

Community awareness, perceptions for using LLINs and factors influencing their efficacy for malaria control in Pakistan.

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Objective: To evaluate the knowledge, attitudes and use practices of the community for LLINs and factors affecting their efficacy and finally to provide technical basis to formulate and implement a sustainable, community-friendly and cost effective strategy for scaling up the use of LLINs in Pakistan

Methods

Questionnaire development:

This KAP survey was the part of a bigger study with the primary objective to evaluate the community preferences and acceptance for different brands of WHOPEs-Recommended LLINs in Pakistan finally to select a *best community-accepted LLIN* in Pakistan.

Household Survey: After finalization of questionnaire, survey was conducted in 693 selected HH. Questions focused on various aspects like, socio-demographic characteristics of respondent; current knowledge regarding malaria; vector mosquitoes; preventive measures adopted for the prevention of mosquito bites; use practices of LLINs; sleeping habit; knowledge of any side effect of using LLINs; beneficiaries and purchasing options if LLINs not available free of cost etc.

Questionnaire was also pre-tested in the field for further improvement. Some already available questionnaires were also used as references.

Moderators were primarily male and were thoroughly trained in conducting surveys and FGD, data management and logistics supply.

Finally, in-depth interviews with head of selected family were conducted. In case of absence of head of family, another senior most family member (preferably female) was interviewed.

Focused Group Discussion (FGD):

To validate and rectify the information collected during HH survey, 1 FGD session was also conducted in each selected district, attended by 19-25 participants, of which 15-20% were from other HH than interviewed during survey.

Key issues and questions raised by results of household survey were put forth for discussion.

All participants were encouraged to discuss freely on all **pros and cons** of the LLINs and also on untreated nets.

During these FGD sessions, all brands of WHOPEs-Recommended LLINs were also displayed and participants were given the opportunity to examine all these brands of LLINs and comment on the favorable and unfavorable characteristics of each brand.

Reasons for preference and acceptance for different texture, shape, color, etc were also discussed and evaluated.

Results

1. The average HH size was 5.5 and 72.4% HH have at least one children <5 years and 95.4% HH were male-headed.
2. Mean age of male and female-headed HH heads were 39.7 and 42.5 years respectively.
3. None of the HH heads had secondary level education.
4. Among female heads none of them have any formal education.
5. On occupation, 68.7% of the respondents were farmers, 16.2% were in casual labor, and 14.4% engaged in self-employment. Overall there were no significant differences between the 4 study sites in age, gender, and household size.

Knowledge of vector(s), and prevention against them:

1. Mosquito bite was considered to be the main cause of malaria spread by 91.5% while 7.2% (n=50) respondents reported the lack of cleanliness as main source of malaria infection.
2. Regarding breeding of mosquitoes, 66.4% (n=460/693) respondents had the opinion about breeding of mosquitoes in street pools, septic tanks and heaps of garbage. Similarly, 19.2% (n=133) and 12.6% (n=87) reported agricultural fields and water courses as main breeding sites of malaria carrying mosquitoes.
3. The use of mosquito repellants/coils, mats and use of LLINs were mentioned as main preventive measures against mosquitoes by 32.8% and 23.5% respondents respectively.
4. Use of smoke of neem leaves and cow dung was mentioned by 13.1% of respondents. Other preventive measures used by local communities were use of fan (16.2%), screening of windows (3.9%) and spraying of room with household aerosoles (2.7%) etc.
5. However 2.3% (n=16) respondents reported they did not use any protection methods against mosquitoes.

6. **Only 53.4% HH possessed LLINs at the time of survey, of which 91.7% possessed only 1 LLIN per family.**
7. Among provided LLINs 85.0% were PermaNet2, 6.1% and 8.9% were DawaPlus & Olyset respectively.
8. On checking of these bednets, 68.5% were found without any damage, 21.3% were found partially damaged and rest were fully damaged.
9. Among the districts, there was a significant variation in number of bed nets owned by households, lowest (19.1%) and highest (75.9%) in Muzafargrah and Zhob respectively.
10. ***The overall results indicated that none of the households had enough coverage (≥ 2 LLIN/HH) through LLINs distribution.***

Frequency of use of LLINs

14. Of total 370 LLINs owned HH at time of survey, 15.4% participants were observed hanging their LLINs all the time.
15. Only 36.5% (n=135/370) HH reported the use of LLINs last night, highest rate of utilization was reported from district Zhob (49.6%), similar and least was reported from Muzafargrah (33.3%), Khairpur (31.4%) and Khyber (26.0%).
16. Among user of last night, the %age of HH where all children <5 and mothers slept under LLINs was considerably higher i.e. 68.9% (n=93) followed by HH (17.0%) reported the use of by all family members.
17. Among those who did not hang LLINs all the time (n=300), only 8.0% (n=24) and 24.0% (n=72) hang LLINs just after sunset and after dinner (8:00-9:00 p.m) respectively, while major proportion of HH 64.0% (n=192) installed LLINs just before sleeping, ***of which 95.3% reported the mosquito bite before sleeping.***

Associated benefits of LLINs use

- ***Determinants of use of LLINs:***

18. Protection against mosquito bite was the main reason for using of LLINs in most of HH (90.5%), followed by protection from disease/malaria (6.6%) and protection from other insects (1.7%). However, 1.2% respondents also reported only a pleasant sleep as a reason for use of LLINs.

19 Despite the significant difference in malaria incidence among four selected districts, no notable difference in attitudes of respondents for reasons of use of LLINs was reported.

- ***Deterrents of use of LLINs:***

20. Among those who did not use LLINs daily, 77.0% reported the use of LLINs on every 2-3 days while 15.7% respondent reported the use of LLINs on any day when convenient.

21 The primary reasons for not using LLINs daily were; nonavailability of fixing materials and overall difficulty in use (39.9%); insufficient number of LLINs provided with respect to family size (33.0%); hotness and suffocation inside LLINs (13.9%), side effects (10.9%) as one of the major problem associated with use of LLINs especially during hot months of year.

22. Among those who reported the side effects, majority 88.0% reported the skin irritation/burning sensation while only 8.0% and 4.0% reported sneezing and headach respectively.

Instructions for use of LLINs:

23. Among HH owning bednets, only 58.4% received guidance and instructions for use of LLINs at the time of receiving LLINs
24. 41.7% respondents informed that they were not provided any guidance for the use of LLINs.
25. Among those who received guidelines, 57.9% got instruction verbally, while 41.6% received written instructions in form of brochure and booklets etc.
26. Among those who received booklets and brochures, none of them could produce these materials when you were asked to show at time of survey.

Maintenance of LLINs:

27. Among 370 HH owning LLINs, 84.9% reported the washing of their LLINs during 1st 2 months (47.8% and 37.0% during 1st and 2nd month respectively).
28. Only 7.3% respondent reported the washing during 3-4 month. Similarly, 7.8% (n=29) respondents washed their LLINs when it got dirty.
29. Major proportion of HH washed their LLINs with hand (74.6%). However, 25.4% (n=94) respondents washed their LLINs by soaking in water, of which 80.8% (n=76) soaked their LLINs in water for more than 1 hour.
31. Most of the respondents reported the drying of LLINs after washing under shade (96.2%), of which 84.1% gave the justification to protect chemical on LLINs while 15.9% just followed the instructions.

Focused Group Discussion (FGD):

During these 4 FGDs, 87.0% of total invited respondents participated, of which 90.8% and 9.2% were males and females respectively. Key findings of FGD are as under;

1. 89.7% (n=78) and 5.7% (n=5) participants reported the protection from mosquitoes and disease were the major reasons for use of LLINs respectively.
2. 98.9% (n=86) participants rejected the use of untreated bednets with explanation of no protection from mosquitoes (82.8%), no protection from disease (13.8%), no use of chemical (2.3%).
3. 93.7% reported the use of LLINs only during peak mosquitoes breeding months (September-November) i.e. post monsoon months.
4. 71.3% reported the installation of LLINs just before sleeping while rest 28.7 after dinner.
5. 41.4% participants reported fever cases from family despite the use of LLINs.
6. 86.2% respondents had the opinion that priority should be given to children<5 and mothers/PW, followed by all family members (8.0%) and head of family (5.7%).
7. 100% participants reported very less number of LLINs provided as compared to family size, and few refused to used due to sometime conflict within family for sleeping under LLINs.
8. 90.8% (n=79) and 44.8% (n=39) respondents preferred circular shape LLINs for inside room and outside sleeping respectively.
9. No considerable difference of preference for material i.e. polyester (48.3%) and polyethylene (51.7%).
10. For color preference 46.0% (n=40) preferred light blue color followed by dark green (36.8%), light green (13.8%) and white (3.4%).

Conclusion

- During routine distribution of LLINs communities were not provided proper guidance and motivation enough to use them properly and regularly resulting in no incredible impact of this intervention on malaria caseload in Pakistan.
- The highlighted issues of fragile awareness, perception, poor compliance, and incorrect maintenance of LLINs pose significant challenges for malaria control efforts in country mainly due to weak awareness campaign at grass root level.
- Feedback from local population through KAP must be taken into account to design and implement evidence-based, sustainable and community friendly strategies for better understanding and implementation of other preventive measures at local levels.
- An urgent need of re-align BCC/IEC strategy in light of social cultural and economic aspects of community to improve compliance of LLINs at community level. Mass health promotion campaign involving health care providers before/during bednet distribution program focusing their proper and regular use would have significant contribution to reduce vector-borne disease incidence in Pakistan.