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PERCEPTION & CARE-SEEKING PRACTICES OF PEOPLE IN A MALARIA ENDEMIC VILLAGE IN ODISHA: AN INDEPTH STUDY

Abstract

Malaria control strategies in rural areas in Odisha have been neglected since long. The reasons may be of its location- remoteness, inaccessible areas, non-availability of trained medical manpower or poor health infrastructure facilities. Keeping this in mind and the past emergency epidemic situation of Malaria diseases in remote rural areas, it is being felt necessary for assessing community perception and care seeking practices of people in a remote village not only for gathering knowledge of cure but also prevention practices being adopted by people for cure. In this paper the community involvement has been highlighted minutely through observing the living pattern and day-to-day activities, personal hygiene factors, regular use of long-lasting insecticidal nets, etc related to Malaria treatment and cure through in-depth study by using qualitative Anthropological research techniques. Care-seeking practices, prevention practice, cure strategies, acceptance and utilization of services before and during occurrence of malaria has been assessed minutely from local people.

Key Words: *Endemic Malaria, anthropological technique, Care seeking KBK.*

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Introduction

It is seen from studies that disease malaria is spreading to new regions and affected new population day by day. Strategies towards community understanding, their perceptions and practices in prevention and Control methods are being considered effective for Malaria disease control. Interventions into the socio-cultural dimensions of the community, adoption of healthy practices, strengthening the availability of effective and affordable health care practices has been considered as the key strategy of Malaria control

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in all malaria-endemic regions [Weatheral B.G & H.K Matin 1984]. There is evidence that the availability of services alone may not ensure healthy practices, as they could be influenced by socio-cultural barriers and inappropriate understanding of the disease etiology [Kumar A; N.Valecha et. al. 2007]. Community perceptions and attitudes are essential inputs to healthy behaviours as they influence the pathways to symptom recognition, perceived disease seriousness, utilization of services, and eventual health outcomes [Dash A. P; N Valecha et. al. 2008]. The state of Odisha has been reported as having the highest malaria cases not only among Indian states but also in the Southeast Asia region since 2000. The reasons for endemic malaria in rural areas attribute indigenous population, difficult terrains, low socio-economic development and less developed infrastructure [Vijayakumar KN et. al. 2009]. Malaria transmission is geographically limited; however, the hilly hard to reach and inaccessible areas of Southern and Western Odisha are regarded as the most focal in malaria and backward regions by the planning commission of India, which re-designated some of these districts as KBK in Odisha state. During 1992-93, the three larger districts (KBK) were re-organized into eight administrative districts viz. Malkangiri, Koraput, Nabrangpur, Rayagada, Kalahandi, Nuapada, Balangir and Sonepur. These eight districts comprise 14 Subdivisions, 37 Tehsils, 80 CD Blocks, 1,437 Gram Panchayats and 12,293 villages. The eight districts which form the KBK region account for 20.62% of the population and occupy over 30.59% geographical area of Odisha state. Around 90% of the people of this region still live in villages. The KBK districts have been historically rich in forest resources. Though, people have been using these forests very intensively for making out their livelihood from these sources but falling sick frequently due to Malaria. The focus of Malaria Programme in KBK areas witnessed a paradigm shift recently from health facility to community-based approaches. The current thrust is on diagnosing and treating malaria by community health workers and prevention through free provision of long-lasting insecticidal nets. However, appropriate community awareness and practices are inevitable for the effectiveness of such efforts. In this context, the present study assessed care seeking practice and perceptions of individual and community member and their actual practice before, during occurrence of malaria and similar febrile illnesses.

Rationale

Odisha in India has witnessed a slow reduction in disease burden, particularly of falciparum malaria, despite considerable investments on malaria control since 1947. Malaria programme in Odisha, India, is covered under the National Vector Borne Disease Control Programme (NVBDCP) which focus towards community-level management of malaria. Now, the village-based community health worker, known as Accredited Social Health Activist (ASHA), undertakes diagnosis and management of uncomplicated malaria in high-burden districts in India. In addition, malaria prevention is supported by the introduction of long-lasting insecticide-treated nets (LLIN). However, little is known about the knowledge, attitude and practice on malaria and the

determinants on community-based approaches in rural India in general and KBK areas in Odisha particular. Further, qualitative studies providing deeper understanding of the pathways of health care seeking behaviour of rural people on malaria are scarce in India. This study aimed at highlighting the community perceptions, practices and their determinants on the ongoing community-based malaria control programme in micro level in a Malaria endemic village.

Methods

Study setting

The study was conducted at Village Chabripalli under Buromal Revenue Village under Bhanapur GP, Khaparakhol Block in the district of Bolangir (KBK district) of Odisha between November 2002 to January 2004 and again revisited in November 2016 to January 2018, after a gap of 12 years to know the differences if any in perception of people in the study area.

Location of study area

Village Chabripalli in Bolangir district was chosen as the study area as it has witnessed highest malaria cases with three reported deaths due to malaria in the year 1999-2000-2001. It was also reported that more than 90% fever cases in the village were P. falciparum (pf) category. But during survey in 2002-2003 it was found that 60% fever cases in the village are still pf category and one death reported. However in 2016-2017 it was found that 60% fever cases in the village are still pf category but no death reported. Among the 8 KBK districts in Odisha, Bolangir district ranked first on the number of reported malaria death and severe malaria cases in the year 2002-2003 and the Village Chabripalli contributed major malaria cases including a death in the village as it was recorded high parasite incidence (API) above five (laboratory-confirmed malaria cases per 1,000 population).

Survey design

Anthropological survey design focused on qualitative methods namely: Identification of Community Gate Keepers, selection of Key informant for interview and focus group discussions (FGD) were carried out in the Village Chabripalli. The number of interview was decided on the basis of category of people available in the village. There were separate FGD samples for adult men, adult women (including Pregnant & Lactating women) and children aged 15 to 17 years, considering the cultural norm and opportunity for free expression of opinion. The discussions were organized at house of Gatekeeper, at village common places such as village middle point, school campus etc. First the Gate Keepers were consulted who had easy access to village. Villagers were contacted and the key informants were purposively selected according to their roles and responsibility with malaria service delivery and influence on the community in the study area. The key informant sample included malaria

staff from Government sector, medical officers/ malaria laboratory technicians, female health workers /Auxiliary Nurse Midwife (ANM) Anganwadi Worker(AWW)/ Accredited Social Health Activist (ASHA)/school teachers/, traditional healers / Private Practioner (PP), and local leader (PRI members). The moderator and the reorder were trained for this purpose at RMRC-ICMR, Bhubaneswar.

Data collection and analysis

The interview was structured on the themes on community perceptions on malaria and care seeking practices. The objective of Key Informant Information (KIIs) was to understand the community's perceptions and care seeking practices from the perspective of the villagers, service providers and opinion of local leaders. The FGDs and KIIs conducted in the local language "*Odia*". The FGDs took about 40 to 45 min and had seven to eight participants each, whereas KIIs ran for 30 to 40 minutes without any time/ date schedule. The FGDs and KIIs were recorded manually as no other facilities are available in the study village. All participants expressed their views voluntarily.

Ethical considerations

The community members were well informed about the aim of the research a week prior to the interviews either by the local Panchayat Member(Sarpanch/ Ward Member/Samiti Member) or Village head, health workers or teacher available in the Village. The key informants were contacted individually. Prior to each discussion or interview the purpose of the study and intended utilization of the information were explained to the participants. Participation was voluntary and participants had the liberty to deny answering any question or withdraw at any point of time. The study was conceived, planned and implemented by the RMRC (ICMR), Bhubaneswar and necessary approval was obtained from the Ethical Committee of Regional Medical Research centre, Bhubaneswar in the year 2001-04 as the part of KBK Malaria Project. For this purpose a written consent in read/ signed by the informants has been done for record.

Results

A. Local terminologies of disease Malaria and illness perceptions:

Malaria is locally familiar as '*Palli Jwoor*' , a term derived from the biomedical nomenclature and there was no vernacular name in the study village. '*Palli Jwoor*' included a cluster of symptoms closely resembling the biomedical presentation of malaria. All respondents ranked feverish condition, weakness, lack of zeal for work as the most common disease or health condition in their locality in the year 2002-2003 and again revisited in the year 2016-2017. Other perceived common ailments described by people were diarrhoea, common cold, skin diseases, typhoid, and Cough disease (suspected tuberculosis).

In the Focus Group Discussion the **First respondent (***a Male participant)* was mentioned that **,** *"*Now *days wherever you go inside or outside village, you would notice only 'Palli Jwoor' complain patients. Whatever fever a person suffers from, the doctor tells it is "Malaria" or 'Palli Jwoor' in this area. "*

The **Second respondent (***Health Worker of Khaprakhol CHC* and visiting health personal to Chabripalli Village) was mentioned that **, "**Malaria *is familiar in this area and local people are calling as 'Palli Jwoor , " Visan Jwoor"* or "Maalariia". People prefer to take home treatment then treatment available inside village level and if not cure then they prefer to approaching PHC when the fever is in pick/ severe stage of *illness ".*

The **Third respondent** *[an Old Male FGD participant, Chabripalli]* was mentioned that**, "***In our area small flies, pigs and even Cockroaches are responsible for 'Palli Jwoor'. You will surprise to know that drinking forest stream water is the Main Cause of Palli Jwoor in this area". "*

The above three responses leads to following **analysis** as follows**:** The participants reported multiple causes of malaria. There were diverse responses, two represented the majority, i.e., forest spring water and small flies. Consuming forest spring water is thought to cause malaria. People who venture into the forest to collect firewood and forest produce are perceived to suffer from malaria through bathing and drinking water from forest rivulets. Participants who reported small flies to be the cause of Malaria had differences of opinions on how the flies are difference from mosquitoes and responsible for spreading the disease. Many opined that malaria was transmitted through small flies (Gunddi pooka) and forest based big mosquito bites. For some it was through exposure to fruits, leaf and water contaminated with infected mosquito eggs.

B. Causes of malaria as perceived by People in the locality

Before the focus group discussions, discussions were held to generate a list of possible causes of Malaria to be presented to Focus Group participants. The findings are as follows:-

In the Focus Group Discussion the **first respondent (***Male FGD participant, Chabripalli)* was mentioned that**,** *" When we go to the forest, we have to drink water and take bath in the streams and rivulets. Upon our return we develop 'Palli Jwoor' ". The* **second respondent** *[Female FGD participant, Chabripalli]* was mentioned that **,** *" Villagers do not cover the food items. When mosquitoes and flies sit on it, they contaminate the food. If one eats that food, it causes 'Palli Jwoor'. "The* **third respondent** *[Medical Officer, Chabripalli]* was mentioned that**,"** *You see…here majority people are illiterate or little literate and superstitious. Their level of awareness is very low. They have their own ideas for the aetiology of every disease, for instance, they say*

drinking forest stream water leads to malaria. "The **fourth respondent** *[Malaria laboratory technician, Khaprakhol CHC]* was mentioned that **,** *"We have been conducting so many awareness sessions in the village for community interest for blood testing in PHC. Despite that we don't see much improvement."* The **fifth respondent** *[Male FGD participant, Chabripalli]* was mentioned that *" In the rainy season we cultivate paddy. Water accumulates in the farms and we have plenty of mosquitoes. More mosquitoes mean more 'Palli Jwoor". The* ***sixth respondent*** *[Female FGD participant, Chabripalli] was opined that. "In 'Palli Jwoor,' when the temperature goes up, the patient shivers, head becomes heavy and aches, whole body aches and vomiting takes place with the loss of appetite. The fever comes and goes on alternate days. "In addition to this m*ost respondents opined that malaria, if not treated timely will lead to jaundice, typhoid, *brain Palli Jwoor*(cerebral malaria) and eventually death. The reported timeframe for developing these complications varied from six to seven days for typhoid, and to 12 to 14 days for jaundice and cerebral malaria. The **seventh respondent** *[Female school student, Chabripalli]* mentioned that, *"If a 'Palli Jwoor' patient does not take medicines, the fever climbs up to the head and he behaves like mad and become hostile. This is locally called as "Mundaa Jwoor". One of my village friend became sick and died because of this. "*Besides above in the FGD discussion other participants reported higher incidence of malaria during the rainy season and the least during the dry period. Some could relate rains leading to more mosquito breeding sites and hence more malaria. "Maalariia *or 'Palli Jwoor'* in the locality was characterized by a combination of symptoms, closely resembling the clinical presentation of malaria. The FGD participants identified malaria as a febrile illness associated with severe shivering and headache.

The above matter can be analyzed in following way**:** All participants were able to state the symptoms of Malaria. However, majority perceived feeling cold, shivering, fever, intermittent fever, vomiting, and headache as malaria symptoms. Thrilling as a symptom was reported to be more commonly associated with malaria among men. Similarly drowsiness, vomiting among women reported common in the locality. The male participants reported more malaria-specific symptoms than the female and the children. Participants were not able to differentiate other fevers from malaria. Almost all participants reported the treatment by a Govt. Doctor at the primary health centre to be the more effective than any private health providers in the locality. As discerned through the Key Informant Information (KII), health-care providers were aware of community perceptions and attributed the misconceptions regarding disease transmission to their low level of literacy and superstitions.

C. Prevention modalities as perceived by people in the locality

Malaria prevention methods were reported to revolve around maintaining personal and environmental hygiene and drinking safe water.

The **first respondent** *[Female FGD participant, Chabripalli]* was mentioned that, *" To prevent 'Malariia' / Palli Jwoor', clothes should be clean, water should be covered and hands should be clean. One should not go to outside especially to forest area with little cloth / bare body ". The* ***Second respondent*** *[Young Female, FGD participant Chabripalli]* was *mentioned that " If we drink boiled water and consume warm food then we will not suffer from 'Palli Jwoor'. The* ***third respondent*** *[An Old Female FGD participant, Chabripalli] was* mentioned that *" We burn neem leaves and bark, cow dung cakes, dried leaves, grain husk to smoke away mosquitoes when they are too much in our house site area. Here mosquitoes are not the sole responsible factor of "Malariia / Palli Jwoor " there are some other little flies which are responsible for "Malariia / Palli Jwoor" in the area. The* ***fourth respondent*** *[an Old Male FGD participant, Chabripalli] was mentioned that " We fumigate the house before we go to bed. Who cares after you are asleep? Besides as we are also rearing / keeping our country chicken inside the room so they cannot take rest if we do more fumigation in the living room where we all are taking night shelter. The* ***fifth respondent*** *(Male FGD participant, Chabripalli) was mentioned that " Mosquito nets cannot keep the mosquitoes away they will move around the Net and biting. Further one big net (double size) costs minimum Rs.200 / -(US$ 3) and we need many nets for a house as we are too many. From where shall we get this much money and ultimately it is of no use?. The* ***sixth respondent*** *[Teacher, Chabripalli Primary School] was highlighted that " Mahuli* (Country *Liquor) is a major problem in this region, which is an additional burden on the family. Here men are usually drinking liquor in every evening / night but during festival time and while performing ritual they drink more and more. They would borrow to drink liquor rather than buying a mosquito net for their safety. The* ***seventh respondent*** *[Anganwadi worker, Chabripalli] was mentioned that " Mosquito nets have been given to them and they are not using it by telling it is too hot inside. Some even catch fish from the canals during the rains. The* ***eighth respondent*** *[Female FGD participant, Chabripalli] was mentioned that " What kind of protection we will find if we sleep inside a old badnet ? Mosquitoes are entering through the holes and when we wake up in the morning we see a lot of mosquitoes in our badnet with their bellies full of blood. Despite sleeping under the nets, my two children got 'Palli Jwora' two months back.*

From the above discussion it was analyzed as follows**:** The community members are not fully convinced that mosquitoes are only responsible for Malaria but they pointed out small flies are the nuisance. All of them were reported to adopt some method of protection from mosquitoes/small flies during the rainy season when the vector is more prevalent. Among other methods, fumigating outside and inside the house in the evenings with dried leaves, husk, straw, or firewood was reported to be the most common way of avoiding flies/mosquitoes. Other reported prevention modalities were application of repellent oils out of neem (*Azadirachta indica*) and karanja (*Pongammia glabra*) seeds. Though most of the opinion that old mosquito nets cannot prevent

malaria, only a few respondents used them regularly. The reported reasons for irregular use were the lack of adequate nets in the household due to unaffordability, old or torn nets, a feeling of suffocation or heat inside the nets, exhaustion or intoxication at night that prevents proper use, and a preference to use nets for something else. FGDs respondents reported about using bed nets for fishing, filtering rice beer, setting traps to catch edible insects, and collecting Sal leaves (*Shorea robusta*) to stitch leaf plates. If nets are few in a household, there is a preference for the children (at times with their mothers) to sleep under it. The reported use of bed nets was higher among children and women than men in the locality. The possessed nets were reported to be never treated with an insecticide. Around half of the participants were skeptical about the efficacy of nets to prevent malaria as they perceived mosquitoes were not the only cause and mosquitoes also bite during the non-sleeping hours. During the summer season, reported net use was less as it was hot and humid inside the nets. Most of the adult men sleep under the open sky in summer, where it is difficult to hang the nets.

Reported care seeking for febrile illnesses

Despite developing fever and malaria-like symptoms, the majority of adult participants reported that care is not immediately sought for themselves. Rather they wait for few days and engage in home remedies like consuming bitter herbal concoctions or a paste made from neem leaves. If the situation worsens they seek care from the local traditional healer. The **first respondent** *[a Male FGD participant, Chabripalli]* was mentioned that, *" If we feel feverish, we think it might be weakness due to hard work. We wait and watch for two to three days." The Second respondent (an ASHA Worker in Chabripalli village) was mentioned that " Immediately these villagers don't come to me; suppose fever comes today then they won't come today. If it continues further, they come to me after a couple of days". The* ***third respondent*** *(A Mobile Private Health Practioner, (Gaon Doctor) mentioned that "* people in the area *First they go to 'gunia', perform 'jhada-phunka' (ritual blowing) and come to me after five to seven days. The* ***fourth respondent*** *[Health Worker, Chabripalli] was mentioned that " People consume tablets and visit the 'gunia' at the same time; despite knowing that the tablet works. They have a faith that they should be treated by him (faith healer) at any cost. ". The fifth respondent [Female FGD participant, Chabripalli]* was mentioned that, *" Children are more vulnerable to malaria. We take our children immediately to the health centre when they get fever. 'Private Doctors' don't have good medicines for the children; we can't take risk by treating children at home through them. "The* ***Sixth respondent*** *[Male FGD participant, Chabripalli] was mentioned that " With whatever fever we go to the 'private doctor', he tells it is 'Palli Jwoor' and you have to take high potency injections. We don't know much about the disease, so we have to obey him. " The* ***seventh respondent*** *[Village Petty shop-keeper]* was mentioned that *" Villagers believe that the more they have to undergo pain*

during treatment, the more effective it is. Though the tablets are cheaper; still the people are prepared to pay more for the injections. ". The ***eighth respondent*** *[Male FGD participant, Chabripalli]* was mentioned that *" With one injection it needs a day to recover as it goes directly to my blood, but consuming tablets will take at least two to three days. How my family will eat if I don't go to work for those days? We don't want to get into more trouble (drug side effects) by consuming tablets. ". The* ***ninth respondent*** *(Village shop-keeper, Chabripalli]* was mentioned that *" If a blood test is done, followed by three injections and an antibiotic, the cost comes to Rs.200-250.Only the malaria tablets would cost around Rs.50, with the antibiotic it will cost a bit more. However, we have to inject most patients as they demand it. The* ***tenth respondent*** *[Female FGD participant, Chabripalli] was mentioned that " When we realized that we are required to shift our family member suffering from 'Palli Jwoor' & is unable to move outside, we used to take hand-loan (haat uddhara) from our neighbor with mortgaging our valuable utensils/land etc. Like this we have cured our family members. ". The* ***eleventh respondent*** *[Male FGD participant, Chabripalli]* was told that *" By realizing our financial condition, the private medicine man sometime never demands for immediate payment of cost of injections and medicines. He advised us to get cure and make payment when we can afford. But it is our duty to arrange money for payment. We use to arrange money by borrowing from the neighbours , the local moneylender or mortgage or sell utensils, gold/silver ornaments, Chicken, Goats, Bullocks and even land. " The* ***twelfth respondent*** *[Male FGD participant, Chabripalli] was mentioned that " You see…the ASHA in the village does not have card test (RDT) and injections. How can we expect quick cure if you don't have these? The* ***thirteenth respondent*** *[Male FGD participant, Chabripalli] " Whenever we go to them (CHW), they would tell that medicines are not there, so we do not go to them nowadays ".*

Observation from the above study

Care seeking from the less qualified providers (LQP) is very common in the locality area by people considering their easy accessibility, use of modern medicine suitable for local need and flexibility in modes of payment. Most LQPs are familiar as Private practioner (Quacks). Quacks are either unqualified (without any education or training in medicine or allied health sciences), or less qualified (very little education or training in allied health science from an un-recognized health institution), but legally they are not allowed to practice modern medicine. Though the participants expressed their dissatisfaction with the providers' attitude and cost of care, their choice of a more convenient alternative is limited. The majority of the participants felt the less qualified providers are doing the work for their own profit without considering the villagers' welfare or financial hardship. The village-based traditional healers are not full-time professional health-care providers and most of them inherit the skills from their forefathers. In the locality, there were two types of

traditional healers: *'gunia/dissari'* (faith healer) and *'baidya'* (herbalist). A *'gunia/dissari'* resorted to sorcery and ritual blowing to ward off evil spirits. The *'baidya'* on the other hand, cured ailments using roots, tubers, leaves and their concoctions. Some traditional healers used both principles. Care seeking from these healers is more of a reflection of faith and some even rely on them while simultaneously seeking care from other providers. Afterwards, depending upon the progression of disease and perceived severity, care is sought from other health care providers or facility, such as the community health worker, multipurpose village grocery shops stocking antipyretics (paracetamol), analgesics, and anti-malarials (chloroquine); less qualified provider (locally known as 'private doctor'), and very rarely the primary health centre. Care seeking for women and elderly, in general, was reported to be delayed. However, immediate care is sought for infants and children from the public health centres as there is a perceived notion of seriousness of their situation and inability of the local providers' methods to ensure complete cure. The less qualified providers (LQPs) almost uniformly narrated the treatment for fever and malaria-like illness with an anti-malarial injection, an antibiotic, Paracetamol, iron and multivitamin syrups. There is a perceived advantage of injections in the community as they think that the injection directly delivers the medicine in their whole body, so it will give them quick relief and they will be able to resume their work early. On the other hand, the oral formulations would reach the body through the stomach and some have prior experience of side effects like dizziness, vomiting, or tinnitus with tablets. That is why, in certain cases, the patients demand injections. The treatment for an episode of fever in this fashion costs around INR 300 to 700 (US$ 7–15), and in case of complicated malaria it can reach up to INR 2,000 to 3,000 (US$ 45–65). This level of health-care expenditure puts severe burden on an average rural family with one breadwinner engaged in subsistence farming or wage labour. The peak malaria transmission season (June to September) coincides with the "lean" period when income is at a seasonal low. At times households have to borrow money from a moneylender with high interest rates or sell scarce assets such as land, jewellery, or livestock to arrange for the treatment. The growing presence of microfinance–related, women's self-help groups have helped to alleviate this burden, but not reduced the cost of expenditure. Visiting government health centre is time consuming, expensive and inconvenient as regular transport facilities are not available. There are community health workers in the villages or in the neighborhoods providing care free of cost, but they hardly get recognized as they do not use any 'injectable medicines' for Malaria treatment. The choice of providers is driven by faith and convenience (proximity, flexible payment modes, and perceived quick relief).

Discussion

Despite increasing investments in malaria control, access to prompt and effective treatment has remained a major challenge in most endemic

settings [Minja H; J.A Schellenberg et. al. 2001]. The inability to consider local contexts, perceptions and cultural dynamics while designing policies for malaria control can lead to suboptimal community acceptance. However, there is need for microscopic facilities for diagnosis of Malaria in village which can help in improving the existing health care system.

This study found that the community had adopted the biomedical-equivalent term of malaria, known as *'Palli Jwoor'* to describe a broad range of illness. Studies from Tanzania and in the Philippines also showed a similar phenomenon where local nomenclatures have evolved from the biomedical term [(Espino F; L.Manderson 2000), (Fong Y; I.Cardign 2000)]. This phenomenon may be due to their frequent exposure to the disease in the family and neighbourhood leading to regular interactions with the service providers. Further, awareness generation activities conducted in the community by the Government could be a contributor in this regard. The community's ranking of malaria as the most common disease was in tandem with the actual prevalence of disease and service providers' opinions. Malaria was perceived primarily to be a water-borne disease with facio-oral mode of transmission. Though the community recognized the role of mosquitoes in causing malaria, the perceived mechanism of disease transmission was often incorrect. Many stated multiple non-biomedical causes of disease transmission as reported from other endemic settings in Africa and Southeast Asia [(GranadoS; L. Manderson et. al. 2011), (Espino F; L. Manderson; et. al. 1997), (Dye TD; R. Apondi; E. S Lugada et. al. 2010) (Das A; T.S Ravindran 2010)]. It is worth noting that lack of proper understanding of the causal link between the disease and vector leads to inadequate use of preventive methods. This was evident in this study as the participants reported the use of inappropriate personal and environmental hygiene measures to prevent malaria.

Though community knowledge of the causes of malaria was not fully accurate, the symptoms enumerated were very similar to the clinical presentations. Respondents could clearly differentiate fever due to malaria from other fevers and were aware of the complications of malaria if not treated on time. This could be due to the community members' personal experiences of illness and the health awareness messages through community level health service providers. Women were found to be more aware of the symptoms than men, which could be explained by their role as the primary caregiver at home and close link with the female community health volunteers (ASHA).

Prevention modalities

The use of prevention methods was determined by four factors; (1) perception of causes and disease transmission; (2) mosquito nuisance; (3) affordability and (4) climate. The reported practices on maintaining personal and environmental hygiene for malaria prevention were consistent with the local perception of causes and disease transmission [Das A, TK Sundari Ravindran,2011]. Examples from the African settings also demonstrate incorrect

perceptions of disease transmission leading to inappropriate preventive behaviours without any change in malaria incidence [Atkinson JA; A. Bobogare et. al. 2009].

Mosquitoes were perceived more as a nuisance than a vector that spreads malaria. Thus, the adoption of prevention methods was confined only to seasons with high vector densities as evident from endemic settings in Africa [(Atkinson JA; L. Fitzgerald et. al. 2010), (Sood RD; P K Mittal et. al. 2010)]. Almost all participants reported adopting some method of driving the mosquitoes away during the rainy season, when their population substantially increases. Fumigation of the house by burning dry leaves and wood in the evenings was the most prevalent prevention method. The protection offered by this kind of fumigation will be the least when most malaria-spreading mosquitoes (even though less in number) bite late in the night. This specific behaviour fails to recognize that malaria vectors can effectively transmit the disease even at low densities. Affordability was a determinant of mosquito-net ownership, though the net was perceived to be an effective tool for protection from mosquito bites. Large family size and the typical sleeping patterns require a rural household to purchase multiple nets, which is beyond the financial capacity of many households. Considering the impoverished and vulnerable status of tribal communities, there is a clear ground for the state to provide them with either free or subsidized mosquito nets. Examples from Africa demonstrate improved health-seeking behaviour and health status after mass distribution of bed nets to vulnerable populations[(Snehalatha KS; KD. Ramaiah et. al. 2003), (Das LK; P. Jambulingam et. al. 2008)] and this constraint is expected to be somewhat alleviated under the new NVBDCP strategy that will distribute two LLINs free of cost to every household [Dhingra N; P. Jha; VP Sharma; et. al. 2010].

However, providing bed nets alone may not be sufficient given the socio-cultural perceptions and behavioural patterns of the community. The use of bed nets was rather limited for malaria control as mosquito bites were not perceived to be the only cause of malaria. The alternative uses of bed nets were reported in this study; due to the intricacies of cultural and livelihood compulsions. This is also reported by studies from Solomon Islands and Kenya [WHO :2009:]. Learning lessons from earlier experiences, sustained behaviour-change communication (BCC) activities may be undertaken post-distribution to ensure the nets are being used appropriately. Inconsistent use of nets during the hot and humid nights due to physical discomfort has been reported from Africa and Asia [Dash AP, N.Valecha, AR Anvikar et.al.2008]. Provision of bed nets with larger mesh size, which allow ventilation during summer nights, may be a potential solution to this problem prevalent in tropical and sub-tropical climates. There is an evidence of young children and mothers receiving priority use of bed nets as in other Afro-Asian settings consistent with the public health messaging [(AminAA; D.Zurovac; BB.Kangwana; et. al. 2007), (Williams HA; D. Durrheim; R. Shretta; 2004)].

Care seeking for fever was found to be a complex interaction between socio-cultural belief, risk perception, economic and livelihood factors. The pathways of care seeking for adult members consisted of multiple modalities as found in other endemic settings[(Whitty CJ, C.Chandler, E.Ansah, et.al.2008), (Das A, R.D Gupta, J.Friedman, et.al.,2013)]. For most adults , it started typically with home remedies, followed by faith healing, community health worker and it continued up to the primary health centre when complete cure was not yet achieved. The preference of home and traditional remedies could be explained by its low cost and easy availability as well as the community's faith on traditional methods of healing.

On the other hand, higher prices charged to poor households by the Quacks through over-prescription also adds to the financial burden of the household in malaria endemic areas. This calls for alternative strategies for Quacks including the possible mainstreaming them into malaria control after adequate capacity development [(Sharma SK, R.Chattopadhyay, et.al.2004)]. Qualitative studies have their limitations in being less generalizable to larger contexts but, most of the findings in this study are similar to many endemic settings locally and globally.

Policy implications

Local community beliefs about disease transmission, availability and perceived quality of services are directly linked with health-seeking behaviour For instance, provision of free bed nets might not induce adequate utilization if the majority of the population believes malaria is transmitted by contaminated water. Despite large investments in health infrastructure and human resources, if the programme does not take these beliefs into account during its planning, policy formulation and implementation, the change in health-seeking behaviour might not be adequate. India has reached a crucial juncture with revised strategies such as ACT and LLIN in its fight against malaria. In the context of introduction of more effective and expensive methods (eg, ACT and LLIN), it becomes imperative to ensure adequate and effective utilization. Evidence has shown that communities adopt practices if they have ownership of the intervention rather than imposing a 'top-down' approach. [Sahu SS, K.Gunasekaran, et.al.2013]. However community participation should be ensured from the beginning of planning phase only so that actual need of community can find a place in policy formulation, otherwise acceptance of Government initiatives at community level will be very low.

Conclusion

From the study on care-seeking practices & perception of people in a malaria endemic KBK village in Odisha, it is found that community-based malaria control interventions namely supervise indoor residual spray, undertake vector source reduction activities , track and monitoring the trend

of local fever and malaria cases, the Community based organizations (CBOs) can be effectively utilize. Further, the community may be sensitized about the availability of malaria diagnosis and treatment services with the ASHA or Anganwadi Worker (AWW) in village level. Similarly, the health system has to ensure regular availability of medicines so that the community does not lose faith in the ASHA or Anganwadi Worker (AWW) and not drift towards irrational and more expensive treatment methods being offered Quacks and others in Villages. The majority of grassroots level health worker namely ASHAs/AWWs had been trained in malaria case management in rural areas had a relatively high level of knowledge, but their potential to perform was undermined by the poor availability of Rapid diagnostic test (RDTs), ACT as reveled from the present study. So the recent policy of Government Odisha-DAMAN - in order to change the existing system and the expected time lag in securing funds, subsequent procurement of RDTs and assuring their availability at the community level may be of immense help in Malaria control programme.

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Abbreviations

AWW	:	Anganwadi Worker
ANM	:	Auxiliary Nurse Mid-wife
ACT	:	Artemisinin-based combination therapy
ASHA	:	Accredited Social Health Activist
BCC	:	Behaviour change communication
CBO	:	Community based organizations
CHW	:	Community health worker
DoHFW	:	Department of Health and Family Welfare
FGD	:	Focus group discussion
KBK	:	Kalahandi-Balangir-Koraput (Un-divided) districts of Odisha
KII	:	Key informant interview
LLIN	:	Long-lasting insecticide-treated bed nets
LQP	:	Less qualified provider
NVBDCP	:	National Vector Borne Diseases Control Programme
RDT	:	Rapid diagnostic test
VHSC	:	Village health and sanitation committee.

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