. water remains up to 1.5 months, then people have to purchase water, many people go to Navahanjiyasar village, 30 kms away from place to fetch water and at times buy water at Rs. 3
- People bring elderly, children and diseased along, take the diseased to Maliya hospital and in severe case, take to Morbi. People throw the fish and other garbage drawn from the sea nearby their houses and hence it increases dirt and foul environment, promoting flies and mosquitoes and spread diseases, this also leads to spending more money on illness.

4. Surajbari: Large Settlement

- There are 445 hh, 44 were selected
- People come from Surajbari village,
- Longest season, get maximum prawns, people migrate from other places & stay up to 3 months,
- 70 families do fishing throughout the year
- Surajbari falls in Kutch, Bhachau,
- no one owns land and all are labourers. 50% people don't have ration card, , most of them have APL card, people migrating here from past 30 years, 36 percent hh are joint and 64% nuclear family, literacy is quite better than other settlements, this cost has primary school., hh engage in fishing, labour, business and animal raring.
- Monthly income of the hh at the base village is Rs. 1000 to 6000, members in family minimum 3 and maximum 7+
- No license to the fishing man, they demand for the same. 3 hh own Mechanized boat, 72% hh own boat, 23 percent own their own place at the settlement, 20-50 percent hh have some or the other kind of assets at the settlement
- Kutch's drinking water pipe line passes thru this coast, collective stand-post is installed for water connection, water is clean & pure.
- With untidy coast, there are illnesses, such as fever, cold, malaria, etc. feel extreme heat due to working in summer.
- As Maliya is nearby, they go to malia than samakhiyali, at shikarpur PHC the nurse gives medicines and medicines are also available at Anganwadi & primary school including for pregnant & lactating mothers. 108 facilities are also accessible with a phone call.

5. Bandh

- There were 167hh, selected 16 hh for the survey
- People come here from Maliya and Navagam, distance ranges between the base village and settlement is 60-75 km.
- Nearest village is Ghantila and Khakhrechi (12-27 Km)
- 69% Nuclear families and 31% Joint families
- People are illiterare, work more in fishing and labour at the base village
- Monthly income at base village id Rs. 1000 to 4000
- Only one hh has land (non irrigated),
- Only one hh own boat, very few has net, Gunja, one has cycle and 1 boat license, 1 cold storage box etc.
- There is a small pond for drinking water though the water is very dirty and not potable. People suffer with diseases due to the usage of this water.
- There are private vehicles available like Jeep & auto, people use these vehicles for commutation between this coast and Ghantila village, and even private doctors are available here, they medicine purchase from Ghantila village.

6. Boda:

- There were 141 hh, selected 14 hh for the survey
- Settlement has 71 percent nuclear and 29 percent joint families

- People come from Maliya, Khirai, Bhagadiya, Rakhodiya, Nava Hanjiyasar, Datar, the distance ranger from 70-90 km. from the base villages to settlement, people does fishing fsince 50 years on this coast
- The nearest villages are Khodgaon, Boda, Ajitgad and Halvad (2-25 km)
- Literacy is very negligible, people work in fishing and labour, their hh income at base village is Rs. 1000-6000, hh members minimum 3 ans maximum 7+
- 4 hh own agricultural land, nobody has their own place at the settlement
- Very few hh have some assets for fishing,
- There is no proper pathway to reach the coast, no vehicles available. It is the remote settlement in all the settlements

7. Venasar:

- There were 417 hh, 41 has been selected for the survey, 1 hindu family found here
- People come from Maliya, Chikhli, Khirai, Bholi, Bhagadiya, Datar , Rakhodiya, Nava Hanjiyasar, the distance from base villages to the settlement is 10-50 km.
- From generations together, people do fishery work on this coast since 100 years, every year the fishing family population increases. Till now, no one has owned any land here.
- 54%families are nuclear and 46% are joint, literacy level is very low in this community, in a hh 1 boy has done 10 years of schooling
- There occupation is fishing, labour, business and animal raring at the base village
- 46% has BPL and 42% has APL card, 12% have no ration card
- Their monthly hh income at base village is minimum Rs. 700 to 8000.
- 4 hh own land in the base village, 1 has irrigated land, 30 percent hh have boat, no hh own land at the settlement, many hh 40-80 percent have some assets,
- People get nail bites, suffer from boils, get 108 facilities and call for it for emergency like delivery, go to Khakharechi PHC & Jetpar private clinic for miner illness in auto, no health related facility on the coast.

8. Mandarki

- There were 182 households, 18 households has been selected for the survey
- People come from Maliya, Nava Hanjiyasar, Kajeda. The distance from base villages to the settlement ranges 60-70 km. It is a village in Maliya, 15 km away from Ghantila
- Here Rickshaw-auto, jeep, chhakada, private vehicles are available for transportation
- All households belong to Muslim religion, people work in fishing, labour, farming, business and animal raring. Literacy level is very low, few persons educated till 8th standards
- Many families observed nuclear, few joint and 2 extended. Family members in a hh minimum 2 to maximum 7+ members
- Only 4 hh own land (non-irrigated) in the base village, 11 hh own boat, Gunja and net, boat license, 5 hh have cold storage box. Only 1 hh own place at the temporary settlement. Monthly income of hh is Rs. 1000 to Rs. 4000.
- There is dirtiness around, people drink water from the nearby small pond, which has water only up to 2 months, rest of the time they have to buy water.

9. Tikar

- Tikar is the largest settlement with total 497 households, 52 households were selected for the survey
- People come here from Maliya, Datar na jhaad/Bholi area, Nava Hanjiyasar and Kajeda
- Distance from base village to the settlement is 70-90 km. Tikar village is very nearby (15 km) from the settlement.
- Members in the hh ranges from 2-7+, 58% hh live jointly, 41%hh are nuclear, literacy level is very low, few people have educated till 9th standard
- People work in fishing, labour, business and animal raring, the hh income in the base village is min. Rs. 500 to Max. Rs. 6000. More hh have BPL card. 13% have no ration card, 6 hh have land (non-irrigated) in the base village
- 49 hh own boat, net and Gunja, 25 hh own boat license, 2 hh have cycle and motorbike and 5 hh have cold storage box.