EFFECTIVENESS OF MALARIA CONTROL ACTIVITIES IN BALISANKARA BLOCK OF SUNDARGARH DISTRICT

A STUDY REPORT

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I. INTRODUCTION

Orissa, one of the constituent states of Indian Union, extends over 4.8 percent geographical area and comprises 3.7 percent population of 31.66 million (1991 census) and estimated to be over 36 million in 1996. In Orissa there are 62 distinct biological isolates (tribes) contributing about 23 percent of the state's population living in varied geo-climatic conditions. Forest, plains, hilly and coastal areas with numerous streams, rivers, mines, ethnic diversity and varied socioeconomic conditions pose a formidable challenge to malaria control operations in the state. Besides, there are financial constraints adversely influencing the requirements of the malaria control programme in the state.

The magnitude of problem of malaria in Orissa is very acute. Orissa contributes about 16% of the total malaria cases of the country with 35.80% of Plasmodium Falciparum cases and over 12.90% of deaths due to malaria. The problem is more alarming in the tribal areas which contribute 2/3rd of cases of the state's total with 80% plasmodium falciparum cases and 70-80% deaths. Although reasons are multifarious, financial constraints are hampering implementation of the NMEP programme. The Budget provision for NMEP is only 4.2% of the total health budget which again is only 2.74% of the total budget of the state (1994-95) and falls short by almost 50% of the actual requirement. Further, Budget Estimate towards other expenses, wages and materials is far below the actual requirement. Moreover, allotment of funds under different heads are not made in time, resulting delays in spray operation schedules to be conducted from first week of May to first week of September. It is felt that the department of health on its own cannot tackle the problem of control of malaria and should involve other agencies engaged in developmental activities to control the problem of malaria in Orissa.

Features contributing perennial transmission in tribal areas are mainly due to difficult terrains inaccessible during rainy season, prone to frequent flooding, vectors very much potent with high anthropophilic index and frequent man biting habits and above all presence of varying degree of resistance to insecticides and drugs. Out of 1290 PHCs & PHC (NEW) of the state, 158 PHCs came under tribal area and another 51 PHCs in High risk malaria area. Although tribal population constitutes only 22.2% of the states population, 2/3rd of malaria cases and 80% of Plasmodium falciparum cases are detected from this population. Thus, malaria if not controlled will seriously undermine the massive effort of the government for achieving rapid socioeconomic development of the state particularly in tribal areas. The project areas where

construction/developmental activities are taken up, particularly, projects like construction, industry, irrigation and power plants etc. arrangements need to be made for establishing a project malaria centre with requisite staff to take up malaria control activities.

High incidence of malaria have been reported from most of the urban areas of the state. As sanctioned by GOI so far 3 urban malaria units have been established covering Rourkela, Berhampur and Sambalpur towns. Funds under NMEP Budget does not permit inclusion of some more towns under the scheme although qualifying to norms fixed by GOI. It is therefore suggested that institution of urban malaria activities in the following towns having population of more than 20,000 and SPR more than 5% or the ratio of clinical malaria cases to fever cases more than one third as per hospital/dispensary statistics during the last calendar year :- Burla, Hirakud, Brajrajnagar, Jharsuguda, Belpahar, Sundargarh, Rajgangpur, Biramitrapur, Barabil, Joda, Keonjhar, Anandpur, Angul, Phulbani, Titilagarh, Bhawanipatna, Jeypore, Koraput, Bolangir, Rayagada, Sunabeda and Nawrangpur.

Orissa's Malaria situation is of considerable concern and has significant implications, the state being the major contributor of malaria cases (16% of the total 2.9 million cases in India) and deaths due to malaria in the country (12.9%). Thus can be explained to the predominance of plasmodium falciparum in Orissa, the species responsible for severe (cerebral) malaria and mortality. 36% of plasmodium falciparum cases in India come from this state. The four districts which are endemic to malaria are Keonjhar, Sundargarh Mayurbhanj and Phulbani. These districts together account for 18% of the population of Orissa and, 42% of all cases of malaria in Orissa are reported from these four districts combined. 45% of the Plasmodium falciparum cases in Orissa are recorded from these districts and 36% of the malarial deaths occur here (source DHS 1996). It could be mentioned that Annual Blood Examination Rate (ABER was 11.97, Slide Positively Rate (SPR) was 11.85, Annual Parasitic Incidence (API) was 14.46, Slide Falciparum Rate was 10.23 and the percentage contribution from Plasmodium falciparum was 86.33% in the state, for the year 1996 (latest available figure).

If one refers to the following two tables of Orissa's malaria situation (1996) it is clear that Sundargarh is one of the most affected district as far as malaria is concerned.
In Sundargarh district there are 55526 positive cases of malaria out of which PV cases are only 3530 and PF cases are 51996. Studying some basic indicators of malaia of sundargarh district one finds that ABER is 22.85, SPR is 14.16, SFR is 13.26, API is 31.95, PF % is 93.64. Total deaths accouding to Government estimates is 29. Actual number of deaths due to malaria for the district will be much more than that. These indicators are quite alarming as far as malaria situation is concerned. So we decided to study the effectiveness of malaria control activities of this district. But as we have limited resources to do so we chose only one block of the district i.e. Balisankara which is advised by one local NGO called Sri Satya Sai Seva Samiti working in the same Block.

Orissa's malaria situation (1996):

TABLE 1 :

District	Blood Examined	Positive	PV	PF	Other	TT, RT Done

Sundargarh	391900		55526	3530	51996	-	48688	
Balasore	161430		6292	1303	4975	14	6276	
Bolangir	182180		18711	5316	13395	-	18708	
Cuttack	124210		3307	911	2390	6	3295	
Dhenkanal	127884		23500	6040	17460	-	21784	
Ganjam	187113		14836	2540	12295	1	14745	
Keonjhar	344980		57573	2210	55363	-	55907	
Kalahandi	114398		13172	2648	10524	-	12622	
Koraput	160076		23122	527	22595	-	23122	
Mayurbhanj	303621		47871	5705	42166	-	47533	
Puri	68332	1035	938	97	-	1034		
Phulbani	155250		28898	1089	27809	-	28898	
Sambalpur	160192		14977	1156	13821	-	14536	
Baragarh	147995		21367	2182	19185	-	21165	
Khurda	76046	2400	1436	964	-	2400		
Nayagarh	84108	6536	2461	4075	-	6500		
Nuapara	84047	12794	2847	9947	-	12794		
Sonepur	74638	11247	6239	5008	-	10837		
Angul	117441		21961	5952	16009	-	20731	
Gajapati	79951	11470	973	10497	-	11454		
Bhadrak	79343	691	430	261	-	679		
Nawrangpur	141445		12591	85	12506	-	12229	
Malkangiri	82920	8849	124	8725	-	8849		
Rayagada	117174		17198	909	16280	9	17198	
Jajpur	78314	3943	1699	2244	-	3867		
Jagatsingpur	40646	183	55	128	-	178		
Kendrapara	64282	611	471	140	-	611		
Jharsuguda	30540	2795	633	2162	-	2513		
Deogarh	65741	12165	1360	10805	-	11395		
Boudh	22384	2932	881	2051	-	2868		
TOTAL	3868581		458553		62650	395873		30

TABLE 2:

District	ABER	SPR	SFR	API	PF%	DEATH
Sundargarh	22.85	14.16	13.26	31.95	93.64	29
Balasore	8.62	3.89	3.08	3.36	79.06	10
Bolangir	13.40	10.27	7.35	13.76	71.58	10
Cuttack	5.70	2.66	1.92	1.51	72.27	4
Dhenkanal	12.21	18.37	13.65	22.45	74.29	24
Ganjam	6.26	7.92	6.57	4.96	82.87	-
Keonjhar	23.36	16.68	16.04	39.00	96.16	35
Kalahandi	9.16	11.51	9.19	10.54	79.89	20
Koraput	14.12	14.44	14.11	20.40	97.72	22

Mayurbhanj	14.85	15.76	13.88	23.42	88.08	46
Puri	4.74	1.51	0.14	0.71	9.35	2
Phulbani	25.74	18.61	17.91	47.91	96.23	21
Sambalpur	17.93	9.34	8.62	16.76	92.28	34
Baragarh	11.10	14.43	12.96	16.03	89.78	28
Khurda	4.58	3.15	1.26	1.44	40.16	-
Nayagarh	9.73	7.77	4.84	7.56	62.34	5
Nuapara	16.21	15.22	18.83	24.68	77.74	10
Sonepur	14.25	15.06	6.70	21.36	44.52	1
Angul	11.06	18.69	13.63	20.69	72.89	2
Gajapati	15.99	14.34	13.12	22.94	91.51	3
Bhadrak	6.49	0.87	0.32	0.56	37.77	5
Nawrangpur	12.86	8.90	8.84	11.45	99.32	8
Malkangiri	17.65	10.67	10.52	18.83	98.59	5
Rayagada	14.86	14.60	13.9	21.81	87.60	13
Jajpur	5.11	5.03	2.86	2.57	56.91	3
Jagatsingpur	3.62	0.45	0.31	0.16	69.94	-
Kendrapara	5.24	0.95	0.21	0.49	22.91	-
Jharsuguda	6.19	9.15	7.07	5.66	77.35	2
Deogarh	25.42	18.50	16.43	47.03	88.82	17
Boudh	7.80	10.70	7.48	8.36	69.95	3
Total	11.97	11.85	10.23	14.46	86.33	362

II. STATEMENT OF OBJECTIVES:

The following are the objectives of the study.

1. To assess the nature and magnitude of malaria in the study area.

2. To assess the socio-economic and demographic features related to malaria incidence in the study area.

3. To assess the level of community participation in malaria control.

4. To find out the effectiveness of malaria control programmes in the area.

5. To measure the knowledge of community members on malaria and its control and prevention.

6. To suggest suitable mode of intervention plan for malaria control and prevention in the area.

III. METHODOLOGY:

1. Cluster sampling method is adopted to study a representative subset of the population. In Balisankara Block there are 11 GPs. Each GP is taken as one cluster. From each cluster one village is selected by Simple Random Sampling. Household survey was carried out in each and every household in each of the eleven selected villages (one from each GP).

2. The sample size for the study is 945 households out of a total of 14,938 households.

3. Both Qualitative and Quantitative methods is followed in the study.

4. The study is conducted with active collaboration with a member organisation working in the area namely Sri Satya Sai Seva Samiti.

5. Research instruments (Schedules) for Quantitative Methods of data collection is prepared and duly pre-tested before data collection activities.

6. Audio recording of Focus Group Discussion was done by the Supervisor of the Data Collection Activity. Blood slides were also collected from persons suffering from fever within last 15 days from the date of data collection and tested with the help from technician at PHC, Kinjirikela.

7. Total of five Field Investigators, One Supervisor, One Laboratory Technician are engaged for field data collection activity.

IV. STUDY AREA:

Balisankara Block of Sundargarh District was taken as the Study Area. Different details of the block as per the PHC records are given below.

NO. OF GPs - 11
NO. OF VILLAGES - 85
NO. OF HOUSEHOLD - 14,938
TOTAL POPULATION - 78,798

We have also visited the census office to collect different secondary data related to the study block. Data as per the 1991 census is given below.

Area in Sq. Km.:	443.39
Number of Households:	14,130

Sl no.	Particulars	Total	Male	Female
1.	Total Population:	68,395	33,788	34,607
2.	SC Population:	6,064	3,095	3,029
3.	ST Population:	46,055	22,578	23,477
4.	Literate population:	23,451	15,366	8,085
5.	Total main workers:	23,219	18,629	4,590
6.	Cultivators	13,466	12,121	1,345
7.	Agricultural labour	5,511	3,103	2,408
8.	Livestock, forest, fishing, hunting, plantation, orchards and allied activities	252	175	77
9.	Mining and quarrying	9	9	-
10.	Manufacturing and households industries	1,012	743	269
11.	Processing, Serving, repairs, other than household industry	187	173	14
12.	Constructions	31	31	-
13.	Trade and commerce	612	513	99
14.	Transport, storage and communication	41	41	-
15	Other services	2,098	1,720	378
16.	Marginal Workers	8,901	555	8,346
17.	Non workers	36,275	14,604	21,671

V. ANALYSIS AND INTERPRETATIONS

Table 1: Distribution of Household by Family type:

Sl. No.	Name of GP	Name of Village	Nuclear	%	Joint including extended	%	Single	Percentage	Total
1.	Birkalidihi	Putudihi	49	79.03	12	19.36	1	1.61	62
2.	Bandhababahal	Perua ada	50	79.37	11	17.46	2	3.17	63
3.	Kusummara	Dhenkigada	43	66.15	21	32.31	1	1.54	65
4.	Kinjirikela	Kupatangar	153	76.12	44	21.89	4	1.99	201
5.	Tilekani	Banajore	60	69.77	25	29.07	1	1.16	86
6.	Talsara	Thiteitangar	79	71.17	29	26.13	3	2.70	111
7.	Rampur	Sundhapani	52	76.47	15	22.06	1	1.47	68
8.	Balisankara	Mohulgaon	97	88.99	11	10.09	1	0.92	109

9.	Tumulia	Rengali	62	81.58	12	15.79	2	2.63	76	
10.	Sagbahal	Hatichhapal	42	84.00	8	16.00	-	-	50	
11	Bandega	Falsa	41	75.93	13	24.07	-	-	54	
Total	-	-	728	77.04	201	21.27	16	1.69	945	

It is important to note that the percentage of nuclear families is 77.04% in the block followed by 21.27% Joint families and a negligible 1.69 % Single families. Nuclear families are high in Balisankara (88.99%), Sagbahal (84.00%) and 81.58%. Nuclear families are low in Kusummara (66.15%), Tilekani (69.77%) GPs. Similarly Joint families are high in Kusummara GP (32.31%) & low in Balisankara (10.09%). For this particular study, extended and joint families are kept in one group asuming it has no significant bearing on the results of the study.

Family size across the GPs ranges from 3.99 to 5.16. The family size of the block as a whole is 4.61.

Table 2: Distribution of Household according to their religion:

Sl. No.	Name of GP	Name of Village	Hindu	% age	Christian	% age	Muslim	C
1.	Birkalidihi	Putudihi	39	62.90	23	37.10	-	-
2.	Bandhabahal	Perua ada	59	93.65	4	6.35	-	-
3.	Kusummara	Dhenkigada	62	95.38	3	4.62	-	-
4.	Kinjirikela	Kupatangar	190	94.53	11	5.47	-	-
5.	Tilekani	Banajore	27	31.4	59	68.6	-	-
6.	Talsara	Thiteitangar	23	20.72	88	79.28	-	-
7.	Rampur	Sundhapani	17	25.00	51	75.00	-	-
8.	Balisankara	Mohulgaon	93	85.32	16	14.68	-	-
9.	Tumulia	Rengali	48	63.16	28	36.84	-	-
10.	Sagbahal	Hatichhapal	23	46.00	27	54.00	-	-
11	Bandega	Falsa	2	3.7	52	96.3	-	-
Total	-	-	583	61.69	362	38.31	-	-

In the block Hindu households are highest (61.69%) followed by Christian (38.31%). We could not found any family following Muslim or other religions. Hindu households are high in Kusummara (95.38%), Kinjirikela (94.53%), Bandhabahal (93.65%) and Balisankara (85.32%) GPs and Low in Bandega (3.7%), Talsara (20.72%) & Rampur (25%). Similarly Christian households are high in Bandega (96.3%), Talsara (79.38%) and Rampur (75%) GPs and low in Kusummara (4.62%), Kinjirikela (5.47%) and Bandhabahal (6.35%) GPs. It is evident from this statistics that Christian population is high in interior GPs (villages).

Table 3: Caste wise distribution of household:

Sl. No.	Name of GP	Name of Village	SC	% AGE	ST	% AGE	OBC	% AGE	GENEL
1.	Birkalidihi	Putudihi	6	9.68	44	70.97	7	11.29	5
2.	Bandhababahal	Perua ada	2	3.17	52	82.54	1	1.59	8
3.	Kusummara	Dhenkigada	4	6.15	54	83.08	-	-	7
4.	Kinjirikela	Kupatangar	18	8.96	122	60.7	15	7.46	46
5.	Tilekani	Banajore	1	1.16	82	95.35	-	-	3
6.	Talsara	Thiteitangar	10	9.01	95	85.59	2	1.8	4
7.	Rampur	Sundhapani	1	1.47	63	92.65	-	-	4
8.	Balisankara	Mohulgaon	22	20.18	82	75.23	3	2.75	2
9.	Tumulia	Rengali	4	5.26	56	73.68	8	10.53	8
10.	Sagbahal	Hatichhapal	4	8.00	44	88.00	2	4.00	-
11	Bandega	Falsa	2	3.7	52	96.3	-	-	-
Total	-	-	74	7.83	746	78.94	38	4.02	87

Among the total households of the GP 78.94% are ST households followed by 9.21 General Caste, 7.83% SC and 4.02% OBC households. ST households are high in Bandega (96.3%) and Rampur (92.65%) GPs and low in Kinjirikela (60.7%). General Caste households are high in Kinjirikela (22.88%) and low in Saghanal and Bandega where we could not found a General caste household in the village we visited. SC households are high in Balisankara (20.18%) and low in Tilekant (1.16%) and Rampur (1.47%). The data indicates that the study area is predominantly a tribal area.

Table 4: Distribution of household according to the annual income:

Sl. No.	Name of GP	Name of Village	UPTO Rs. 5000	% age	Rs.5000-11,000	% age	Rs.11,000 – 16,000	% age	Rs.16,0- abo
1.	Birkalidihi	Putudihi	17	27.42	39	62.9	6	9.68	-
2.	Bandhabahal	Perua ada	36	57.14	19	30.16	8	12.7	-
3.	Kusummara	Dhenkigada	21	32.30	33	50.77	9	13.85	2
4.	Kinjirikela	Kupatangar	85	42.29	104	51.74	10	4.98	2
5.	Tilekani	Banajore	45	52.33	32	37.20	6	6.98	3
6.	Talsara	Thiteitangar	50	45.04	53	47.75	7	6.31	1
7.	Rampur	Sundhapani	27	39.71	32	47,06	8	11.76	1
8.	Balisankara	Mohulgaon	47	43.12	55	50.46	7	6.42	-
9.	Tumulia	Rengali	28	36.84	39	51.32	9	11.84	-
10.	Sagbahal	Hatichhapal	14	28.00	33	66.00	3	6.00	-
11	Bandega	Falsa	16	29.63	32	59.26	5	9.26	1
Total	-	-	386	40.85	471	49.84	78	8.25	10

Annual Income of the households is upto Rs. 5000 in 40.85% households and between Rs. 5,000 to Rs. 11,000 are 49.84% households. So the Annual Income of 90.69% households is below Rs. 11,000 per year. It indicates that 90.69% households are below poverty line. About 40.85% of the households is poorest of the poor. There is no significant difference across the GPs as the annual income is a high of 94.03% household falls below poverty line in Kinjirikela GP and a low of 83.07% households falls below poverty line in Kusummara GP.

Table 5: Age wise distribution of the population:

Sl. No	Name of GP	Name of Village	< 1 yr	%	1-5 yrs	%	6-15 yrs	%	16-25 yrs	%	26-35 yrs	%	36-49 yrs	%	50-59 yrs	%	6
1.	Birkalidihi	Putudihi	6	2.11	32	11.27	56	19.72	66	23.24	44	15.49	30	10.56	29	10.21	2
2.	Bandhabahal	Peruada	2	0.74	19	6.99	87	31.98	37	13.6	47	17.28	43	15.81	17	6.25	2
3.	Kusummara	Dhenkigada	3	0.95	29	9.15	69	71.77	81	25.55	46	14.51	35	11.04	31	9.78	2
4.	Kinjirikela	Kupatangar	9	0.95	107	11.32	260	27.52	187	19.79	143	15.13	140	14.82	59	6.24	4
5.	Tilekani	Banajore	3	0.69	44	10.11	108	24.83	101	23.22	70	16.09	58	13.33	30	6.9	2
6.	Talsara	Thiteitangar	4	0.82	71	14.55	128	26.23	65	13.32	79	16.19	91	18.65	27	5.53	2
7.	Rampur	Sundhapani	-	-	67	20.55	79	24.23	52	15.95	38	11.66	42	12.89	36	11.04	1
8.	Balisankara	Mohulgaon	8	1.83	34	7.82	117	26.9	90	20.69	75	17.24	68	15.63	23	5.29	2
9.	Tumulia	Rengali	3	0.93	40	12.42	76	23.6	63	19.57	64	19.88	43	13.35	17	5.28	1
10	Sagbahal	Hatichhapal	2	0.77	48	18.6	75	29.07	34	13,18	30	11.63	48	1.61	11	4.26	1
11	Bandega	Falsa	4	1.46	37	13.5	76	27.74	42	15.33	52	18.98	40	14.6	13	4.74	1
	Total		44	1.01	528	12.12	1131	25.96	818	18.78	688	15.79	638	14.65	293	6.73	2

It is worthwhile to note from table 5 that the population below 1 yrs of age i.e. infant population is quite low at 1.01%, which indicates that the IMR might be low in the population. The population above the age of 60 is 4.96%, which is the old age category. Population below the age of 15 years is about 40%, which means that the birth rate of the community is quite high.

Table 6: Sex wise distribution of the population and sex ratio:

Sl. No.	Name of GP	Name of Village	Male	%	Female	%	To
1.	Birkalidihi	Putudihi	140	49.3	144	50.7	28
2.	Bandhababahal	Perua ada	136	50.00	136	50.00	27
3.	Kusummara	Dhenkigada	156	49.21	161	50.79	31
4.	Kinjirikela	Kupatangar	478	50.58	467	49.42	94
5.	Tilekani	Banajore	226	51.95	209	48.05	43
6.	Talsara	Thiteitangar	248	50.82	240	49.18	48
7.	Rampur	Sundhapani	162	49.69	164	50.31	32
8.	Balisankara	Mohulgaon	235	54.02	200	45.98	43
9.	Tumulia	Rengali	162	50.31	160	49.69	32
10.	Sagbahal	Hatichhapal	119	46.12	139	53.88	25
11	Bandega	Falsa	140	51.09	134	48.91	27
Total			2202	50.55	2154	49.45	43

The sex ratio of the block is 978.20 as found out from the study. But according to the 1991 census the sex ratio is 1024. Which is at par with other tribal areas of the state. It indicates that the sex ratio has dropped considerably since 1991 census. Sex ratio is above 1,000 in Sagbahal, (1168.07), Susummara (1032.05), Birkalidihi (1028.57) and Rampur (1012.35).

Table 7: Distribution of population according to the marital status:

Sl. No.	Name of GP	Name of Village	Married	%	Unmarried	%	Widow	%	Widow r
1.	Birkalidihi	Putudihi	130	45.77	138	48.59	12	4.23	4
2.	Bandhabahal	Perua ada	128	47.06	130	47.79	9	3.31	5
3.	Kusummara	Dhenkigada	140	44.16	159	50.16	12	3.79	6

4.	Kinjirikela	Kupatangar	394	41.69	512	54.18	26	2.75	13	
5.	Tilekani	Banajore	190	43.68	228	52.41	12	2.76	5	
6.	Talsara	Thiteitangar	224	45.9	240	49.18	20	4.1	4	
7.	Rampur	Sundhapani	138	44.33	177	54.29	5	1.54	6	
8.	Balisankara	Mohulgaon	186	42.76	220	50.57	22	5.06	7	
9.	Tumulia	Rengali	150	46.58	163	50.62	7	2.18	2	
10.	Sagbahal	Hatichhapal	100	38.76	150	58.14	5	1.94	3	
11	Bandega	Falsa	114	41.61	152	55.47	7	2.55	1	
Total			1894	43.48	2269	52.09	137	3.15	56	

It is found from the table that 43.48% population is married while 52.09% are unmarried. From table 5 we found that 39.09% of population is below the age of 15 which is the age of marriage practiced in the tribal communities. Almost all of this 39.09% of population falls in the unmarried category. So the actual unmarried persons who have attended the age of 15 years is quite low i.e. around 13%. The percentage of widow and widower is not significantly high.

Table 8: Distribution of population according to the educational status:

Sl. No.	Name of GP	Name of Village	Illiterate	%	Literate	%	1^{st}-5^{th}	%	6^{th}-7^{th}	%	8^{th}-10^{th}	%	Ae
1.	Birkalidihi	Putudihi	121	42.61	39	13.73	62	21.83	27	9.51	21	7,39	1
2.	Bandhabahal	Perua ada	143	52.57	38	13.97	48	17.65	17	6.25	17	6.25	9
3.	Kusummara	Dhenkigada	131	41.32	35	11.04	67	21.14	18	5.68	46	14.51	2
4.	Kinjirikela	Kupatanga	371	39.2	220	23.2	207	21.91	52	5.5	60	6.35	3

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5.	Tilekani	Banajore	180	41.38	70	16.09	75	17.24	37	8.51	38	8.73	3
6.	Talsara	Thiteitangar	199	40.78	93	19.06	86	17.62	37	7.58	52	10.66	2
7.	Rampur	Sundhapani	168	51.53	68	20.86	50	15.34	18	5.52	17	5.22	5
8.	Balisankara	Mohulgaon	171	39.31	109	25.06	62	14.25	25	5.75	41	9.42	2
9.	Tumulia	Rengali	146	45.34	86	26.71	49	15.22	12	3.72	14	4.35	1
10.	Sagbahal	Hatichhapal	131	50.77	47	18.22	44	17.05	20	7.75	6	2.33	1
11	Bandega	Falsa	78	28.47	68	24.82	46	16.79	28	10.22	37	13.5	1
	Total		1839	42.22	873	20.04	796	18.27	291	6.68	349	8.01	2

The percentage of literacy according to the above table is 57.22%. According to the 1991 census the percentage of literacy is 34.28%. So we can say that the literacy percentage is increased tremendously since 1991 census. Areas with low literacy level are Bandhabahal (47.43%), Rampur (48.53%) and Sagbahal (49.23%). Areas with high literacy % are Bandega (71.47%), Kinjirikela (60.74%) and Balisankara (60.69%). It is important to note that 20.04% of the population are probably termed as literates because they only learned how to put their signatures. Most of them often forget to do so subsequently. Moreover, only around 10% of the population have studied above the 8^{th} standard, which proves that the people are mostly uneducated.

Table 9: Occupation wise distribution of the population:

Sl. no	Name of GP	Name of Village	Ag.	%	Service	%	Business	%	AGL	%	Labour	%	HHL	%	NLF	%	Artician	%
1.	Birkali	Putudi	63	22.1	3	1.0	2	0.7	12	4.2	14	4.9	69	24.3	96	33.8	6	2.

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2.	Bandhabahal	Perua ada	57	20.96	2	0.74	-	-	8	2.94	14	5.15	67	24.63	65	23.89	-	-
3.	Kusummara	Dhenkigada	70	22.08	6	1.89	1	0.32	20	6.31	10	3.15	71	22.4	64	20.19	7	2.21
4.	Kinjirikela	Kupatangar	189	20.00	10	1.06	5	0.53	47	4.97	32	3.39	217	22.96	198	20.95	22	2.33
5.	Tilekani	Banajore	89	20.46	13	2.99	1	0.23	23	5.29	7	1.61	95	21.84	117	26.89	12	2.76
6.	Talsara	Thiteitangar	112	22.95	3	0.62	-	-	7	1.43	20	4.1	118	24.18	95	19.47	6	1.23
7.	Rampur	Sundhapani	58	17.79	5	1.54	-	-	9	2.76	21	6.44	72	22.09	91	27.91	2	0.61
8.	Balisankara	Mohulgaon	100	22.99	10	2.3	-	-	23	5.29	14	3.22	103	23.68	70	16.08	7	1.61
9.	Tumulia	Rengali	70	21.74	4	125	2	0.62	7	2.17	28	8.7	77	23.91	54	16.77	8	2.48
10	Sagbahal	Hatichhapal	49	18.98	5	1.94	-	-	13	5.04	5	1.94	51	19.77	72	27.91	3	1.16
11	Bandega	Falsa	49	17.88	9	3.27	-	-	6	2.19	12	4.38	59	21.53	47	17.15	-	-
			906	20.8	70	1.61	11	0.25	175	4.02	177	4.06	999	22.93	969	22.24	73	1.68

From this table it is evident that 20.8% of people has occupation of agriculture which is quite low for a tribal community. Non labour force of 22.24% is quite alarming. Because the population below 15 years of age are 39% and that above 60 years of age are 5%. It indicates that child labour is a problem in the community.

Table 10: Distribution of household by housing structure:

Sl. No.	Name of GP	Name of Village	Kutcha	%	Pucca	%	Semikutcha	
1.	Birkalidihi	Putudihi	58	93.55	-	-	4	
2.	Bandhabahal	Perua ada	60	95.24	-	-	3	
3.	Kusummara	Dhenkigada	55	84.62	2	3.07	8	
4.	Kinjirikela	Kupatangar	194	96.52	1	0.5	6	
5.	Tilekani	Banajore	85	98.84	-	-	1	
6.	Talsara	Thiteitangar	110	99.1	-	-	1	
7.	Rampur	Sundhapani	66	97.06	-	-	2	
8.	Balisankar	Mohulgao	104	95.41	1	0.92	4	

	a	n						
9.	Tumulia	Rengali	70	92.1	1	1.32	5	
10.	Sagbahal	Hatichhapa l	47	94.00	-	-	3	
11	Bandega	Falsa	53	98.15	1	1.85	-	
Total			902	95.45	6	0.63	37	

If we study the above table of housing structure we can find that 95.45% of population have Kutcha houses, followed by 3.92% Semi Kutcha houses and 0.63% Pucca Houses. It indicates that the people of the area are very poor.

Table 11: Distribution of household according to latrine facility:

Sl. No.	Name of GP	Name of Village	Open field	Flush	Barpali	Others
1.	Birkalidihi	Putudihi	62	-	-	-
2.	Bandhabahal	Perua ada	63	-	-	-
3.	Kusummara	Dhenkigada	65	-	-	-
4.	Kinjirikela	Kupatangar	201	-	-	-
5.	Tilekani	Banajore	86	-	-	-
6.	Talsara	Thiteitangar	111	-	-	-
7.	Rampur	Sundhapani	68	-	-	-
8.	Balisankara	Mohulgaon	109	-	-	-
9.	Tumulia	Rengali	76	-	-	-
10.	Sagbahal	Hatichhapal	50	-	-	-
11	Bandega	Falsa	54	-	-	-
Total			945	-	-	-

During the study we could not find a single house with latrine facility. All the households use open field as latrine which makes the sanitary condition of the villages very poor.

Table 12: Distribution of household according to cow shed:

Sl. No.	Name of GP	Name of Village	Attached	%	Non attached	%
1.	Birkalidihi	Putudihi	49	79.03	13	20.97
2.	Bandhabahal	Perua ada	52	82.54	11	17.46
3.	Kusummara	Dhenkigada	49	75.38	16	24.62
4.	Kinjirikela	Kupatangar	164	81.59	37	18.41
5.	Tilekani	Banajore	73	84.88	13	15.12
6.	Talsara	Thiteitangar	103	92.79	8	7.21
7.	Rampur	Sundhapani	62	91.18	6	8.82
8.	Balisankara	Mohulgaon	92	84.40	17	15.60
9.	Tumulia	Rengali	67	88.16	9	11.84
10.	Sagbahal	Hatichhapal	44	88.00	6	12.00
11	Bandega	Falsa	46	85.19	8	14.81
Total			108	84.76	144	15.24

In 84.76% of the total houses the cowshed is attached to the house which indicates that the sanitary condition of the house is poor and helpful for mosquito breeding. It also makes the sanitary condition of the village very poor.

Table 13: Distribution of households according to garbadge disposal:

Sl. No.	Name of GP	Name of Village	Near the House	%	Away from the house	%
1.	Birkalidihi	Putudihi	36	58.06	26	41.94
2.	Bandhabahal	Perua ada	44	69.84	19	30.16
3.	Kusummara	Dhenkigada	40	61.54	25	38.46
4.	Kinjirikela	Kupatangar	144	71.64	57	28.36
5.	Tilekani	Banajore	61	70.93	25	29.07
6.	Talsara	Thiteitangar	97	87.39	14	12.61
7.	Rampur	Sundhapani	47	69.12	21	30.88
8.	Balisankara	Mohulgaon	83	76.15	26	23.85
9.	Tumulia	Rengali	69	90.79	7	9.21
10.	Sagbahal	Hatichhapal	41	82.00	9	18.00
11	Bandega	Falsa	45	83.33	9	16.67
Total			707	74.81	238	25.19

From the table it is evident that in 74.81% households the garbage is disposed near the house, which indicates the sanitary condition of the villages are not good & helpful for mosquito breeding. It also indicates that the sanitary condition of the villages is poor.

Table 14: Distribution of household by drainage system:

Sl. No.	Name of GP	Name of Village	Open and stagnant	%	Open and running	%	Closed	
1.	Birkalidihi	Putudihi	22	35.48	40	64.52	-	
2.	Bandhabahal	Perua ada	27	42.86	36	57.14	-	
3.	Kusummara	Dhenkigada	15	23.08	50	76.92	-	
4.	Kinjirikela	Kupatangar	68	33.83	133	66.17	-	
5.	Tilekani	Banajore	33	38.37	53	61.63	-	
6.	Talsara	Thiteitangar	37	33.33	74	66.67	-	
7.	Rampur	Sundhapani	27	39.71	41	60.29	-	
8.	Balisankara	Mohulgaon	36	33.03	73	66.97	-	
9.	Tumulia	Rengali	1	1.32	75	98.68	-	
10.	Sagbahal	Hatichhapal	20	40.00	30	60.00	-	
11	Bandega	Falsa	22	40.74	32	59.26	-	
Total			308	32.59	637	67.41	-	

From the above table it is found that there is not a single household with closed drainage system 32.59% households have open and stagnant drainage system and 67.41% households have open and running drainage system. This indicates that the sanitary condition is very poor and helpful for mosquito breeding.

Table 15: Distribution of household according to drinking water usage:

Sl. No.	Name of GP	Name of Village	Open well	%	Stream	%	Pond	Bore well	%	
1.	Birkalidihi	Putudihi	45	72.58	-	-	-	17	27.42	
2.	Bandhababaha	Perua ada	44	69.84	-	-	-	19	30.16	

	l									
3.	Kusummara	Dhenkigad a	27	41.54	-	-	-	38	58.46	
4.	Kinjirikela	Kupatangar	72	35.82	1	0.50	-	128	63.68	
5.	Tilekani	Banajore	86	100.00	-	-	-	-	-	
6.	Talsara	Thiteitanga r	101	90.99	-	-	-	10	9.01	
7.	Rampur	Sundhapani	38	55.88	-	-	-	30	44.12	
8.	Balisankara	Mohulgaon	76	69.72	-	-	-	33	30.28	
9.	Tumulia	Rengali	69	90.79	7	9.21	-	-	-	
10.	Sagbahal	Hatichhapa l	45	90.00	-	-	-	5	10.00	
11	Bandega	Falsa	38	70.37	-	-	-	16	29.63	
Total			641	67.83	8	0.85	-	296	31.32	

From the above table it is clear that in the Block 67.83% households use open well as drinking water source followed by 31.32% Bore well as drinking water source and 0.85% stream as drinking water source. So we can say that 31.32% households have safe drinking water source. This indicates that water borne diseases and malaria must be rampant in the area.

Table 16: Age wise distribution of fever cases within one year:

Sl. No	Name of GP	Name of Village	< 1 yrs	%	1-5 yrs	%	6-15 yrs	%	16-25 yrs	%	26-35 yrs	%	36-49 yrs	%	50-59 yrs	%
1.	Birkali dihi	Putud ihi	1	1.01	10	10.10	15	15.15	20	20.21	21	21.21	16	16.16	11	1
2.	Bandh abahal	Perua ada	-	-	6	5.88	25	24.51	14	13.73	18	17.65	25	24.51	5	4
3.	Kusu mmara	Dhen kigad	-	-	11	8.09	24	17.65	35	25.74	18	13.23	22	16.18	14	1

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4.	Kinjirikela	Kupatangar	-	-	12	4.82	63	25.30	60	24.10	42	16.87	44	17.67	18	7
5.	Tilekani	Banajore	-	-	16	12.12	30	22.73	28	21.21	24	18.18	17	12.18	12	9
6.	Talsara	Thiteitangar	-	-	21	14.79	38	26.76	17	11.97	20	14.08	32	22.54	6	4
7.	Rampur	Sundhapani	-	-	22	40.74	6	11.11	5	9.26	6	11.11	4	7.41	9	1
8.	Balisankara	Mohulgaon	-	-	6	4.96	32	26.45	20	16.52	26	21.49	19	15.70	12	9
9.	Tumulia	Rengali	-	-	19	17.43	28	25.69	14	12.84	20	18.35	15	13.76	4	3
10	Sagbahal	Hatichhapal	1	2.26	10	22.73	2	4.55	5	11.36	6	13.64	14	31.82	2	4
11	Bandega	Falsa	-	-	16	28.57	12	21.43	5	8.93	9	16.07	9	16.07	2	3
	Total		2	0.16	149	11.98	275	22.10	223	17.93	210	16.88	217	17.44	95	7

It is evident from the table that all ages of people suffer from fever cases. So malaria attacks all ages of population. We found less fever cases in 0-1 age group. Fever cases are highest in the age group 6-15 years (22.10%) followed by 16-25 years age group (17.93%).

Table 17: Sex wise distribution of fever cases within one year:

Sl. No	Name of GP	Name of Village	Male	%	Female	%
1.	Birkalidihi	Putudihi	54	54.55	45	45.45
2.	Bandhabahal	Perua ada	47	46.08	55	53.92
3.	Kusummara	Dhenkigada	70	51.47	66	48.53
4.	Kinjirikela	Kupatangar	131	52.61	118	47.39
5.	Tilekani	Banajore	70	53.03	62	46.97
6.	Talsara	Thiteitangar	82	57.75	60	42.25
7.	Rampur	Sundhapani	23	42.59	31	57.41
8.	Balisankara	Mohulgaon	56	46.28	65	53.72
9.	Tumulia	Rengali	55	50.46	54	49.54
10	Sagbahal	Hatichhapal	30	68.18	14	31.82
11	Bandega	Falsa	29	51.79	27	48.21
	Total		647	52.01	597	47.99

It is clear from table 17 that fever attacks both male and female alike. So it indicates that malaria attacks both sexes alike. We found 52.01% male fever cases and 47.99% female fever cases.

Table18: Distribution of population according to Duration of illness of fever cases within one year:

Sl. No	Name of GP	Name of Village	1-5 days	%	5-15 days	%	15-30 days	%	
1.	Birkalidihi	Putudihi	42	42.42	57	57.58	-	-	
2.	Bandhabahal	Perua ada	18	17.65	84	82.35	-	-	
3.	Kusummara	Dhenkigada	41	30.15	76	55.88	19	13.97	
4.	Kinjirikela	Kupatangar	74	29.42	165	66.26	10	4.02	
5.	Tilekani	Banajore	37	28.03	90	68.18	5	3.79	
6.	Talsara	Thiteitangar	39	27.46	100	70.42	3	2.12	
7.	Rampur	Sundhapani	13	24.07	41	75.93	-	-	
8.	Balisankara	Mohulgaon	43	35.54	74	61.16	4	3.30	
9.	Tumulia	Rengali	44	40.37	59	54.13	6	5.50	
10	Sagbahal	Hatichhapal	11	25.00	28	63.64	5	11.36	
11	Bandega	Falsa	20	35.71	36	64.29	-	-	
	Total		382	30.71	810	65.11	52	4.18	

It is clear from the above table that in fever cases the duration of illness is 5-15 days in 65.11% cases followed by 1-5 days in 30.71% cases. Fever cases with duration of illness 15-30 days is very less i.e. 4.18%. We could not found fever cases with above 30 days duration.

Table 19: Distribution of population according to type of treatment of fever cases within one year:

Sl. No	Name of GP	Name of Village	Allopathic	%	Homeopathic	Ayurbedic	%	Others	No treatmt
1.	Birkalidihi	Putudihi	94	94.95	-	-	-	-	5
2.	Bandhabahal	Perua ada	98	96.08	-	-	-	-	4
3.	Kusummara	Dhenkigada	125	91.91	-	-	-	-	11
4.	Kinjirikela	Kupatangar	242	97.19	-	4	1.61	-	3
5.	Tilekani	Banajore	124	93.94	-	1	0.76	-	7
6.	Talsara	Thiteitangar	142	100.00	-	-	-	-	-
7.	Rampur	Sundhapani	53	98.15	-	-	-	-	1
8.	Balisankara	Mohulgaon	113	93.39	-	2	1.65	-	6
9.	Tumulia	Rengali	109	100.00	-	-	-	-	-
10	Sagbahal	Hatichhapal	44	100.00	-	-	-	-	-
11	Bandega	Falsa	55	98.21	-	-	-	-	1
	Total		1199	96.38	-	7	0.56	-	38

It is found from the above table that for fever cases 96.38% perfered allopathic treatment followed by 3.06% no treatment and 0.56% Ayurbedic treatment. We could not found a single case of Homeopathic and other type of treatments. It is clear that most people perfer

allopathic treatment. Also it is clear that most of the people treat themselves if suffering from fever. It indicates that the people health seeking behaviour is good.

Table 20: Distribution of population according to Place of treatment of fever cases within one year:

Sl. No	Name of GP	Name of Village	Hosp.	%	PHC	%	Sub centre	%	Quack	%	AW/ DDC	%	
1.	Birkalidihi	Putudihi	2	2.13	47	50.00	8	8.51	37	39.36	-	-	
2.	Bandhabahal	Perua ada	-	-	41	41.84	6	6.12	51	52.04	-	-	
3.	Kusummara	Dhenkigada	-	-	31	24.80	-	-	75	60.00	14	11.20	
4.	Kinjirikela	Kupatangar	-	-	159	64.63	4	1.63	72	29.27	7	2.84	
5.	Tilekani	Banajore	-	-	7	5.60	73	58.40	30	24.00	14	11.20	
6.	Talsara	Thiteitangar	-	-	51	35.92	4	2.81	87	61.27	-	-	
7.	Rampur	Sundhapani	-	-	9	16.98	32	60.38	12	22.64	-	-	
8.	Balisankara	Mohulgaon	-	-	3	2.61	92	80.00	18	15.65	-	-	
9.	Tumulia	Rengali	27	24.77	35	32.11	-	-	45	41.28	2	1.84	
10	Sagbahal	Hatichhapal	-	-	3	6.82	2	4.54	39	88.64	-	-	
11	Bandega	Falsa	-	-	-	-	25	45.45	30	54.55	-	-	
	Total		29	2.40	386	32.01	246	20.40	496	41.13	37	3.07	

While analysing the above table of place of treatment we found that 41.13% (highest) perfer treatment by Quack. It is worthwhile to mention that they think that the treatment by a Quack is allopathic treatment. 32.01% prefer treatment by PHC and 20.40% perfer treatment by Sub centre. A low of 2.40% treated themselves by Hospital, 3.07% by AW/DDC and 0.99% at Home/Shop. If we ad PHC and Sub-centre together we found that 52.41% use sub-centre or PHC for treatment of fever.

Table 21: Age wise distribution of population according to mortality cases within last one year:

Sl. No	Name of GP	Name of Village	< 1 yrs	%	1-5 yrs	%	6-15 yrs	%	16-25 yrs	%	26-35 yrs	%	36-49 yrs	%	50-59 yrs	%	
1.	Birkalidihi	Putudihi	1	16.67	1	16.67	-	-	-	-	1	16.66	3	50.00	-	-	
2.	Bandhabahal	Peruada	1	25.00	1	25.00	-	-	-	-	-	-	2	50.00	-	-	
3.	Kusummara	Dhenkigada	-	-	-	-	-	-	1	100	-	-	-	-	-	-	
4.	Kinjirikela	Kupatangar	1	20.00	1	20.00	2	40.00	-	-	-	-	-	-	-	-	
5.	Tilekani	Banajore	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
6.	Talsara	Thiteitangar	-	-	1	50.00	-	-	-	-	1	50.00	-	-	-	-	
7.	Rampur	Sundhapani	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
8.	Balisankara	Mohulgaon	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
9.	Tumulia	Rengali	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

10	Sagbahal	Hatichhapal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Bandega	Falsa	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total		3	16.67	4	22.22	2	11.11	1	5.56	2	11.11	5	27.78	-	-

Among the mortality cases during last one year, the infants of age 0-1 years are 16.67%, which is quite alarming. It is worthwhile to note that only 5.5% aged 60+ died while highest of 27.78% of 36-49 years person died followed by 22.22% 1-5 yrs child, 16.67% 0-1 infant died. So percentage of infants and child death is quite alarming.

Table 22: Sex wise distribution of Mortality cases within last one year:

Sl. No	Name of GP	Name of Village	Male	%	Female	%
1.	Birkalidihi	Putudihi	4	66.67	2	33.33
2.	Bandhabahal	Perua ada	-	-	4	100.00
3.	Kusummara	Dhenkigada	1	100.00	-	-
4.	Kinjirikela	Kupatangar	3	60.00	2	40.00
5.	Tilekani	Banajore	-	-	-	-
6.	Talsara	Thiteitangar	-	-	2	100.00
7.	Rampur	Sundhapani	-	-	-	-
8.	Balisankara	Mohulgaon	-	-	-	-
9.	Tumulia	Rengali	-	-	-	-
10	Sagbahal	Hatichhapal	-	-	-	-
11	Bandega	Falsa	-	-	-	-
	Total		8	44.44	10	55.56

It is found that percentage of female deaths is 55.56%, which is more than that of male deaths 44.44%.

Table 23: Distribution of mortality cases within last one year according to duration of illness:

Sl. No	Name of GP	Name of Village	1-5 days	%	5-10 days	%	Above 10 days	
1.	Birkalidihi	Putudihi	2	33.33	1	16.67	3	
2.	Bandhabahal	Perua ada	2	50.00	-	-	2	
3.	Kusummara	Dhenkigada	-	-	1	100.00	-	
4.	Kinjirikela	Kupatangar	3	60.00	1	20.00	1	
5.	Tilekani	Banajore	-	-	-	-	-	
6.	Talsara	Thiteitangar	1	50.00	-	-	1	
7.	Rampur	Sundhapani	-	-	-	-	-	
8.	Balisankara	Mohulgaon	-	-	-	-	-	
9.	Tumulia	Rengali	-	-	-	-	-	
10	Sagbahal	Hatichhapal	-	-	-	-	-	
11	Bandega	Falsa	-	-	-	-	-	
	Total		8	44.44	3	16.67	7	

Duration of illness before death is 1-5 years in 44.44% cases followed by 38.89% in above 10 days and 16.67% 5-10 days. So more people died with 1-5 days of duration of illness which is quite bad.

Table 24: Distribution of mortality cases within last one year according to place of treatment:

Sl. No	Name of GP	Name of Village	Hosp.	%	PHC	%	Sub centre	%	Quack	%	Home	Others	%
1.	Birkalidihi	Putudihi	-	-	1	16.67	-	-	3	50.00	-	-	-
2.	Bandhabahal	Perua ada	1	25.00	-	-	1	25.00	-	-	-	1	25.00
3.	Kusummara	Dhenkigada	-	-	-	-	-	-	-	-	-	-	-
4.	Kinjirikela	Kupatangar	-	-	4	80.00	-	-	-	-	-	-	-
5.	Tilekani	Banajore	-	-	-	-	-	-	-	-	-	-	-
6.	Talsara	Thiteitangar	-	-	2	100.00	-	-	-	-	-	-	-
7.	Rampur	Sundhapani	-	-	-	-	-	-	-	-	-	-	-
8.	Balisankara	Mohulgaon	-	-	-	-	-	-	-	-	-	-	-
9.	Tumulia	Rengali	-	-	-	-	-	-	-	-	-	-	-
10	Sagbahal	Hatichhapal	-	-	-	-	-	-	-	-	-	-	-
11	Bandega	Falsa	-	-	-	-	-	-	-	-	-	-	-
	Total		1	5.55	7	38.89	1	5.55	3	16.67	-	1	5.56

Among the death cases 38.89% treated themselves by PHC followed by 27.78% no treatment and 16.67% treatment by Quack. The percentage of no treatment and treatment by Quack is alarming.

Table 25: Distribution of mortality cases within last one year according to cause of death:

Sl. No	Name of GP	Name of Village	Malaria	%	Diarr-hoea	%	Snake Bite	%	Obs. Problem	%	C
1.	Birkalidihi	Putudihi	4	66.66	1	16.67	-	-	-	-	1
2.	Bandhabahal	Perua ada	1	25.00	1	25.00	-	-	-	-	2
3.	Kusummara	Dhenkigada	1	100	-	-	-	-	-	-	-
4.	Kinjirikela	Kupatangar	3	60.00	-	-	1	20.00	-	-	1
5.	Tilekani	Banajore	-	-	-	-	-	-	-	-	-
6.	Talsara	Thiteitangar	-	-	-	-	-	-	-	-	2
7.	Rampur	Sundhapani	-	-	-	-	-	-	-	-	-
8.	Balisankara	Mohulgaon	-	-	-	-	-	-	-	-	-
9.	Tumulia	Rengali	-	-	-	-	-	-	-	-	-
10	Sagbahal	Hatichhapal	-	-	-	-	-	-	-	-	-
11	Bandega	Falsa	-	-	-	-	-	-	-	-	-
	Total		9	50.00	2	11.11	1	5.56	-	-	6

In 50% cases the cause of death is malaria followed by 33.33% others. So the main reason of death cases in the area is malaria.

Table 26: Age wise Distribution of persons suffering from fever within last 15 days:

Sl. No	Name of GP	Name of Village	< 1 yrs	%	1-5 yrs	%	6-15 yrs	%	16-25 yrs	%	26-35 yrs	%	36-49 yrs	%	50-59 yrs	
1.	Birkalidihi	Putudihi	1	4.17	1	4.17	3	12.50	6	25.00	8	33.33	3	12.5	2	
2.	Bandhabahal	Peruada	-	-	4	10.81	13	25.14	5	13.51	4	10.81	8	21.62	-	
3.	Kusummaa	Dhenkigada	-	-	5	11.63	9	20.93	12	27.91	1	2.33	6	13.95	4	
4.	Kinjirikela	Kupatangar	-	-	9	12.50	20	27.78	18	25.00	11	15.28	7	9.72	4	
5.	Tilekani	Banajore	-	-	4	14.29	5	17.86	7	25.00	7	25.00	3	10.71	2	
6.	Talsara	Thiteitangar	-	-	9	26.47	12	35.30	4	11.76	4	11.76	4	11.77	1	
7.	Rampur	Sundhapani	-	-	21	80.77	2	7.69	1	3.85	-	-	1	3.85	1	
8.	Balisankara	Mohulgaon	1	1.61	4	6.45	21	33.87	11	17.74	9	14.52	8	12.90	4	
9.	Tumulia	Rengali	-	-	14	30.43	14	30.43	4	8.7	5	10.87	2	4.35	3	
10	Sagbahal	Haticchhapal	-	-	3	50.00	1	16.67	1	16.67	1	16.67	-	-	-	
11	Bandega	Falsa	-	-	8	44.44	4	22.22	1	5.56	1	5.56	1	5.56	1	
	Total		2	0.51	82	20.71	104	26.26	70	17.68	51	12.88	43	10.86	22	

If we look at the age wise distribution of persons suffering from fever within last 15 days of the date of data collection the following facts are found out. Fever attacks all the age groups alike. Only the infant (0-1 yrs) population seems to be little less affected.

Table 27: Sex wise distribution of persons suffering from fever within last 15 days:

Sl. No	Name of GP	Name of Village	Male	%	Female	%	Total	B/S collected

1.	Birkalidihi	Putudihi	11	45.83	13	54.17	24	16
2.	Bandhabahal	Perua ada	17	45.95	20	54.05	37	13
3.	Kusummara	Dhenkigada	22	51.16	21	48.84	43	30
4.	Kinjirikela	Kupatangar	33	45.83	39	54.17	72	61
5.	Tilekani	Banajore	12	42.86	16	57.14	28	9
6.	Talsara	Thiteitangar	16	47.06	18	52.94	34	5
7.	Rampur	Sundhapani	8	30.77	18	69.23	26	12
8.	Balisankara	Mohulgaon	30	48.39	32	51.61	62	43
9.	Tumulia	Rengali	24	52.17	22	47.83	46	10
10	Sagbahal	Hatichhapal	3	50.00	3	50.00	6	5
11	Bandega	Falsa	4	22.22	14	77.78	18	18
	Total		180	45.45	216	54.55	396	222

It is clear from the above table that female is more affected by fever (54.55%). We have collected about 222 blood slides out of a total of 396 fever cases found which is 56.06% of total fever cases. So 43.94% do not give permission to collect blood for testing. This finding indicates that the tribal population has a stigma towards allowing blood collection for testing. In Hatichapal village we found all persons who are suffering from fever within last 15 days of data collection date allowed to collect blood from their body.

Table 28: Distribution according to Chloroquine taken or not before blood testing:

Sl. No	Name of GP	Name of Village	Chloroquine taken	%	Not taken	%
1.	Birkalidihi	Putudihi	7	43.25	9	56.25
2.	Bandhabahal	Perua ada	6	46.15	7	53.85
3.	Kusummara	Dhenkigada	14	46.67	16	53.33
4.	Kinjirikela	Kupatangar	25	40.98	36	59.02
5.	Tilekani	Banajore	4	44.44	5	55.56
6.	Talsara	Thiteitangar	2	40	3	60
7.	Rampur	Sundhapani	5	41.67	7	58.33
8.	Balisankara	Mohulgaon	20	46.51	23	53.49
9.	Tumulia	Rengali	4	40	6	60
10	Sagbahal	Hatichhapal	2	40	3	60

11	Bandega	Falsa	8	44.44	10	55.56
	Total		97	43.69	125	56.31

We collected blood from the willing patients who are suffering from fever within last 15 days of data collection. Among those persons from whom we collected blood for testing, 56.31% have not taken chloroquine before blood collection. A total of 43.69% had taken chloroquine before blood collection. This must have an impact on the blood testing report. The slide SPR might have been quite high if no patient was allowed to consume chloroquine before blood slide collection.

Table 29: Age distribution of persons whose blood testing was done for malaria:

Sl. No	Name of GP	Name of Village	< 1 yrs	%	1-5 yrs	%	6-15 yrs	%	16-25 yrs	%	26-35 yrs	%	36-49 yrs	%	50-59 yrs	
1.	Birkalidihi	Putudihi	1	6.25	1	6.25	2	12.5	5	31.25	2	12.5	3	18.75	1	
2.	Bandhabahal	Peruada	-	-	-	-	5	38.46	2	15.38	2	15.38	1	7.07	1	
3.	Kusummara	Dhenkigada	-	-	4	13.33	5	1.67	11	36.67	4	13.33	3	10.00	1	
4.	Kinjirikela	Kupatangar	1	1.63	12	19.67	19	31.15	6	9.84	8	13.11	8	13.11	4	
5.	Tilekani	Banajore	-	-	1	11.11	1	11.11	5	55.56	1	11.11	1	11.11	-	
6.	Talsara	Thiteitangar	1	20.00	-	-	3	60.00	-	-	1	20.00	-	-	-	
7.	Rampur	Sundhapani	-	-	6	50.00	3	25.00	2	16.67	1	8.33	-	-	-	
8.	Balisankara	Mohulgaon	-	-	1	2.32	16	37.21	10	23.26	4	9.30	5	11.63	5	

9.	Tumulia	Rengali	-	-	3	30.00	4	40.00	1	10.00	-	-	-	-	1	1
10	Sagbahal	Hatichhapal	-	-	1	20.00	-	-	2	40.00	-	-	2	40.00	-	-
11	Bandega	Falsa	1	5.55	-	-	8	44.44	3	16.67	2	11.11	2	11.11	1	5
	Total		4	1.8	29	13.06	66	29.73	47	21.17	25	11.26	25	11.26	14	7

From the table of age distribution of persons whose blood testing was done for malaria, we can see that all ages of population are tested for malaria. It is highest (29.73%) in 6-15 year age group followed by 21.17% in 16-25 year age group.

Table 30: Sex wise distribution of persons whose blood was tested for malaria:

Sl. No	Name of GP	Name of Village	Male	%	Female	%
1.	Birkalidihi	Putudihi	10	62.5	6	37.5
2.	Bandhababahal	Perua ada	6	46.15	7	13.85
3.	Kusummara	Dhenkigada	13	43.33	17	56.67
4.	Kinjirikela	Kupatangar	24	39.34	37	60.66
5.	Tilekani	Banajore	5	55.56	4	44.44
6.	Talsara	Thiteitangar	3	60.00	2	40.00
7.	Rampur	Sundhapani	3	25.00	9	75.00
8.	Balisankara	Mohulgaon	21	48.84	22	51.16
9.	Tumulia	Rengali	6	60.00	4	40.00
10	Sagbahal	Hatichhapal	-	-	5	100.00
11	Bandega	Falsa	7	38.89	11	61.11
	Total		98	44.14	124	55.86

From the above table it is quite clear that blood was tested for more female persons (55.86%) than male persons (44.14%) for malaria.

Table 31: Blood Testing report:

Sl. No	Name of GP	Name of Village	Blood slide collected	Blood slide examined	PV	PF	PFg	Total Positive found	
1.	Birkalidihi	Putudihi	16	16	-	1	1	2	
2.	Bandhabahal	Perua ada	13	13	-	2	-	2	
3.	Kusummara	Dhenkigada	30	30	-	6	-	6	
4.	Kinjirikela	Kupatangar	61	61	-	3	-	3	
5.	Tilekani	Banajore	9	9	-	1	-	1	
6.	Talsara	Thiteitangar	5	5	-	1	-	1	
7.	Rampur	Sundhapani	12	12	-	3	-	3	
8.	Balisankara	Mohulgaon	43	43	-	5	-	5	
9.	Tumulia	Rengali	10	10	-	2	-	2	
10	Sagbahal	Hatichhapal	5	5	-	1	-	1	
11	Bandega	Falsa	18	18	-	2	-	2	
	Total		222	222	-	27	1	28	

In the blood testing report table we can see that 12.61% slides are found to be positive. So the Slide Positivity Rate (SPR) = 12.61. The PF% is found to be 100% in each of the study villages. In Putidihi village of Birkalidihi GP we found one patient with PFg (Plasmodium Gametosite). As this type of case is new for us, we enquired about the case with the PHC doctor and Regional Office for Health and Family Welfare, Bhubaneswar. They said that this patient no longer suffering from fever but can infect others. So we kept it in a separate column from PF. The PF% of 100% is quite an alarming finding of the study.

Table32: Do you know about a disease called malaria?

Sl. No	Name of GP	Name of Village	Yes	%	No	%
1.	Birkalidihi	Putudihi	58	93.55	4	6.45
2.	Bandhababahal	Perua ada	63	100.00	-	-
3.	Kusummara	Dhenkigada	64	98.46	1	1.54
4.	Kinjirikela	Kupatangar	194	96.52	7	3.48
5.	Tilekani	Banajore	86	100.00	-	-
6.	Talsara	Thiteitangar	108	97.30	3	2.70
7.	Rampur	Sundhapani	62	91.18	6	8.82
8.	Balisankara	Mohulgaon	108	99.08	1	0.92
9.	Tumulia	Rengali	60	78.95	16	21.05
10	Sagbahal	Hatichhapal	44	88.00	6	12.00
11	Bandega	Falsa	52	96.30	2	3.70
	Total		899	95.13	46	4.87

In the KAP study when we questioned “Do you know about a disease called malaria?” 95.12% said yes and 4.87% said no. In Perua ada and Banajore 100% said yes. So we can say that people heard about the disease called malaria.

Table 33: What are the signs and symptoms of malaria?

Sl. No	Name of GP	Name of Village	Peri-odic fever	%	Fever with chill	%	Swea ting	%	Head/ Body ache	%	High fever	
1.	Birkalidihi	Putudihi	31	53.45	50	86.21	13	22.41	50	86.21	10	
2.	Bandhaba hal	Perua ada	41	65.08	56	88.89	8	12.70	37	58.73	18	
3.	Kusummar	Dhenkigad	42	65.62	60	93.75	19	29.69	40	62.50	20	

	a	a										
4.	Kinjirikela	Kupatangar	133	68.56	156	80.41	25	12.89	112	57.73	75	
5.	Tilekani	Banajore	63	73.26	68	79.07	20	23.26	44	51.16	23	
6.	Talsara	Thiteitangar	79	73.15	72	66.67	8	7.41	58	53.70	44	
7.	Rampur	Sundhapani	46	74.19	43	69.35	4	6.45	37	59.68	13	
8.	Balisankara	Mohulgaon	70	64.81	96	88.89	8	7.41	65	60.18	47	
9.	Tumulia	Rengali	37	61.67	53	88.33	-	-	34	56.67	32	
10	Sagbahal	Hatichhapal	32	72.73	36	81.82	8	18.18	23	52.27	17	
11	Bandega	Falsa	41	78.85	40	76.92	2	3.85	29	55.77	23	
	Total		615	68.41	730	81.20	115	12.79	529	58.84	322	

About the signs and symptoms of malaria, highest of 81.20% identified fever with chill, 68.41% identified Periodic-fever, 48.84% respondents identified head/body ache. But symptoms like high fever and sweating were identified by 35.82% and 12.79% respondents respectively. So it is clear that above 50% of respondents identified periodic fever, fever with chill and head/body ache as symptoms of malaria. But less than 50% respondents identified sweating and high fever as symptoms of malaria.

So it can be said that the respondents have moderate knowledge about malaria.

Table 34: Do you know that blood testing is done to detect malaria?

Sl. No	Name of GP	Name of Village	Yes	%	No	%
1.	Birkalidihi	Putudihi	49	84.48	9	15.52
2.	Bandhabahal	Perua ada	56	88.89	7	11.11
3.	Kusummara	Dhenkigada	51	79.69	13	20.31
4.	Kinjirikela	Kupatangar	176	90.72	18	9.28
5.	Tilekani	Banajore	82	95.35	4	4.65
6.	Talsara	Thiteitangar	103	95.37	5	4.63
7.	Rampur	Sundhapani	55	88.71	7	11.29
8.	Balisankara	Mohulgaon	101	93.52	7	6.48

9.	Tumulia	Rengali	52	86.67	8	13.33
10	Sagbahal	Hatichhapal	34	77.27	10	22.73
11	Bandega	Falsa	36	69.23	16	30.77
	Total		795	88.43	104	11.57

It can be easily marked from the above table that 88.43% know that blood testing is done to detect malaria. Consequently 11.57% do not know the said fact. So it can be said that the respondents knowledge about blood testing is good.

Table 35: What is the cause of malaria?

Sl. No	Name of GP	Name of Village	Mosquito bite	%	Stagnant water	%	Taking pond water	%	Dirty environment	%	
1.	Birkalidihi	Putudihi	52	89.65	14	24.14	1	1.72	6	10.3	
2.	Bandhabahal	Perua ada	50	79.36	17	26.98	2	3.17	7	11.1	
3.	Kusummara	Dhenkigada	46	71.87	22	34.37	12	18.75	11	17.1	
4.	Kinjirikela	Kupatangar	152	78.35	57	29.38	16	8.25	33	17.0	
5.	Tilekani	Banajore	76	88.37	17	19.77	5	5.81	5	5.8	
6.	Talsara	Thiteitangar	88	81.48	18	16.67	7	6.48	23	21.3	
7.	Rampur	Sundhapani	51	82.26	16	25.81	5	8.06	8	12.9	
8.	Balisankara	Mohulgaon	87	80.56	25	23.15	19	17.59	16	14.8	
9.	Tumulia	Rengali	47	78.33	2	3.33	3	5.00	-	-	
10	Sagbahal	Hatichhapal	28	63.64	8	18.18	4	9.09	11	25.0	
11	Bandega	Falsa	36	69.23	9	17.31	9	17.31	10	19.2	
	Total		713	79.31	205	22.80	83	9.23	130	14.4	

While asked about the cause of malaria, 79.31% said that mosquito bite is the cause of malaria. 22.80% thought that stagnant water is the cause of malaria. 16.02% do not know the

cause of malaria, which is quite high. Only 1.34% said that malaria parasite is the cause of malaria, which is the correct cause of malaria. This shows that people have adequate knowledge about the cause of malaria. Answers like Mosquito bite is very close to the correct answer as mosquito is the carrier of malaria parasites.

Table 36: How can malaria be prevented?

Sl. No	Name of GP	Name of Village	mosquito net	%	Insecticide / mosquito coil	%	Chloroquine tabs	%	Smoke	%
1.	Birkalidihi	Putudihi	40	68.97	-	-	14	24.14	33	56.90
2.	Bandhabahal	Perua ada	40	63.49	-	-	14	22.22	34	53.97
3.	Kusummara	Dhenkigada	39	60.94	-	-	19	29.69	16	25.00
4.	Kinjirikela	Kupatangar	89	45.88	9	4.64	38	19.59	60	30.93
5.	Tilekani	Banajore	70	81.40	-	-	26	30.23	35	40.70
6.	Talsara	Thiteitangar	72	66.67	-	-	15	13.87	35	32.41
7.	Rampur	Sundhapani	51	82.26	-	-	7	11.29	8	12.90
8.	Balisankara	Mohulgaon	84	77.78	-	-	22	20.37	26	24.07
9.	Tumulia	Rengali	43	71.67	-	-	2	3.33	10	16.67
10	Sagbahal	Hatichhapal	28	63.64	-	-	2	4.55	4	9.09
11	Bandega	Falsa	34	65.38	-	-	4	7.69	6	11.54
	Total		590	65.63	9	1.00	163	18.13	267	29.70

About prevention of malaria 65.63% thought mosquito net is useful for prevention of malaria, 29.70% thought smoke as the prevention. Some respondents (18% each) also thought chloroquine tablets and clean environment as prevention from malaria. 18.80% could not say what is the prevention for malaria.

Table 37: Usually in which season people suffer from malaria?

Sl. No	Name of GP	Name of Village	Summer	Rainy	%	Winter	%	Others	Total

1.	Birkalidihi	Putudihi	-	13	22.41	45	77.59	-	58
2.	Bandhabahal	Perua ada	-	15	23.81	48	76.19	-	63
3.	Kusummara	Dhenkigada	-	28	43.75	36	56.25	-	64
4.	Kinjirikela	Kupatangar	-	57	29.38	137	70.62	-	194
5.	Tilekani	Banajore	-	22	25.58	64	74.42	-	86
6.	Talsara	Thiteitangar	-	15	13.89	93	86.11	-	108
7.	Rampur	Sundhapani	-	13	20.97	49	79.03	-	62
8.	Balisankara	Mohulgaon	-	19	17.59	89	82.41	-	108
9.	Tumulia	Rengali	-	1	1.67	59	98.33	-	60
10	Sagbahal	Hatichhapal	-	16	36.36	28	63.64	-	44
11	Bandega	Falsa	-	16	30.77	36	69.23	-	52
	Total		-	215	23.92	684	76.08	-	899

While asked about the season for malaria, 76.08% thought that winter is the malaria season while 23.92% thought that rainy is the malaria season. Due to rain in rainy season for start of winter mosquito population increases tremendously leading to more malaria incidence.

able 38: What is the treatment of malaria?

Sl. No	Name of GP	Name of Village	Chloroquine tablets	%	Don't Know	%	Others	%	Total
1.	Birkalidihi	Putudihi	44	75.86	13	22.41	1	1.73	58
2.	Bandhabahal	Perua ada	43	68.25	20	31.75	-	-	63
3.	Kusummara	Dhenkigada	36	56.25	28	43.75	-	-	64
4.	Kinjirikela	Kupatangar	101	52.06	93	47.94	-	-	194
5.	Tilekani	Banajore	45	52.33	41	47.67	-	-	86
6.	Talsara	Thiteitangar	39	36.11	69	63.89	-	-	108
7.	Rampur	Sundhapani	34	54.84	28	45.16	-	-	62
8.	Balisankara	Mohulgaon	53	49.07	55	50.93	-	-	108
9.	Tumulia	Rengali	39	65.00	21	35.00	-	-	60
10	Sagbahal	Hatichhapal	17	38.64	26	59.09	1	2.27	44
11	Bandega	Falsa	21	40.38	31	59.62	-	-	52
	Total		472	52.50	425	47.28	2	0.22	899

While asked about the treatment for malaria 52.50% said that chloroquine tablets is the treatment for malaria. 47.28% do not know about the treatment for malaria and a negligible 0.22% suggested other treatments of malaria. So the knowledge about the treatment for malaria of the community is good.

Table 39: Do you know the health worker/malaria worker in your area?

Sl. No	Name of GP	Name of Village	Yes	%	No	%	Total
1.	Birkalidihi	Putudihi	33	53.23	29	46.77	62
2.	Bandhabahal	Perua ada	50	79.37	13	20.63	63
3.	Kusummara	Dhenkigada	51	78.46	14	21.54	65
4.	Kinjirikela	Kupatangar	182	90.55	19	9.45	201
5.	Tilekani	Banajore	53	61.63	33	38.37	86
6.	Talsara	Thiteitangar	25	22.52	86	77.48	111
7.	Rampur	Sundhapani	23	33.82	45	66.18	68
8.	Balisankara	Mohulgaon	66	60.55	43	39.45	109
9.	Tumulia	Rengali	4	5.26	72	94.74	76
10	Sagbahal	Hatichhapal	19	38.00	31	62.00	50
11	Bandega	Falsa	26	48.15	28	51.85	54
	Total		532	56.30	413	43.70	945

While asked about the malaria worker/Health worker of the area, 56.30% said that they know him/her and 43.70% said they do not know him/her. The percentage of respondents who do not know the malaria worker/Health worker is quite high.

Table 40: Does he/she visit your home?

Sl. No	Name of GP	Name of Village	Yes	%	No	%
1.	Birkalidihi	Putudihi	20	62.5	12	37.5
2.	Bandhabahal	Perua ada	48	96.00	2	4.00
3.	Kusummara	Dhenkigada	48	92.31	4	7.69
4.	Kinjirikela	Kupatangar	162	89.01	20	10.99
5.	Tilekani	Banajore	29	54.72	24	45.28
6.	Talsara	Thiteitangar	4	16.00	21	84.00
7.	Rampur	Sundhapani	11	47.83	12	52.17
8.	Balisankara	Mohulgaon	64	96.97	2	3.03
9.	Tumulia	Rengali	4	100.00	-	-
10	Sagbahal	Hatichhapal	11	57.89	8	42.11
11	Bandega	Falsa	15	57.69	11	42.31
	Total		416	78.20	116	21.80

Among those who said they know her 78.20% said that he/she visits their area which is 44.02%. If we calculare the same for total number of respondents. So we can conclude that the visit by malaria worker/health worker to the villages is not adequate.

Table 41: If yes, How frequently?

Sl. No	Name of GP	Name of Village	< 15 days	%	15-30 days	%	1-3 months	%	3-6 months	%	> 6 months	%
1.	Birkalidihi	Putudihi	1	5.00	9	45.00	9	45.00	-	-	1	5
2.	Bandhababahal	Perua ada	15	31.25	24	50.00	5	10.42	4	8.33	-	-
3.	Kusummara	Dhenkigada	26	54.17	16	33.33	6	12.50	-	-	-	-
4.	Kinjirikela	Kupatangar	38	23.46	65	40.12	50	30.86	5	3.09	4	2
5.	Tilekani	Banajore	-	-	14	48.28	15	51.72	-	-	-	-
6.	Talsara	Thiteitangar	-	-	-	-	-	-	-	-	4	1
7.	Rampur	Sundhapani	-	-	-	-	-	-	-	-	11	1
8.	Balisankara	Mohulgaon	-	-	-	-	60	93.75	-	-	4	6
9.	Tumulia	Rengali	-	-	-	-	1	25.00	-	-	3	7
10	Sagbahal	Hatichhapal	-	-	-	-	-	-	-	-	11	1
11	Bandega	Falsa	-	-	-	-	10	66.67	-	-	5	3
	Total		80	19.23	128	30.77	156	37.50	9	2.16	43	1

While asked about frequency of visit by the health worker/malaria worker, we found that 37.50% visit once in 1-3 months, followed by 30.77% visit once in 15-30 days. Only 19.23% visit once in less than 15 days duration, which is not good. They should visit the villages more frequently.

Table 42: Does he/she gives malaria tablets to fever patients?

Sl. No	Name of GP	Name of Village	Yes	%	No	%	Total
1.	Birkalidihi	Putudihi	19	95.00	1	5.00	20
2.	Bandhababahal	Perua ada	48	100.00	-	-	48
3.	Kusummara	Dhenkigada	39	81.25	9	18.75	48
4.	Kinjirikela	Kupatangar	150	92.59	12	7.41	162

5.	Tilekani	Banajore	22	75.86	7	24.14	29
6.	Talsara	Thiteitangar	4	100.00	-	-	4
7.	Rampur	Sundhapani	8	72.73	3	27.27	11
8.	Balisankara	Mohulgaon	55	85.94	9	14.06	64
9.	Tumulia	Rengali	3	75.00	1	25.00	4
10	Sagbahal	Hatichhapal	2	18.18	9	81.82	11
11	Bandega	Falsa	11	73.33	4	26.67	15
	Total		361	86.78	55	13.22	416

While asked about whether he/she gives tablets to malaria patients, the answer is 86.78% yes and 13.22% no. It seems that a good percentage of respondents said yes. But if we consider the total number of respondents we find that it is 38.2% , which is not at all acceptable.

Table 43: Does he/she collect blood for malaria testing?

Sl. No	Name of GP	Name of Village	Yes	%	No	%	Total
1.	Birkalidihi	Putudihi	19	100	-	-	19
2.	Bandhabahal	Perua ada	47	97.92	1	2.08	48
3.	Kusummara	Dhenkigada	31	79.49	8	20.51	39
4.	Kinjirikela	Kupatangar	119	79.33	31	20.67	150
5.	Tilekani	Banajore	22	100.00	-	-	22
6.	Talsara	Thiteitangar	3	75.00	1	25.00	4
7.	Rampur	Sundhapani	2	25.00	6	75.00	8
8.	Balisankara	Mohulgaon	38	69.09	17	30.91	55
9.	Tumulia	Rengali	2	66.67	1	33.33	3
10	Sagbahal	Hatichhapal	-	-	2	100.00	2
11	Bandega	Falsa	9	81.82	2	18.18	11
	Total		292	80.89	69	19.11	361

When asked whether he/she collects blood for testing the answer is 80.89% yes and 19.1% no. While compared to the total respondents the percentage of yes comes to 30.90%, which is not at all acceptable.

Table 44: Does she/he spray some chemicals to prevent mosquito breeding?

Sl. No	Name of GP	Name of Village	Yes	%	No	%	Total
1.	Birkalidihi	Putudihi	-	-	62	100.00	62
2.	Bandhababahal	Perua ada	-	-	63	100.00	63
3.	Kusummara	Dhenkigada	-	-	65	100.00	65
4.	Kinjirikela	Kupatangar	74	36.82	127	63.18	201
5.	Tilekani	Banajore	-	-	86	100.00	86
6.	Talsara	Thiteitangar	-	-	111	100.00	111
7.	Rampur	Sundhapani	-	-	68	100.00	68
8.	Balisankara	Mohulgaon	-	-	109	100.00	109
9.	Tumulia	Rengali	-	-	76	100.00	76
10	Sagbahal	Hatichhapal	-	-	50	100.00	50
11	Bandega	Falsa	-	-	54	100.00	54
	Total		74	7.83	871	92.17	945

While asked about whether the respondents sprays some chemicals to prevent mosquito breeding the answer is yes in 7.83% and no in 92.17% respondents. We find out that only in one village DDT is sprayed. The name of the village is Kupatangara of Kinjirikela GP. Apart from that one village, no other village has been sprayed by chemicals to prevent mosquito breeding.

Table 45: If yes, How often?

Sl. No	Name of GP	Name of Village	0-6 months	6-12 months	> 12 months	Total
1.	Birkalidihi	Putudihi	-	-	-	-
2.	Bandhabahal	Perua ada	-	-	-	-
3.	Kusummara	Dhenkigada	-	-	-	-
4.	Kinjirikela	Kupatangar	-	74	-	74
5.	Tilekani	Banajore	-	-	-	-
6.	Talsara	Thiteitangar	-	-	-	-
7.	Rampur	Sundhapani	-	-	-	-
8.	Balisankara	Mohulgaon	-	-	-	-
9.	Tumulia	Rengali	-	-	-	-
10	Sagbahal	Hatichhapal	-	-	-	-
11	Bandega	Falsa	-	-	-	-
	Total		-	74	-	74

In the solitary village where DDT is sprayed, it is sprayed once in 6-12 months duration which is not adequate. One should do so once in every three months.

Table 46: Is malaria tablet available in your village?

Sl. No	Name of GP	Name of Village	Yes	%	No	%	Total
1.	Birkalidihi	Putudihi	38	61.29	24	38.71	62
2.	Bandhabahal	Perua ada	43	68.25	20	31.75	63
3.	Kusummara	Dhenkigada	57	87.69	8	12.31	65
4.	Kinjirikela	Kupatangar	191	95.02	10	4.98	201
5.	Tilekani	Banajore	45	52.33	41	47.67	86
6.	Talsara	Thiteitangar	14	12.61	97	87.39	111
7.	Rampur	Sundhapani	-	-	68	100.00	68
8.	Balisankara	Mohulgaon	76	69.72	33	30.28	109
9.	Tumulia	Rengali	11	14.47	65	85.53	76
10	Sagbahal	Hatichhapal	22	44.00	28	56.00	50
11	Bandega	Falsa	23	42.59	31	57.41	54
	Total		520	55.03	425	44.97	945

When we asked whether malaria tablets are available in the village, 55.03% said yes and 44.97% said no. So we can say that the availability of malaria tablets in the village is good.

Table 47: If yes, where?

Sl. No	Name of GP	Name of Village	Anganwadi	%	DDC	%	Shop	Others (mission)
1.	Birkalidihi	Putudihi	17	44.74	-	-	-	21
2.	Bandhabahal	Perua ada	19	44.19	24	55.81	-	-
3.	Kusummara	Dhenkigada	30	52.63	27	47.37	-	-
4.	Kinjirikela	Kupatangar	182	95.29	9	4.71	-	-
5.	Tilekani	Banajore	36	80.00	9	20.00	-	-

6.	Talsara	Thiteitangar	14	100.00	-	-	-	-	
7.	Rampur	Sundhapani	-	-	-	-	-	-	
8.	Balisankara	Mohulgaon	73	96.05	3	3.95	-	-	
9.	Tumulia	Rengali	11	100.00	-	-	-	-	
10	Sagbahal	Hatichhapal	22	100.00	-	-	-	-	
11	Bandega	Falsa	-	-	-	-	-	23	
	Total		404	77.69	72	13.85	-	44	

From those who said yes 77.69% said it is available in Anganwadi Centres, 13.85% said that it is available in DDC and 8.46% said that it is available in other places including Christian missionaries.

Table 48: Do you bring malaria tablets from there?

Sl. No	Name of GP	Name of Village	Yes	%	No	%	Total
1.	Birkalidihi	Putudihi	38	100.00	-	-	38
2.	Bandhabahal	Perua ada	43	100.00	-	-	43
3.	Kusummara	Dhenkigada	57	100.00	-	-	57
4.	Kinjirikela	Kupatangar	180	94.24	11	5.76	191
5.	Tilekani	Banajore	45	100.00	-	-	45
6.	Talsara	Thiteitangar	14	100.00	-	-	14
7.	Rampur	Sundhapani	-	-	-	-	-
8.	Balisankara	Mohulgaon	41	53.95	35	46.05	76
9.	Tumulia	Rengali	11	100.00	-	-	11
10	Sagbahal	Hatichhapal	22	100.00	-	-	22
11	Bandega	Falsa	23	100.00	-	-	23
	Total		474	91.15	46	8.85	520

When asked about whether they bring tablets from those places 91.15% said yes and 8.85% said no. So it is clear that respondents like to take tablets for malaria treatment. This is a positive sign for the personnel who are engaged in control of malaria.

VI. FOCUS GROUP DISCUSSIONS:

We have conducted 6 focus group discussions among 6 of the 11 study villages to assess the peoples perspective on malaria in the area. Few important points emerged from the FGDs are as follows.

Putidihi:

Knowledge:

* Malaria is a severe type of fever.
* It mainly attacks in winter.
* People know that blood testing is done for malaria detection.
* Eating Guava causes malaria. As it is a cold producing fruit.
* People know that due to cowsheds near the house more mosquito are produced which causes malaria. But they are forced to keep it near the house due to fear of theves.

Problems:

* One person died due to malaira 3/4 years back in the village.
* The problem of malaria is increasing day by day.

Practice:

* People wanted to know how to prevent mosquitos from biting them. Our investigator appraised about the same.
* No traditional treatment is practiced in the village for malaira.
* When people suffer from fever they often visit the dispensaries.

Interventions:

* Supervisor comes to the village from time to time.
* We take medicine from mission nurse.

Perua ada:

Knowledge:

* One persons said that he had fever one month back.
* Malaria is a fever associated with cold and caugh.
* Malaria is caused due to malaria.

Problems:
* Medicine is not available in emergency.

Practive:
* For malaria we take medicine form doctor.
* We do not have vehicle, so we go to the hospital by cycle.

* We do not test blood for malaria testing. Often we take medicine ditectly.

Interventions:
* Doctor gives medicine for malaria.
* People need mosquito nets and medicines for prevention of malaria.

Dhenkigada:

Knowledge:
* Malaria is a fever. It is caused by mosquito.
* Symptoms of malaira are high fever and cold.

Practice:
* Community effort for controlling malaria is inadequate.
* We could not keep the cowshed away form the house due to fear of theves.

Interventions:
* We have no medicine. So how can we prevent malaria.
* Some times Anganwadi worker gives medicines.

Kupatangar:

Knowledge:
* Malaria is a deadly fever. Whenever fever causes it is mostly malaria.
* Fever causes due to mosquito bite.
* Symptoms of malaria are cold, caugh, head ache and trembling of the body.

Practive:
* If they visit the doctor by cycle they help.
* We take medicine for malaria from supervisors
* Quack/Private practitioner is available near the village for treatment of malaira
* The sisters help the sufferers of malaria.
* No preventive measures are done to control mosquito breeding
* Government people come to help malaria patients.

Interventions:
* Medicine are not adequately available.
* Malaria supervisors come only once a week.
* People need medicines, check up facility and availability of doctors.

Banajore:

Knowledge:

* We know the supervisor of malaria of our area.
* He often comes to give vaccines.
* We do not know about the cause of malaria.

Practice:

* Community effort is nil to control malaria.

* Private Doctor comes if called. But only gives medicine most of the times. He does not advice to do blood testing.
* Government Doctors often treat well if we visit them privately and they take money from us for treatment.

Intervention:

* No NGO is working in malaria control in the area.
* Government malaira control activities in the area is not adequate.

Hati chapal:

Knowledge:

* For ordinary fever Handia is effective.
* For malaria fever we have to take medicines.

Problems:

* Fever is increasing now a days.
* People want medicines and proper treatment facility from the Government.

Practice:
* From shop we purchase medicine.
* We often take vagetables and Saga to prevent us from malaria.
* We do not have any which craft practive.
* Some herbal medicine practice is there.
* If we are not cured by these medicines, we go for modern medicines.

Interventions:
* Government people give medicines.
* Sisters give medicines and collect blood for testing.
* No NGO is working here on malaria control.

VII. THE STUDY TEAM

Person power	Qualifications
Consultants:	
Mr. K. K. Swain	MA, Economics (Utkal)
Mr. Ajay Tripathy	BA, DCHM
Mr. B. Panda	BA, LLB
Md. J. Akhter	MBBS (Utkal)
Principal Inventigator	

Himansu Sekhar Dutta	MSc, Statistics (Utkal)
Field Supervisor cum Tabulator	
Mr. Nirakar Sahu	BA
Field Technician	
Mr. Subrat Kumar Bisoi	BSc, D Pharm
Focus Group Discussion Analysis	
Mr. N. R. Patra	MSW (Utkal)
Field Investigators	
Mr. Ashok Chachan	BA
Mr. Dadhicharan Sa	BA
Mr. Mangu Barla	Matirc
Ms. Soudamini Dandsena	+2 Arts
Ms. Tula Bhoi	+2 Arts

V I I I . L I M I T A T I O N S :

During these survey we have certain limitations which may have affected the study results. Then limitations were :

1. As the sample size is small, i.e. 945 households out of total 14,938 households of the block, it may have affected the study results.
2. All though utmost care has been taken to collect accurate and authentic data, some amount of interviewer bias and mis reporting by respondents can not be ruled out. This may have affected the study results.

IX. CONCLUSIONS AND RECOMMENDATIONS:

The problems of the area is multy facated in nature. The High pervalence of malaria is related to problems like ignorance, lack of early diagnosis and treatment, incomplete treatment, lack of bednet use practice and lack of proper water drainage facility. 90% of the population of the area are below poverty line. Due to poverty and deprivations of essential needs, the tribal people’s living condition is very poor. Infant death is quite high among the total deaths. It is not surprising to note that 95% of the houses are kutcha in nature. Not a single house has latrine facility.

The household and community sanitary condition is very poor. In 85% cases the cow shed is attached to the house. In 75% households the garbadge is disposed near the house. Drainage system is very poor. Al these facts contribute to mosquito breeding. Apart from one village no where we found spraying of DDT to control mosquito breeding. Almost 70% of the households does not have access to safe drinking water. The population suffering from fever is quite high. Often people prefer quacks to cure malaria. Malaria is the most common cause of death of the area. In blood collection report we found the slide positivity rate (SPR) to be 12.61 and the PF% to be 100% which is quite alarming.

During the study we found one case of PFg. This person will no longer suffer from fever but can infect others. Knowledge of malaria is moderate but the malaria control activitied in the area is very poor. Apart from one village no where chemicals are sprayed to prevent moquito breeding. People know that mosquito net is useful, but as the mosquito bite rate is quite low, they do not use them. The malaria workers/health workers occationaly visit the villages. With these facts we can conclude that the malaria control activities in the area is very poor.

Further it can be concluded that the situation of malaria, its extent and magnitude is quite deplorable in the area. The reason may be atteributed to various factors. Low level of educational status, rampant ignorance about the cause, treatment and prevention of malaria, poor socio economic background contribute a lot to the cause of malaria. Besides these indifferent attitude towards health care services provided by Government, which is absolutely negligible for the public compounded the situation dramatically. Inadequate health care services, added by people's ignorance with socio economic instability makes the disease more infectious in the region. The KAP study indicates that in the study villages the services provided by Govt. is quite dismal as compared to the infrastructural and person power support available. The role and responsibility of health workers are almost nil as a handful of health workers are found to be seen during the field data collection of the study. The availability and distribution of chloroquine tablets are found to be inadequate in the study villages.

The study compels us to devise a good number of suggestions in strengthening the actions and interventions for control of malaria. Regular and periodic intervention in the form of health education to bring an attutitudinal and behavioural change and provision of better health care services in the study villages can only bring about a qualitative change in control of malaria in the study region.

It is basic knowledge for dissemination to all that man mosquito contact is to be avoided and vector mosquitoes should be prevented to breed in water for arresting their proliferation. This can easily be achieved through personal protection by individuals by rendering all breeding places unsuitable for mosquito breeding by the local bodies or project authorities by elimination, covering, modification, introduction of biological control agents or treatment with larvicides and by making facilities available for an early treatment of malaria cases. This can be done by educating people, training of officials engaged in developmental activities and incorporation of health component in all developmental projects by all concerned. The following short term intervention measures can be of great help.

Water management should be done by providing water supply and disposal. Improvement of rain water drainage is a most. Source reduction of peri-domestic water bodies by drainage

will help tremoundously in decreasing of mosquito breeding. Indoor spray of chemicals should be done in and around the village. Weekly anti-larval measures should be done.

Apart from the above, the following measures can also be useful. Door to door visits by the health workers in the malaria endemic areas should be encouraged to impart education to the family. By the help of traditional folk lores and street plays community should be imparted education. School children with school health programmes should be imparted knowledge on malaria.

Voluntary organisations of the area can take up presumptive treatment of cases with or without infrastructural support. Clearly acceptable and accurate messages sbould be developed by the organisations realising the costoms and cultures of the community to help educate the community in malaria control.

Apart from these vector control activities can also be useful. Voluntary organisations can take up antilarval measures and environmental sanitation. They can also promote boi-environmental measures. Work in coordination and collaboration with Government will help in successful intervention of the programme.

Now a days the malaria control strategy is more or less primary health care oriented approach. So as to ensure the linkages and involvement of the community in building up the first line of health care is of inescapable necessity.

To make the malaria control activities more effective and result oriented the following suggestions are made.

* The community must be accepted at all levels of control strategy as an active partner.
* The communtiy leaders should be involved in planning and organisation of activities.
* The focus of the activities should not be confirmed only providing package of services but empowering them to participate in the decision making process.

Empowerment of the community is essential in control of malaria. To facilitate community capacity building the following measures will be useful.

* Providing knowkedge on malaria, its cause, treatment and prevention.
* Stressing the importance of early disgnosis and treatment.
* As the PF% is quite high the malaria control measures should take into account the above fact.
* It is quite difficult for Government alone to achieve good result in control and prevention of malaria. So Government should find suitable ways of involving NGOs of the area in the activities of control and prevention of malaira.
* NGOs of the area should take initiative in starting malaria control and prevention activities.
* Mosquito net use should be promoted among the population.

During the study we found that the mosquito bite rate is quite low in the area which results in low bednet use. People are mostly dependent on quacks for treatment of malaria which could not cure the disease. Often incomplete doses are taken for malaria. Once fever subsides people often stop taking medicines. In the DDCs drugs are not available. Supervision done by the supervisors is not timely. Infected persons could not examine their blood due to lack of

communication. As a result the Gametocide is quite high resulting in high PF transmission. As Gametocidal drugs are not taken by most of the patients. This results in transmission of PF by Gametocidal persons. The following suggestions are made to correct the above difficulties.

* To aware people more.
* To change the attitude of people for check up and blood testing by qualified doctors.
* To promote immediate treatment
* To take complete doses
* Government should take action such as to legalise NGOs to give radical treatment which will result in gametocidal reduction in society. So gametocite tramission will not be possible.
* Accumulation of waste water should be stopped.
* As we have not tested the DDT response in the area so it can be used as first choice. If it is not effective then other chemicals can be sprayed.
* To control gametocite in the population radical treatment should be given. Primaquine should be given with chloroquine from the first day of treatment.

X. APPENDIX: A. COPY OF HOUSEHOLD SCHEDULE USED

STUDY ON EFFECTIVENESS OF MALARIA CONTROL ACTIVITIES IN BALISANKARA BLOCK OF SUNDERGARH DISTRICT

SCHEDULE OF ENQUARY

STATE: ORISSA PHC: KINJIRIKELA

DISTRICT: SUNDARGARH G.P.:

BLOCK: BALISANKARA VILLAGE:

Name of Head of the Household: Family Type:

Name of the Respondant: Religion:

Caste: Monthly Income:

A. HOUSEHOLD PARTICULARS:

Sl. No.	Name	Age	Sex	Marital Status	Literacy	Occupation
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						

10.

B. HOUSING CONDITION:

1. Type of House:

a) Katcha b) Pucca c) Semi Kutcha

2. Latrine Facility:

a) Open field b) Flush c) Barapali d) Others (specify)

3. Cowshed:

a) Attached b) Not attached

4. Garbage Disposal:

a) Near the house b) Away from the House

5. Drainage:

a) Open and Stagnant b) Open and Running

c) Closed

6. Drinking water:

a) Open well b) Stream c) pond

d) Bore well e) Govt. supply (tap)

f) others (specify)

C. FEVER CASES (WITHIN LAST ONE YEAR):

Sl. No.	Name	Age	Sex	Duration of illness	Type of treatment	Place of treatment
1.						
2.						
3.						
4.						
5.						

D. MORTALITY CASES (WITHIN LAST ONE YEAR):

Sl. No.	Name	Age	Sex	Duration of illness	Place of treatment	Cause of death

1.
2.
3.

E. BLOOD TESTING REPORT (Persons suffering from fever at present and/or since last 15 days)

Sl. No.	Name	Age	Sex	Test report (pv/pf/-ve)	Chloroquine taken before blood collection (Yes/No)
1.					
2.					
3.					
4.					
5.					

F. KNOWLEDGE ABOUT MALARIA:

1. Do you know about a disease called malaria ?

a) Yes b) No

2. What are the signs & symptoms of malaria ?

a) Periodic Fever b) Fever with chill

f) Sweating

d) Head ache/Body ache e) High Fever

g) Any other (specify)

3. Do you know that blood testing is done to detect malaria ?

a) Yes b) No

4. What is the cause of malaria ?

a) Mosquito bite b) Stagnant water

c) Drinking water from the pond

d) Dirty environment e) Malaria parasite

f) Others (specify)

5. How can malaria be prevented ?

   a) Using mosquito nets.
   b) Using insecticides/mosquito repellants/ mosquito coil
   c) Consuming chloroquine tablets
   d) Smoke of neam leaves, dry cow dung, rice husk
   e) Clean environment
   f) Completly covering the body with clothes
   g) Clearing stagnant water
   h) Others (speficy)

6. Usually in which season people suffer from malaria ?

   a) summer b) rainy c) winter

   d) other (specify)

7. What is the treatment of malaria ?

   a) Chloroquine tablets b) Don't know

   c) Any other (specify)

F. EFFECTIVENESS OF MALARIA CONTROL ACTIVITIES:

1. Do you know the health worker/malaria worker in your area ?

a) Yes (go to question no 2)

b) No (go to question no 8)

2. Does he/she visit your home ? a) Yes b) No

3. If yes, how frequently ?

4. Does he/she gives malaria tablets to fever patients ?

a) Yes b) No

5. Does he/she collect blood for malaria testing ?

a) Yes b) No

6. Does she/he spray some chemicals to prevent mosquito breeding?

a) Yes b) No

7. If yes, how often ?

8. Is malaria tablet available in your village ?

a) Yes b) No

9. If yes. Where ?

a) Anganwadi Centre b) Any other (specify)

10. Do you bring malaria tablets from there ?

a) Yes b) No

11. Give the names of voluntary organisations working on malaria control in your area ?

a) b) c) Don't Know

12. What steps they are taking to prevent and control malaria in your area ?

a)
b)
c)

Name of the Investigator:
Signature of the Investigator: Date:

B. Coding Key

Family Type

1. Nuclear
2. Joint
3. Single

Religion

1. Hindu
2. Christian
3. Muslim
4. Other

Caste

1. SC
2. ST
3. OBC
4. General

Annual Income in Rupees

1. Upto 5,000
2. 5,000 to 10,000
3. 10,000 to 15,000
4. Above 15,000

Sex

1. Male
2. Female

Age in years

1. Below 1
2. 1-5
3. 6-15
4. 16-25
5. 26-35
6. 36-45
7. 46-55
8. Above 55

Marital Status

1. Married
2. Unmarried
3. Widow
4. Widower

Literacy

1. Illiterate
2. Literate
3. 1st to 5th standard
4. 6th to 7th standard
5. 8th to 10th standard

6. Matriculate and above

Occupation

1. Agriculture
2. Service
3. Business
4. Agr. Labour
5. Regular Labour
6. HHL
7. NLF
8. Artisan
9. Others

Type of house

1. Kutcha
2. Pucca
3. Semi kutcha

Latrine facility

1. Open field
2. Flush
3. Barapali
4. Others

Cowshed

1. Attached
2. Not attached

Garbage Disposal

1. Near the house
2. Away from the house

Drainage

1. Open and stagnant
2. Open and running
3. Closed

Drinking Water Source

1 Open Well

2. Stream

3. Pond

4. Bore Well

5. Govt. Supply (tap)

6. Others

Duration of illness in days

1. 1-5
2. 6-15
3. 16-30
4. Above 33

Type of treatment

1. Allopathic
2. Homeopathic
3. Ayurbedic
4. Others
5. No treatment

Place of treatment

1. Hospital
2. PHC
3. Subcentre
4. Quack
5. Anganwadi/DDC
6. Home
7. Others

Blood test report

1. Pv
2. Pf
3. -VE

Chloroquine taken before blood slide collection

1. Yes
2. No

Signs and symptoms of malaria

1. Periodic fever
2. Fever with chill
3. Sweating
4. Headache
5. High fever

6. Any other

Cause of malaria

1. Mosquito bite
2. Stagnant Water
3. Drinking water from the pond
4. Dirty environment
5. Malaria parasite
6. Don’t Know
7. Others

Prevention of malaria

1. Using mosquito nets.
2. Using insecticides/mosquito repellants/ mosquito coil
3. Consuming chloroquine tablets
4. Smoke of neam leaves, dry cow dung, rice husk
5. Clean environment
6. Completly covering the body with clothes
7. Clearing stagnant water
8. Others
9. Don’t Know

Malaria season

1. Summer
2. Rainy
3. Winter
4. Others

Treatment of malaria

1. Chloroquine tablets
2. Don’t know
3. Any other

Frequency of visit by health worker/malaria worker

1. Once a week
2. Twice a week
3. Once a month
4. Twice a month
5. Once a year
6. Twice a year

Place of availability of malaria tablets

1. Anganwadi centre
2. Drug Distribution Centre

3. Medicine Shop
4. Any other

C. Operational Definitions :

1. Study in this report means study on Effectiveness of malaria control activities in Balisankara Block of Sundargarh district.

2. Sex ratio : Number of females per 1000 population.

3. ST : Scheduled Tribes

4. OBC : Other Backward Classes

5. Agr. : Agriculture

6. HHL : Household Labour

7. NLF : Non Labour Force

8. Infant : Child below the age of 1 years.

9. LB : Live Birth

10. SB : Still Birth

11. TBA : Trained Birth Attendants

12. ANM : Auxillary Nurse Midwife

13. Pv : Plasmodium vivax

14. Pf : Plasmodium falciparum

15. -VE : Negative