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Knowledge, attitudes, and practices toward malaria risk and prevention among the people of Koraput district, Odisha

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Abstract
Malaria is a mosquito-borne disease caused by *Plasmodium* parasites. It is one of the most prevalent disorders worldwide. India ranked the fourth highest number of death cases. The majority of malaria cases are reported from eastern and central part of the country and from states which have forest, hilly and tribal areas. In Odisha more than two third of malaria cases are reported from ten southern district i.e. Koraput, Balangir, Kalahandi. The present study aims to access the knowledge, attitude, and practices (KAP) about malaria among the individuals in Koraput district of Odisha. This is a cross-sectional study and 1369 respondents were recruited randomly from Koraput district. Data regarding demographic and KAP were collected by using pretested schedules. The study found a significant number of respondents have a good knowledge about malaria. However, the attitude and practice to eradicate malaria was not satisfactory. So there found to be a gap between knowledge and practices among the respondents.

Keywords: malaria, knowledge, attitude, practices, Koraput

Introduction
Malaria is a serious, and sometimes fatal if untreated, disease in human being that found worldwide. Generally it occurs due to the female anopheles mosquito bites. Generally, these mosquito bites during the time of night, hence called as night biting. Presently, there are 29 countries that share 95% of malaria globally. In the regions of south-east Asia, only India contributes the largest reduction of malaria cases from 20 million in 2000 to 5.6 million in 2019. India recorded 86% malaria deaths in south East Asia region (WHO, 2020). In India, 90% of population reside in malaria endemic areas and 80% of those are found from hilly and tribal dominated area like Odisha, Madhya Pradesh, Chhattisgarh, Jharkhand, west Bengal, Gujarat, Maharashtra, Rajasthan and north-eastern state (Parida *et al*, 2015). In India Odisha contributed highest number if incidence (45%) of malaria (Pradhan *et al*, 2019) [9]. Koraput district falls under high risk of malaria infection zone, which is a backward region and predominated by tribal population of Odisha (Bindhani *et al*., 2020; Bindhani, 2021) [2, 1].
The present study aims to access Knowledge, Attitude, and Practice (KAP) of malaria among the individuals of Koraput District.

Materials and Methods
A cross sectional study was carried out in two villages in Koraput district of Odisha between 15 February 2018 and 15 March 2018. A total of 1369 individuals, among which 39 individuals were patients, aged between 15 and 64 were recruited for the present study. Individuals those were suffered from malaria from the last 6 months to the date of survey were categorized under the patient group. Socio-demographic data were collected by using schedules. To access knowledge, attitude and practice on malaria, pretested questionnaires and schedules were administered (Netaji, *et al*., 2017). Informed consent was taken from the participants. Data analysis was done by using MS excel 2010.

Results
21 males (53.85%) and 18 females (46.15%) were recruited for the present study. The majority of the respondents mentioned that fever with chills (94.87%), followed by fever with headache (82.05%), fever with weakness (76.92%), fever with body pain (15.38%), fever with vomiting (66.67%), fever with loss of appetite (48.72%), fever with diarrhoea (20.51%) and fever with shivering (74.36%). All the participants reveal that malaria is a transmitted disease, out of them 71.79% answered that malaria happens due to anopheles mosquito bites, 7.69% said that malaria happens due to climatic conditions, 15.38% expressed that related to eating contaminated foodstuffs and 5.13% said that it is due to swimming in rivers and ponds. It was also found that 53.85% of the respondents mentioned that malaria is more common in rainy season, 28.21% expressed that it more common in dry season that is in summer, and 17.95% did not know that which season is more common for malaria. Furthermore, it was also found that a majority of the respondents (79.49%) known about malaria from the health workers, 12.82% came to know about malaria from television and radio, 5.13% were known it from friends and relatives, and 2.56% were known it from their neighbours. To control the malaria disease, 41.03% of population reveal that indoor residual Spray is the best and a majority (58.97%) of them mentioned that long lasting insecticide nets (LLINs) should be Use to stop malaria, they believe that this bed net is insecticide treated net (ITNs) and it has capable to eradicate the mosquito. Regarding the mosquito vector of breeding

places, 56.41% motioned that stagnant water is the breeding places of malaria, 7.69% told that mosquitos breeds in garbage and 35.90% reveal that they don't know the exact places of mosquito breeding sites (table-2).

Table 1: Demographic profile of the studied population

Particulars	Male	Female	Total
Age (mean ± SD)	28.04±1.4	32±1.3	29.87±1.35
Literate (mean ± SD)	6.23±0.4	5.88±0.6	6.07±0.5
lliterate (%)	28.57	33.33	30.76
Marital status			
Married	57.14	50.00	46.15
Unmarried	42.86	50.00	53.85
Community			
SC	33.34	38.89	35.89
ST	42.86	33.33	38.47
Other	23.80	27.78	25.64
Religion			
Hindu	80.95	72.22	76.92
Christian	19.05	27.78	23.08
Occupation			
Farmer	33.33	0	17.95
Student	14.29	11.11	12.82
Employment(Govt.)	4.76	5.56	5.13
Labour	38.10	44.44	41.03
Housewife	0.00	33.33	15.38
Other	9.52	5.56	7.69
Family income	72,000±10,000		

Table 2: Knowledge of malaria among the studied population

Questions	No.	%
Do you heard about malaria?		
Yes	39	100.00
Can malaria get twice?		
Yes	16	41.03
No	23	58.97
What are the most important symptoms of malaria?		
Fever with Chill	37	94.87
Fever with headache	32	82.05
Fever	39	100.00
Fever with weakness	30	76.92
Fever with body pain	6	15.38
Fever with vomiting	26	66.67
Fever with loss of apatite	19	48.72
Fever with diarrhoea	8	20.51
Fever with shivering	29	74.36
What is the mode of transmission for malaria?		
Anopheles mosquito bites	28	71.79
Related tom climate condition	3	7.69
Related to eating contaminated food	6	15.38
Related to swimming in river and ponds	2	5.13
In which season of year malaria is more common		
Rainy	21	53.85
Dry	11	28.21
I do not know	7	17.95
What is the source of information about malaria?		
Radio and T.V.	5	12.82
Friends and relatives	2	5.13
Neighbour	1	2.56
Health worker	31	79.49
What is the best strategy for malaria vector control?		
Indoor residual spray	16	41.03
Larvicide	0	0.00
Fogging (area spray)	0	0.00
LLINs	23	58.97
What are the breeding places of mosquito vector?		
Stagnant water	22	56.41
Garbage	3	7.69
Soil	0	0.00
I don't know	14	35.90

Table 3: Attitudes and practices of participants on malaria among the studied people

Sl. No.	No.	%
Do you think malaria is a preventable disease?		
Yes	27	69.23
No	3	7.69
I don't know	9	23.08
Do you use bed net during sleeping?		
Yes, usually	17	43.59
Yes, sometimes	11	28.21
No	11	28.21
Where do you rest in the summer nights?		
Room	7	17.95
Porch	27	69.23
Roof top	5	12.82
Do you wash the mosquito net?		
Yes	30	76.92
Sometimes (frequently)	6	15.38
No	3	7.69
Where do you refer for malaria treatment?		
Traditional healer	6	15.38
Hospital	25	64.10
ASHA	8	20.51

A majority of the respondents (69.23%) expressed that malaria is a preventable disease, whereas on the other side only 7.69% mentioned that it is not a preventable disease, and 23.08% don't know that malaria is what types of disease. During the time of sleeping 43.59% of the samples were using bed nets and 28.21% were using sometimes and 28.21% of respondents never used bed nets. A significant number (69.23%) of respondents take rest at porch (in front of room) during the time of summer nights, 17.95% taking rest in room during summer nights and only12.82% takes rest at the roof top. A significant number (76.92%) of participant wash their bed net frequently and only 7.69% of participant's were not washed bed net. As per the respondents, the majority of them treat their disease at modern health care system, 20.51% consult with ASHA of the village and only 15.38% of respondents rely on traditional medical practice for the recovery from malaria (table-3).

Also, the study found that individuals with higher education is less affected with malaria (table-4).

Table 4: Association of educational level of patients with affected and non-affected individual

Education	Affected individuals	p- value
Literate	12 (30.77%)	<0.001
Non literate	27 (69.23%)	

Discussion

All the respondents aware of malaria and had heard about malaria. This is similar with the previous study (Gupta, *et al*., 2019; Sharma, *et al*., (2017). More than half of the sample **(**94.87**%)** expressed that Fever and chills happens during the time of malaria, similar study has been carried out by Netaji *et al*, (2017). A significant number of respondents 71.79% answered that malaria is due to female anopheles mosquito bite that means these population have a clear cut idea that malaria is caused by mosquito bite. 53.85% of the population mentioned that malaria is more common in rainy season. As heavy rain reserves water in drain along with our surrounding, hence that causes the growth of malaria parasites. Also, some people reported that

summer season is more common for malaria and some of the respondents unaware about the season of the spread of malaria. Similar study has been found by Kinung *et al* and Hanafi-Bojd *et al* in Tanzania (Kinung *et al*, 2010; Hanafi-Bojd *et al*, 2011) [6]. Majority of participant answered that they gain the information about malaria from the source of health workers. It means that government has played an important role in grass root level to create awareness. Some are there who know about malaria from television and radio. Similar studies have been found by Forero *et al*, (2014) [3] in Colombia (Forero *et al*, 2014) [3] In this study, a significant participants were reported about the best strategy for malaria control and they expressed that Long-lasting insecticidal nets(LLINs) is best and some individuals agreed that indoor residual spray is best to control malaria. Based on the result, 56.41% reveals that stagnant water is the breeding places of mosquito and 35.90% not aware about breeding places for malaria.

Based on the study, significant respondents mentioned that malaria is a preventable disease, which is similar to the previous study (Khan *et al*, 2010) [5]. Still some individuals are there those were unaware about malaria is preventable or not. A maximum number of respondents are taking rest at porch during summer nights by using bed net. A very less numbers of respondent were taking rest at roof top during this season. On the other side, a significant number (76.92%) of participant wash their mosquito net regularly. 15.38% of the sample wash bed net occasionally and 7.69% were not washing it at all. Those who were washing their mosquitoes nets regularly reported that the Mosquitoes nets provided by the governments were sprayed with some medicines that causes skin itching.

Conclusion

This study reveals that a majority of the respondents were aware of malaria, its symptoms, and prevention. This article tries to emphasize on the fact that it should be purely control only after the strengthening of primary health care systems, cleaning of uncovered breeding sites, and strengthening of manpower in health sector. In this study most of the respondents had good level of knowledge to eradicate malaria but attitude and practices in relation to malaria prevention still need to be improved regarding malaria. Therefore it should be concluded that a grassroots level strategies should be constructed to enhance the proper implantation and control measures to maximize the protective practices towards malaria.

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