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Research Article

Spot-Check Survey of Seasonal Malaria Chemoprevention of 2021 in Adamawa and Yobe States in the Phase of COVID-19 Infection

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Abstract

Malaria is a major health issue in sub-Saharan Africa, and the World Health Organization (WHO) introduced Seasonal Malaria Chemoprevention (SMC) as a strategy to reduce malarial morbidity and mortality in under-fives. A Spot-check Survey (SCS) was introduced to ensure proper implementation of the SMC program in Adamawa and Yobe states. A structured questionnaire was administered to households during the three-day SCS, involving 875 and 721 households, respectively, during each cycle of the SMC of 2021. Mothers were the major respondents (87%), while fathers constituted only 13%. In Yobe State, the majority of respondents had Qur'anic education, while in Adamawa, 30% had Qur'anic education and 25% had post-primary school education. In both states, 36% of households had 2 under-five children per household, and 22% had 3 children, all of whom had SMC drugs. In Adamawa, 41% of households heard about the SMC campaign through health workers, followed by friends, neighbours, and spouses (39%). In Yobe state, voluntary community mobilizers contributed most significantly to SMC information dissemination (55%). The predominant reasons for accepting SMC drugs included the prevention of fever/malaria and government-coordinated free distribution. In Adamawa and Yobe, 88% and 94% of households have mosquito nets, but most nets are ineffective in preventing mosquito bites. Further training and re-training of health workers are needed to reduce malaria incidence in these communities. Spot check survey is a good monitoring tool that provides real-time information needed to keep a programme going in the right direction, it should be encouraged to continue.

Keywords: *World Health Organization (WHO); Seasonal Malaria Chemoprevention (SMC); Spot-check Survey (SCS); Malaria; COVID-19 Infection*

Introduction

Malaria is a major public health problem and contributes to high morbidity and mortality in children and adolescents in sub-Saharan Africa. According to the World Malaria Report 2019, sub-Saharan Africa accounted for approximately 93% of global malaria cases and 94% of deaths in 2018. More than two-thirds of deaths were among children under the age of five years. Democratic Republic of Congo and Nigeria account for about 40% of estimated mortality due to malaria worldwide [1].

Seasonal Malaria Chemoprevention (SMC) is one of the strategies recommended by the World Health Organization (WHO) [2,3]. SMC is the complete treatment course with a fixed-dose combination of amodiaquine and sulfadoxine-pyrimethamine (SPAQ) given at monthly intervals to children aged 3 - 59 months, during the peak period of malaria transmission (usually between July to October) with distribution cycles 28-35 days apart for 4 months [4,5]. The medication delivery is primarily door-to-door in most countries, and this strategy has significantly improved coverage in the areas where the exercise was conducted. SMC is routinely used in some Sahel states in northern Nigeria.

Spot-check (SC) is a quick examination of a few members, or groups instead of the whole group. It is a check or examination done at random to ensure that the exercise everything is carried out according to the rules [6,7]. Spot-check is an unanticipated visit done by senior field staff to verify the programme to make sure that it is satisfactory [8] and to ensure that the programme is done in accordance with the scheme [8]. Spot check evaluation can identify problems in the performance of the programme. According to J-PAL's research protocols, it is a suggested best practice that 15% of surveys are spot-checked [9].

SC survey (SCS) was thus employed to verify in the field whether the operational guidelines through the methodological guide and the procedures, planning and micro-planning documents, are followed and applied by all at the different stages of the implementation process of SMC campaign. The spot check was able to identify good practices, lessons learned and areas of weakness for which recommendations were made to strengthen SMC implementation in the country.

Materials and Methodology

A structured questionnaire for the Households (HHs) was developed, pre-tested and validated in some communities in Borno State in 2018, when SMC was carried out. There were nine Research assistants (RAs) that were trained, 5 for Adamawa and 4 for Yobe state.

Adamawa has 21 LGAs, while Yobe has 17 LGAs. Specific LGAs in both states were covered in a rotatory fashion during each month of the SMC cycle, until all the LGAs were covered for Adamawa State except for Michika and Madagali, because of insecurity. In Yobe, 4 LGAs were visited during each cycle, of the 3 SMC cycles, while only 4 LGAs had the 4^{th} SMC cycle due to logistic reasons.

A community was randomly selected in a day and HHs were selected in the various LGAs. Questionnaires were administered to 15 households per day for 3 days, making a total of 225 Households (HHs), for each cycle, in Adamawa. In Yobe State, a total of 180 HHs were visited. During the first cycle, the survey started late, thus the expected number were not reached (200 against 225 in Adamawa and 170 against 180 HHs in Yobe States). The questionnaires were administered by the research assistants.

Thus, a total of 875 and 710 HHs, were interviewed in Adamawa and Yobe States respectively. Some areas in Adamawa and Yobe States were not visited because of insecurity.

Ethical considerations

Ethical approval was not required for this programmatic survey as this is part of SMC programme implementation. Respondents were informed of the nature of the study, benefits and risks.

The survey was carried out according to the existing National Guidelines on COVID-19 during all stages of survey activities-training/ workshops, meetings, data collection - including consent taking and interviews. The general guiding principle was to protect all study participants and assessment personnel from infection, including the CDDs, RAs as well as community members in assessment locations. Measures taken during survey activities included social distancing (limiting physical interactions to two meters apart), appropriate use of face masks, frequent hand hygiene, and disinfection of equipment. Operational guidance for implementing SMC in the COVID-19 context developed by the RBM Partnership was provided.

Results

Nineteen LGAs were visited in Adamawa state, during the whole 4 cycles of SMC, 4 SCS were done and a total of 875 HHs were interviewed, while in Yobe State, 13 LGAs were visited in which 710 HHs were interviewed.

Mothers were the majority of the respondents constituting 87.5% and 87.3% in Adamawa and Yobe state respectively, followed by the fathers. Majority of the respondents had only Qur'anic education, 30% in Adamawa and 53% in Yobe State while 20% did not have any form of education in each of the states. In Adamawa state, there were 25% who have post primary school education, while in Yobe state it was 11%. Figure 1a and 1b show the distribution of children in the household from 3 months to 10 years old per household in Adamawa and Yobe states respectively.

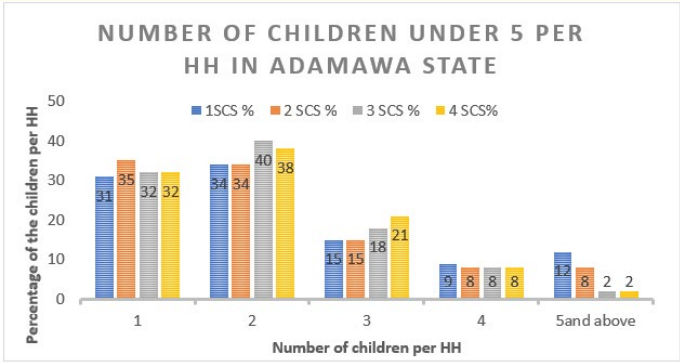

Figure 1a: *Adamawa state.*

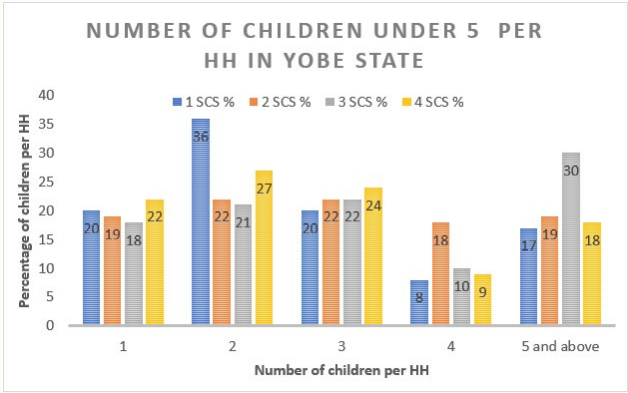

Figure 1b: *Yobe state.*

In Adamawa state, there were almost equal percentages of HHs with 1 and 2 children below the age of 10, while in Yobe State there were more of 2, 3 and 5 children under 10 years old in a HHs.

Figure 2a and 2b show the number of children who had a fever and were taken to HF and were tested in Adamawa and Yobe states.

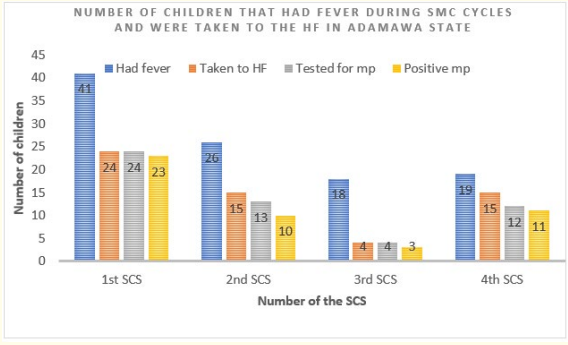

Figure 2a: *Adamawa state.*

mp = Malaria Parasitaemia, HF = Health Facility.

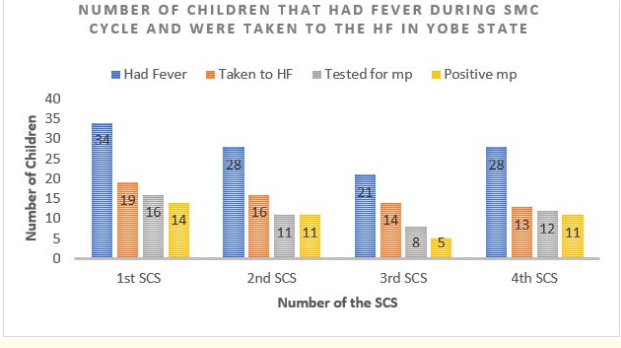

Figure 2b: *Yobe state.*

Figure 3a and 3b show the number of HHs that have children who had fever. Out of those that had fever only a few were taken to the HF and they were tested for malaria and those positive were treated according to the National guideline.

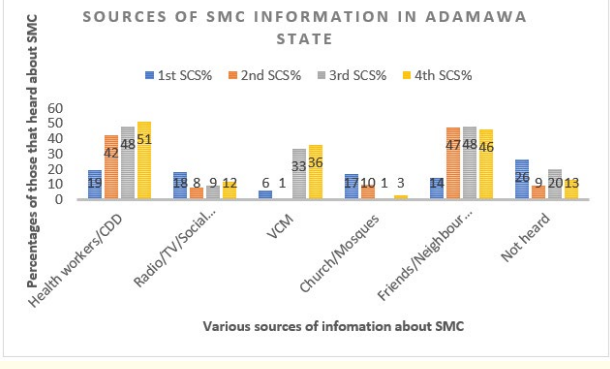

Figure 3a: *Source of information about SMC in Adamawa state.*

N:B. some HH have more than one source of information.

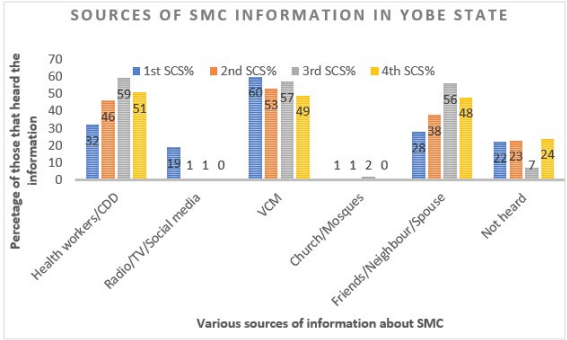

Figure 3b: *Source of information about SMC in Yobe state.*

In Yobe State, VCM, Health workers, friends, neighbours, and spouses contributed greatly to the spread of information about SMC, while in Adamawa state it was more of friends, neighbours and spouses followed by health workers.

Figure 4a and 4b show the reasons for accepting SPAQ for the children in Adamawa and Yobe states respectively.

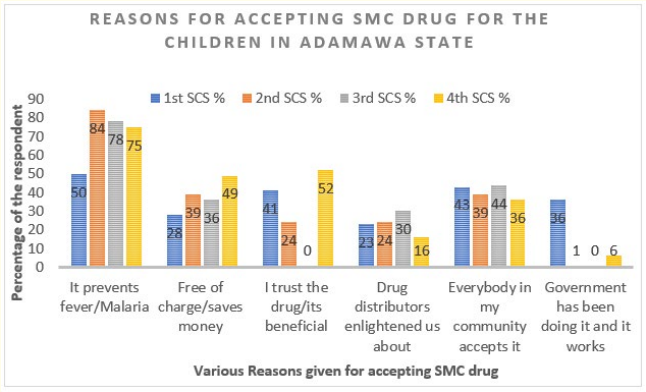

Figure 4a: *Adamawa state.*

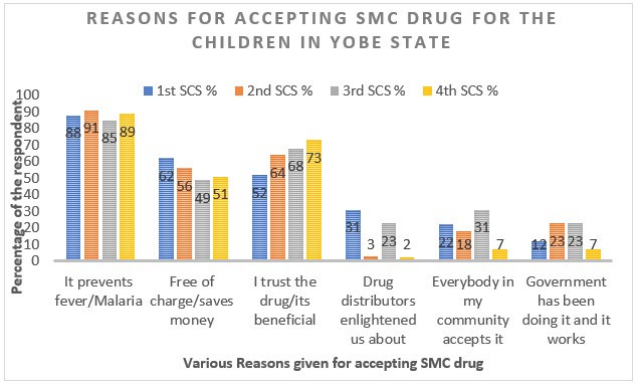

Figure 4b: *Yobe state.*

There were multiple responses. From the above figures, more of the HHs in Yobe gave the reason for accepting SMC drug (SPAQ), because it prevents children from having malaria followed by trusting the drug, that it is beneficial, unlike in Adamawa, where apart from it prevents malaria, but also that everybody in the community is taking the drugs.

Direct observed therapy (DOT) was 95% in Adamawa state, while in Yobe state, it was 54%.

The messages passed to the household after the administration of the SMC drug is seen in figure 5a and 5b.

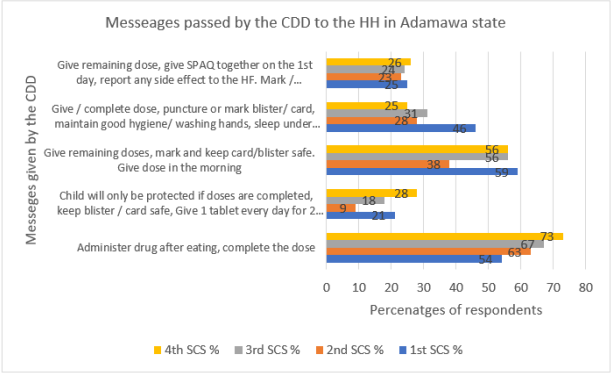

Figure 5a: *Adamawa state.*

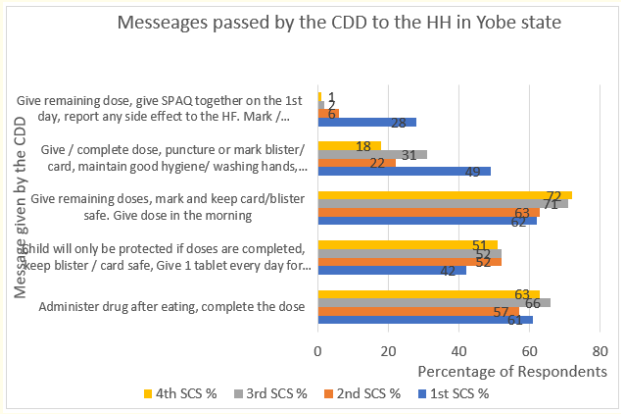

Figure 5b: *Yobe state.*

The messages passed by the CDDs after the administration of SPAQ, as seen in figure 6a and 6b indicated that both in Adamawa and Yobe states, majority passed the information of administering drug after eating and completing the dose. In Yobe, the information most passed by the CDD was to give remaining doses, mark and keep card/blister safe, and ensure to give the drug in mornings, which was similar to Adamawa. The CDDs still do not passed full information, except in Adamawa, where few of the CDDs passed information about punching the card, maintaining good hygiene, sleep under a mosquito net and that there will be another round.

Adverse drug reactions (ADR) seen during the 4 cycles of SMC were 85 (9.7%) in Adamawa state, while in Yobe state, 23 (3.2%).

The figure below shows percentages of the HHs that have mosquito nets, and how many households had their children sleeping in the net the previous night.

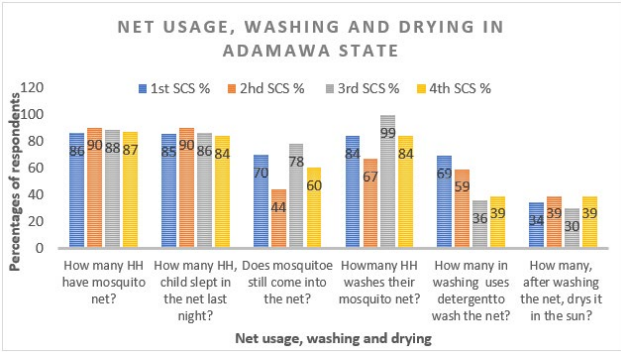

Figure 6a: *Adamawa state.*

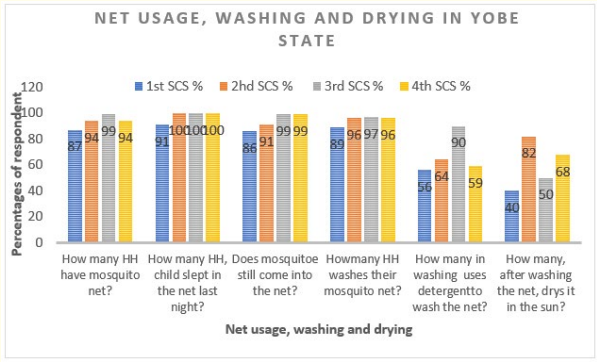

Figure 6b: *Yobe state.*

Net usage in both states showed above 85% of the HHs have at least one mosquito net, and that 90% of the children slept under the net the previous night, however, in Yobe State, despite the nets, more than 85% of the HHs, do experience mosquitoes coming into the net, thus the net is not protecting them or they have lost their potency of repelling the mosquitoes away or are torn and were not mended. Washing the nets with detergent and drying it in the sun also destroys this chemical as seen by the percentage above.

Discussion

During the survey, almost all accepted SMC drugs for malaria prevention, and because it's free delivery with government support. Mothers were the major respondents; they were primarily the caregivers at home. This is not out of place, since during the period of SMC, most fathers are out on the farm or doing other handy jobs, which is not different from the findings of National Health Survey report of 2013 [10]. Few of the respondents had primary and secondary school education, which is also similar to the NDHS 2013 report [10]. In Adamawa state, there were 1 - 2 children under 10 years per household. In Yobe state, where they have 2 - 5 children under 10 years old in a household. The states seem to be overpopulated, exceeding what was expected. After the 1st cycle of SMC in Yobe State, there is a drop in the number of children in the households (HHs). Reasons are not apparent, may be that after knowing that only children under 5 are

given the SMC drugs, they must have gone away or are in the schools. In Adamawa State, 104 children under 5 years of age had a fever, only 58 (55.8%) of them were taken to the HF, and 53 were tested and 47 had parasitaemia, while in Yobe, 111 children had a fever, 62 (55.9%) of them were taken to the HF, 47 tested and 41 had malaria parasitaemia. There is still poor health-seeking behaviour in these states and also despite the SMC drugs, there is still some number of these children having malaria. It is not a surprise to see some of these children having malaria parasitaemia, especially during the 2 - 4th cycle [11], it has been shown that it may occur if children did not complete the doses of the SMC drugs (SPAQ) or were not around when the CDDs came around or there may be a form of resistance.

In Adamawa state, the source of SMC information was by health workers (41%), followed by friends, neighbours and spouse (39%), unlike what is seen in Yobe state, the majority was from the VCM (54%) followed by health workers and CDDs (47%). This is quite different from the survey report by Malaria Consortium (MC) [12] in Zamfara, the information about SMC was from radio, town announcers, friends and neighbours, and in Jigawa and Katsina from mosques and churches. More health information to the communities is passed through the health workers and the VCM. Health information if passed through radios may have little or no effect on the communities. Those who did not hear about SMC in Adamawa and Yobe were 17% and 19% respectively, this was lower than that observed in Zamfara, Jigawa and Katsina reported by MC [12].

Generally, SMC is a well-accepted program in both states. The reasons for accepting SPAQ (SMC drug) in Adamawa and Yobe states were that it prevents fever/malaria infection in children, 72% and 81% respectively, followed by that everybody in the community accepts the drug in Adamawa state (40%) while in Yobe state, 64% said because they trust the drug and it is beneficial. Ogbulafor., *et al*. [13] also corroborated in their report that the reason for accepting the SMC drug by the communities was because it is a good preventive measure for malaria.

Direct observed Therapy (DOT) was 95% in Adamawa, while in Yobe state it was 54%. The CDDs left behind some of the drugs, and it was not possible to ascertain that these drugs were taken rightly, most especially in Yobe state. There may be the possibility of not taking the drugs correctly or completing the doses, this may result in it not completely preventing malaria infection. This may also cause some form of resistance, since drugs are not taken accordingly. There is a need to ensure that DOT is done in every household and that children under 5 years are protected from the morbidity of malaria infection.

Messages passed by the CDDs after DOT of SPAQ in the HHs, the majority of the HHs in both states, were told to administer drug after eating and complete the dose, 65% in Adamawa and 60% in Yobe. The CDDs were trained to deliver the drugs and to pass on some key messages,[5] however, not all key messages were passed on to the communities, such as "give/complete dose, puncture or mark blister/card, maintain good hygiene/washing hands, sleep under a mosquito net and we will be coming next month", only 32% in Adamawa and 30% of the HHs said what the CDDs told them. Thus, messages such as report any side effect, only 24% and 8.7% in Adamawa and Yobe reported this. There is a need to emphasise the importance malaria preventive measures to the communities.

From this survey, it was seen that in Adamawa state, 86 - 90% of the households had mosquito nets, while in Yobe state, 87 - 99% of the HHs had mosquito net. This is an improvement compared to the 2015 MIS [14] report indicating that in Adamawa state, it was 70.6%, while in Yobe it was 82,6%. From this survey, 97 - 100% of those that had mosquito nets, had their children were sleeping within the nets. However, the presence of these nets did not stop mosquitoes entering the nets, thus indicating that these nets are either not LLIN/treated nets or might have lost their potency of repelling or killing the mosquitoes. It was seen that 36 - 69% of those that had the nets in Adamawa state, washed their nets with detergents, and in Yobe State, 40 - 69% washed their nets with detergents, and they dried the nets after washing in the sun. All these, washing in detergent and drying in sun destroys the chemicals, making them ineffective. There is a need to educate the populace about how to take care of the nets, washing the nets with a mild soap and drying them in the shade or in the room.

Conclusion

In conclusion, Spot check survey (SCS) is a very good way of checking programs such as SMC, to find out if it is done accordingly and to see its effect on the people. The acceptance of SMC amongst the sampled households was high. The majority of the households gave good reasons for accepting SMC drugs. Although majority of the HHs do have mosquito nets, they need to have more enlightenment on how to take good care of these nets.

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