

Willingness to Pay for Community Health Financing: An Approach to Financing and Sustainability of Integrated Community Case Management of Childhood Illness in Rural Communities in Niger State

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Authors' contributions

This work was carried out in collaboration among all authors. Author IMS designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Authors AA and MDS managed the analyses of the study. Authors YFI and BEA managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Introduction: Community based health financing mechanism is referred to as a process whereby household in a community finance or co finance the recurrent and capital cost associated with a given set of health services thereby also include management of financial scheme and organization of health services.

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Iccm as a strategy to providing integrated case management services for two or more illness including diarrhea, malaria, pneumonia among children from two to upto five years. It is a community approach where lay persons are trained on management of the three diseases. This approach is being funded by foreign donor. However, there was stipulated period in which this support would elapsed and the support from the state Government may not be feasible. In an attempt to source for financing of iccm, this study aim at determining the willingness of the caregiver to use Community financing approach through payment of Premium to finance this community intervention (iccm). The concept of willingness to pay is maximum price a consumer is willing to pay for a given product or services.

Materials and Methodology: A descriptive Cross sectional study was carried out among four hundred respondents that were selected using Multi stage sampling technique. Data was collected, coded and entered into a computer. Analysis was carried out using SPSS. Chi Square and logistic regression was used as a test of significance. Level of significance was set at Pvalue less than 0.05.

Results: Twenty two percent of the respondents had good knowledge of iccm activities. Less than half of the respondents 41.3% were satisfied with iccm activities. Majority of the respondents 93.3% were willing to pay. Out of this, half of them 50.0% said they could only afford to pay less than 1000 naira per annum and 72.8% said the convenient time to pay was during the harvesting time. Factors influencing willingness to pay include Age, marital status and income level (Pvalue <0.05). Knowledge and level of satisfaction were not influencing factors. The predictor of willingness to pay are aged 38-47 years and income of less than 5000 naira.

Conclusion and Recommendation: There was willingness of the respondents to contribute for financing and sustainability of iccm in Niger State but the amount the majority of them were willing to pay was less than 1000 naira which might not able to sustain the iccm activities. There may be need for further research to determine amount needed for the annual activities and hence sustainability of iccm. The Government should show much responsibilities toward financing of iccm. Bi-apartite arrangement could be made between State Government and the Communities with iccm in place on how to share some responsibilities of iccm activities.

Keywords: Community health; ICCM; childhood illness; health financing.

1. BACKGROUND INFORMATION

Community based health financing mechanism is referred to as a process whereby households in a community finance or co-finance the recurrent and capital costs associated with a given set of health services, thereby also involve in the management of the community financing scheme and organization of health services [1]. The introduction of the community based Health financing provides an avenue for the patrons of social organization in the community, philanthropist, non- governmental organizations, town unions to subsidize the cost of the health services through the scheme by paying a portion of the required premium, while the poor households who are the beneficiaries pay smaller contribution to the scheme [2]. This is to ensure mentality of ownership and allow for efficiency and continuity of the scheme. Four main functions of the health system are taking into consideration: health financing, the resource generation for health, the provision of health services, and the government stewardship [3]. In health financing function, in which community

based financing is structured, its objective is to ensure that enough fund are made available so that people are assured of access to effective personal and public health care. Three sub functions in health financing include, fund pooling, revenue collection and purchasing. Revenue collection can be defined as a way by which the health system determine and obtains financial contributions from household, enterprises, organization and donors. In the pooling subfunction, contributions from various sources are gathered together and managed in order to spread the risk of payment for health care among all households, instead of individual paying for the health services. Purchasing is defined as a method by which the accumulated contributions are used to pay provider to deliver a set of specified or unspecified health services. Government stewardship is referred to as government's overall responsibilities for the health of its citizen through monitoring, regulation and guidance.

The concept of willingness to pay is the maximum price a given consumer accepts to pay

for a product or services [4]. This concept first appeared in economic literature more than a century ago [4]. Willingness to pay and its method were used to determine prices for public goods and services [4]. There are various methods of conducting willingness to pay [5]. These include Contingent valuation, conjoint Analysis and choice modeling [5]. However CV is increasingly being used in health sector globally and in Nigeria [6]. It is a valid technique for measuring cost benefits of goods and services where market do not exist [7]. The method is used in environmental, health and social sector to set prices of services and cost benefit analysis [8]. There are various factors that influence willingness to pay, this include household size, level of Education, occupation and household income [9].

In the mid 1990s, WHO, UNICEF and other Technical partners initiated a strategy known as IMCI to reduce childhood mortality and to promote growth and development among children less than five years [10]. In a multi country study, the result showed that improving the quality of care in primary health facilities was not enough to improve low utilization and achieve universal coverage [11]. They concluded that healthcare should not be at the health facility alone, more effective ways of reaching the children with scientifically proven interventions at home should be developed to reduce mortality [11]. Similar study was also carried out and similar findings was observed [12].

In 2000, WHO and UNICEF in collaboration with other partners developed what is known as iccm to bring health care closer to home and advocated low and middle income countries to adopted it [13]. iccm is an approach to providing integrated case management services for two or more illness, including diarrhea, malaria and pneumonia among children from two months to up to five years by iccm trained lay workers at a community level that has limited access to health facility base case management services [14]. There are three components [15].

- Training and deployment: This process of recruitment of eligible lay personnel trained on iccm guidelines developed by WHO/UNICEF and deploy to communities that has limited access to health facilities
- System component: This is health system strengthening, procurement of commodities that are specifically for iccm and deploy to various lay workers in

various communities. Supportive Supervision of these lay workers and intermittent evaluation.

- Communication and community mobilization component: This is an intervention with the main purpose of mobilizing the communities in accessing the services of the providers through communication media.

In Nigeria, about 55% of the population live in rural communities and do not have access to modern health care services [16]. Furthermore out of pocket expenditure on health is over 60% of the total medical expenditure and this has serious consequence on the rural communities in view of the high level of poverty [1]. Some rural communities are far away from health center and are hard to reach because their roads are not motor-able hence they have limited access to case management services. All these have cumulative effect on childhood mortality. It is on this note Integrated Community Case Management of childhood illness was developed and has been found to reduce this indicator [16]. However, most of the resources used in financing the iccm came from foreign Donor which is not sustainable. In Niger State, the budget line earmark for health sector is usually below the Abuja Declaration of 15% (2011). In addition, other sectors compete with health sector taking into account the meager resources available to the Government of Niger State. So in view of the above the State may not be able to finance the activities of iccm fully.

This study aim to determine willingness to pay for Community Health Financing of the iccm by rural communities with iccm intervention in Niger State.

2. MATERIALS AND METHODS

Niger State is one of the states that constitute North Central region in Nigeria. It is bounded in the North by Kaduna, Kebbi states, in the West by Benin Republic, in the East by FCT and in the South by Kwara State. It has a population of [17] 5,556,247 and projected population of 6,308,295 as at 2020. The State is divided into zones A,B and C. It has 3 major Ethnic groups drawn along the zones. Zone A are mainly Nupe, Zone B – Gwari and Zone C- Hausa. Number of settlements with iccm in zone A is 769 Zone B 722 is and Zone C 638 respectively. About 2,129 CORPS are currently working with iccm. The inclusion criteria for respondents that participated in the study included:

- Respondents above 18 years,
- Respondents that have visited a CORPS in their settlements
- Respondents that are living in their settlements for more than 6 months.

The study was Cross Sectional Descriptive Study. The minimum sample size for the study was determined using fisher formula for a population greater than 10,000 [18].

$$n = \frac{Z^2pq}{d^2}$$

Where

n – Minimum sample size when population >10,000

z - Standard normal deviate corresponding to 95% confidence interval

p – Proportion of wiliness to pay

1 – p = Proportion of Not willing to pay

d= Degree of Accuracy

After calculation the result obtained was 304 and finally arrived at 338 taking into consideration Non response. However for this study four hundred(400) respondents were used. The respondents were selected using Multi- Stage Sampling Technique. One LGA with iccm in place was chosen from each zone by simple random sampling technique.

The number of respondents that participated from each zone was determined by proportional allocation. From the LGA chosen in each Zone, The settlements with iccm in place was determined and one was chosen by simple random sampling technique. Number of households in each of chosen settlement with iccm in each LGA was determined. A sampling frame was formed for each settlement and respondents were chosen by systematic sampling technique. The eligible respondents from the households were chosen by Simple random technique by balloting.

Three research assistants were recruited, one from each zone, trained on data collection using interviewer administered questionnaire.

Ten percent 10% of the questionnaire was pretested. The questionnaire was translated into three major languages and back translated into English by independent bodies. Interviewer administered semi structured questionnaire was used to collect data. The questionnaire was

developed by the researcher in line with contingency valuation with polychotonous choice elicitation modeling. Questionnaire, where the respondent has option of more than two as oppose to dichotomou choice. Researchers concerning WTP elicitation method has led Contingent Valuation researchers to prefer Dichotomous Choice valuation questions because Dichotomous questions are relatively easy to answer since the options are only yes or no, Dichotomous questions are relatively similar to actual market transactions which increase the respondents familiarity with the contingent market and Validity of WTP [19]. However, with Polychotomous questions, respondents are given multiple choice hence they provide more information's compare to Dichotomous questions. Also, something about the strength or certainty about the underlying preferences are known in addition to whether the respondents would be willing to pay or not. National Oceanic and Atmospheric Administration (NOAA) panel on Contingent Valuation recommended that Dichotomous WTP format should contain a middle response, a form of Polychotomous questions in oder to increase reliability of Contingent Valuation for estimation of passive use values. In a study to determine construct validity of the Polychotomous and Dichotomous questions, the result shows similarity in term of Convergent Validy, Internal Validity and Statistical precision [19].

Data was analyzed using SPSS. A software use in data analysis. The result was displayed in Tables, figures. CHI Square and Logistic regression were used to test association.

3. RESULTS

The modal age group was 28-37 yrs. Majority of the respondents 96.0% were married. Majority of the respondents 74.0% had household size greater than 5. Quranic Education was the major level of Education 26.7%. Farming was the major occupation 47.3%. Majority of the respondents 28.2% received less than ₦5000. Forty one percent (41.0%) of the respondents had high utilization of the corps services.

Less than half of the respondents had poor knowledge of the iccm (22%). Majority of the respondents had fair knowledge (52%). While 26% of the respondents had poor knowledge.

Table 1. Socio-demographic characteristics of the respondents

Variables	Frequency	Percentage
Zone		
A	125	31.2
B	112	28.0
C	163	40.8
Age groups		
< 28	57	14.2
28 – 37	128	32.0
38 – 47	119	29.8
48 – 57	67	16.7
58 – 67	23	5.8
> 67	6	1.5
Gender		
Male	313	78.2
Female	87	21.8
Marital Status		
Married	384	96.0
Single	1	0.2
Divorced	3	0.8
Widowed	12	3.0
Type of marriage		
Monogamy	234	58.5
Polygamy	166	41.5
Household size		
< 5	104	26.0
≥ 5	296	74.0
Tribe		
Nupe	260	65.0
Hausa	26	6.5
Gwari	92	23.0
Others	22	5.5
Level of education		
Uneducated	85	21.3
Primary	50	12.5
Secondary	64	16.0
Tertiary	94	23.5
Quranic	107	26.7
Occupation		
Unemployed	12	3.0
Private employed	22	5.5
Government employed	61	15.2
Farming	189	47.3
Self employed	116	29.0
Income ('000)		
< 5	113	28.2
5 – < 10	102	25.4
10 – < 20	65	16.3
20 – < 30	21	5.3
≥ 30	99	24.8
Religion		
Islam	378	94.5
Christianity	21	5.2
Traditional	1	0.3
Number of corps visit		
Low utilization	79	19.8
Moderate utilization	157	39.2
High utilization	164	41.0

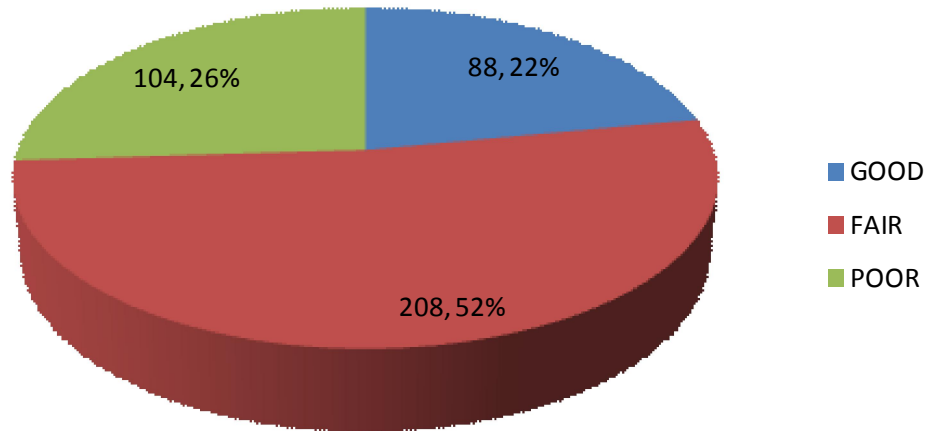


Fig. 1. Pie chart showing knowledge gradients of the respondents on ICCM

More than half of the respondents were strongly satisfied with the skills of the corps, time spent with the caregivers and listening skills. More than half of the respondents were just satisfied with other items except referral system which is less than half. However, significant number of respondents 29.0% were unsatisfied with the referral system by the corps.

Less than half of the respondents 41.3% were satisfied with the iccm While majority were unsatisfied 58.7%.

Majority of the respondents 93.3% were willing to pay to sustain iccm. Out of these respondents, 50% were willing to pay less than ₦1000. And majority of them 64.4% were willing to pay twice per year. Harvesting period was the time majority of them 72.8% were willing to pay and 86.6% of them said they would continue to pay as long as iccm continue to exist. The major reason given by those who were not willing to pay for a long time was due to low income.

The econometric model used is shown below

$$Y = @ + B1X1 + B2X2 + B3X3 + \dots + U$$

Where Y= WTP in Naira

@= Constant

B= Coefficient

X= Variables

X1= Age

X2= Marital Status

X3= Income

U=Random error

3.1 Logistic Regression

Age 38 -47years and income less than ₦5000 are predictors of willingness to pay.

4. DISCUSSION

In contrast to the report, Which stated that 92.3% of the study participants have knowledge about ICCM service [20], this current study showed that minority (22.0%) of respondents have good knowledge about ICCM activities. The reason may be connected to low level of Education among the respondents.

With regards to level of satisfaction among respondents, this study show that majority of the respondents (58.7%) were unsatisfied with the services. This does not agree with reports from a study in Uganda which stated that most of the care Givers were satisfied with ICCM services [21], Poor level of satisfaction may be due to referral of caregiver which may not be acceptable to the caregiver.

Majority of the respondents 93.3% were willing to pay to finance iccm and half of them 50% were willing to pay only less than ₦1000. There is no research conducted to determine willingness to pay for iccm activities in the past. However in a related study to determine willingness to pay for community health insurance shows that 77.8% of the respondents were willing to pay for insurance [22] and in a study carried out in Kwara State of Nigeria 53.1% said they could afford premium of only between 500 to 1000 [23] which is similar to this study. Although majority want to pay but the amount willing to pay would not be able to support and sustain iccm because of cost of drugs and other commodities. The reason may be due to low income.

Table 2. Client satisfaction scores

Variables	Strongly agree (%)	Agree (%)	Indifferent (%)	Disagree (%)	Strongly disagree (%)
Corps in the community has skills in treating children	274 (68.5)	121 (30.3)	5 (1.3)	0 (0.0)	0 (0.0)
Corps listen before examination and drug prescription	211 (52.8)	185 (46.3)	4 (1.00)	0 (0.0)	0 (0.0)
Corps take enough time	203 (50.8)	192 (48.0)	5 (1.3)	0 (0.0)	0 (0.0)
Corps explain what is needed to be known about child	189 (47.3)	207 (51.8)	4 (1.00)	0 (0.0)	0 (0.0)
Gives good advice and treatment	181 (45.3)	215 (53.8)	4 (1.0)	0 (0.0)	0 (0.0)
Friendly and helpful	166 (41.5)	230 (57.5)	4 (1.0)	0 (0.0)	0 (0.0)
Answer questions	136 (34.0)	260 (65.0)	4 (1.0)	0 (0.0)	0 (0.0)
Exhibit good attitude towards care givers during consultation	136 (34.00)	259 (64.8)	5 (1.3)	0 (0.0)	0 (0.0)
Tells caregiver what is wrong with their child	125 (31.3)	270 (67.5)	5 (1.3)	0 (0.0)	0 (0.0)
Tells caregiver when to return for follow up	130 (32.5)	365 (65.8)	6 (1.5)	0 (0.0)	1 (0.3)
Privacy during consultation	111 (27.8)	283 (70.8)	5 (1.3)	0 (0.0)	1 (0.3)
Confidentiality during consultation	124 (31.0)	271 (67.8)	5 (1.3)	0 (0.0)	0 (0.0)
Efficiently respond to caregiver	137 (34.3)	254 (63.5)	4 (1.0)	5 (1.3)	0 (0.0)
Refers immediately and responsively	114 (28.5)	155 (38.8)	4 (1.0)	116 (29.0)	11 (2.8)

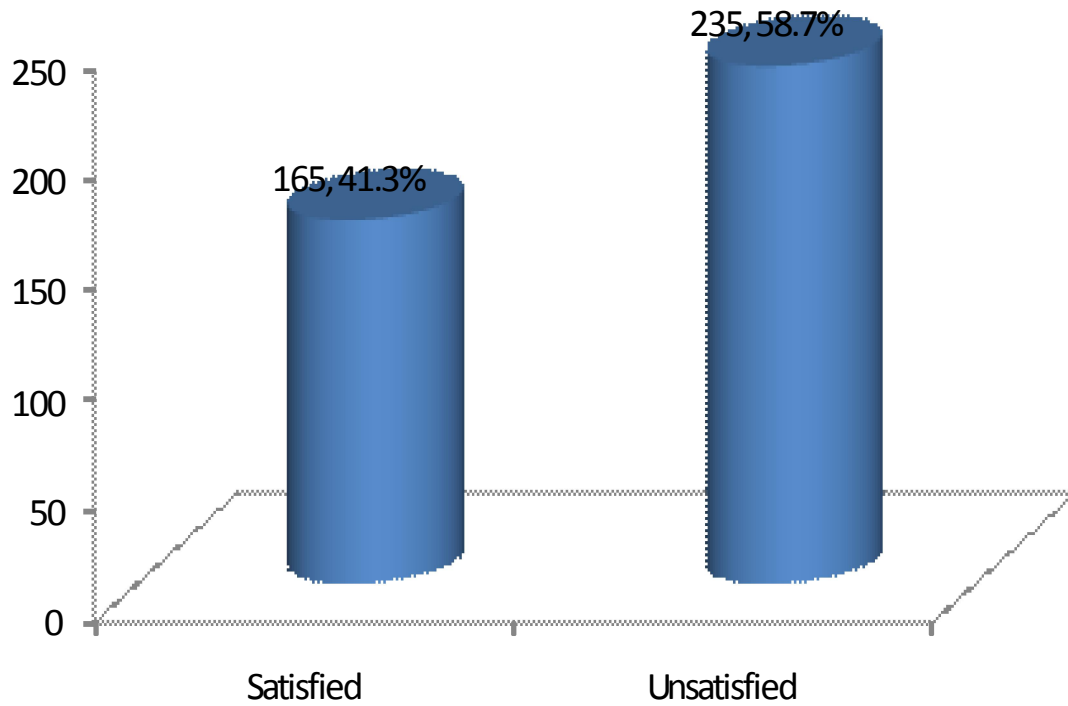


Fig. 2. Level of satisfaction of the respondents

Table 3. Willingness to pay by the respondents

Variables	Frequency	Percentage
Willing to pay to help finance ICCM		
Yes	373	93.3
No	23	5.8
Do not know	4	1.0
Amount willing to pay ('000)		
n=373		
< 1	187	50.0
> 1 – 5	130	34.9
> 5 – 10	44	11.7
> 10	12	3.2
Number of times willing to pay to meet up		
Once	56	14.9
Twice	240	64.4
Thrice	77	20.5
Time convenient to pay		
Harvesting period	271	72.8
During planting season	7	1.9
Any time	95	25.3
Period of payment		
Short period of time	12	3.2
Cannot say	38	10.2
As long as ICCM continues	323	86.6
Reasons for short period and cannot say		
n=50		
Due to financial problems	12	24
Low income	31	62
Inconsistent income	4	8
Others	3	6

Table 4. Predictors of willingness to pay for ICCM

Variables	P-value	Odd ratio	95 % CI
Age groups			
< 28	0.061	0.151	0.021 – 1.091
28 – 37	0.032	0.133	0.021 – 0.841
38 – 47	0.005	0.052	0.007 – 0.401
48 – 57	0.092	0.197	0.030 – 1.306
58 – 67	0.399	0.421	0.056 – 3.145
> 67	(RC)		
Marital status			
Married	0.935	0.918	0.117 – 7.224
Single	(RC)		
Income ('000)			
< 5	0.033	0.102	0.012 – 0.827
5 – < 10	0.386	1.517	0.592 – 3.886
10 – < 20	0.797	1.157	0.382 – 3.503
20 – < 30	0.998	< 0.001	< 0.001 – 1.000
≥ 30	(RC)		

With regards to willingness to pay for ICCM in association with socio-demographic status of respondents, this study has shown that majority of respondents who are willing to pay for ICCM are those that are married. Also, those who earn more than 30,000 naira showed more willingness to pay for ICCM than those who earn less. Furthermore, respondents who are less than or exactly 28 years of age are more willing to pay for ICCM. All these sums up why age, marital status, and level of income were proven to be statistically significantly associated with the willingness to pay for ICCM. This is consistent with a study in 2013, which reported that marital status, educational status, and average monthly income had significant effect as predictive variables on the outcome of ICCM service utilization among mothers [24].

However, findings from this study have also shown that Knowledge, level of satisfaction, awareness of winding up of ICCM and zone were not statistically significantly associated with the willingness to help finance ICCM among the respondents. In correlation with the reports from [25] the adoption of ICCM is relatively low. This study also revealed that Knowledge, awareness of winding up of ICCM were statistically significantly associated with the amount willing to pay among the respondents.

Socio-demographics in relation to amount willing to pay for ICCM among respondents in this current study, results has shown that majority of those who are willing to pay less than 1,000 naira are between the ages of 58-67 years and more two-third of those who are willing to pay less than 1,000 naira were females and only very few of

them who are males were willing to pay more than 10,000 naira. As regards level of education, more than half of those who were willing to pay less than 1,000 naira are respondents with quaranic education. Also, those with quaranic education are of the majority among the respondents who were willing to pay more than 10,000 naira. this result is slightly different from a study in Uganda [25].

Results of this study has shown that there is an association between social status of respondents and amount they are willing to pay with regards to knowledge and awareness of winding up of ICCM. In this study, half of the respondents who have good knowledge are willing to pay less than 1,000 naira whereas, very few (5.7%) of the respondents who are willing to pay more than 10,000 naira are those with fair knowledge. With regards to level of satisfaction, less than half who claimed to be satisfied are willing to pay less than 1,000 naira while very few (3.6%) of the respondents who showed some level of unsatisfaction were willing to pay more than 10,000 naira. Knowledge, awareness of winding up of ICCM were statistically significantly associated with the amount willing to pay among the respondents. In this current study, Tribe, level of education and number of corps visits were shown to be statistically significantly associated with the amount willing to pay for ICCM among the respondents.

5. CONCLUSIONS

The results of this analysis show that majority of the respondents were willing to pay to support iccm and majority of them said they could afford

only less than 1000 naira per annum. Level of knowledge of iccm was also poor among the respondents. Age 38-47years and income less than ₦5000 are predictors of willingness to pay.

Majority of factors that influence willingness to help in financing ICCM among respondents have a lot to do with service utilization. ICCM programs must be well utilized in order to boost demands for such services in communities. This requires activities that would encourage and promote utilization of ICCM. Communities need to be educated about the benefits of ICCM services. This can be done through the provision of adequate sensitization and mobilization activities, such as door-to-door campaigns. Doing so would help to improve ICCM utilization.

There is a major gap in literature as to determining the willingness to pay to support iccm activities in Nigeria. Therefore, further researches are needed to explore other ways of financing iccm activities other than foreign donors in Nigeria.

There may be need for further research to determine amount needed for the annual activities and hence sustainability of iccm. The Government should show much responsibilities toward financing of iccm. Bi-apartite arrangement could be made between State Government and the Communities with iccm in place on how to share some responsibilities of iccm activities.

ETHICAL APPROVAL

Ethical approval was obtained from the Ethics Committee of the ministry of Health. Permission was sought from individual Household Head.s.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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