

# MALARIA CONTROL INTERVENTION AND ITS UPTAKE BY THE COMMUNITY IN DISTRICT KILLASAIFULLAH, PAKISTAN

Inamullah Kakar<sup>✉</sup>, Ghazala Noor<sup>1</sup>

## ABSTRACT

**BACKGROUND:** Malaria is responsible for huge morbidity, mortality and enormous economic losses worldwide, especially in the poor and developing countries. Children under the age of five years and pregnant women bear the major burden of the disease. In Pakistan, malaria has been a major public health problem, threatening million of people due to prevailing socioeconomic conditions and epidemiological situation. The estimated annual number of malaria cases in Pakistan has been reported as 1.6 million. Objective of this study was to assess the community knowledge about sign and symptoms, risk factors and health seeking behavior with regard to malaria, to assess the adaptation by the households for preventive measures against malaria and to assess the availability of inputs (Microscopes, anti malarial RDTs) at the health facility level.

**METHODS:** This was a descriptive Cross Sectional Study conducted between May-August 2013. Sample size calculated was 422 persons. A total of 4 villages were selected for the study through simple random sampling from Union Council Saddar. There are only 02 health facilities in the Union Council (an EPI Centre and a private clinic) therefore, data on patient (number of patients treated for malaria in the last one year) and inputs (availability of anti malarial drugs, bed nets, microscopes, slides, RDTs and their stock out position) was collected from these two facilities only. Data was entered and analyzed using SPSS version 17. Descriptive analysis was done. Frequency and percentages of different variables were calculated and presented through tables.

**RESULTS:** Majority of the respondents (75.4%) knew about malaria and most of them heard about it from family members (39%). Most (48%) of the respondents knew that malaria is transmitted to humans by mosquitoes, still 30% didn't know about it. Among the family members who slept under the LLIN included, fathers (13%), mothers (9%), children over the age of five years (7.3%), and children under 5 years of age (5.4%).

**CONCLUSION:** The overall knowledge about malaria prevention and control was generally low, and it did not translate into good practice behaviors, hence the uptake of control interventions by the community was sub-optimal.

**KEY WORDS:** Malaria, Mosquito nets, Pregnant women.

✉ Epidemiologist - Directorate of Malaria Control, Islamabad, Pakistan.

@ inamkakar@hotmail.com

☎ 0321-8019772

1. Bolan Medical Complex, Quetta, Pakistan.

Received: Sept 4, 2017, Revised: Dec 8, 2017, Accepted: Dec 12, 2017

million cases of malaria worldwide and an estimated 655,000 deaths in 2010, mostly among African children. Children under the age of five years and pregnant women bear the major burden of the disease. Children that survive malaria episodes may suffer from anemia and cerebral complications that affect long-term development. Low birth weight in infants, often a result of malaria infection during pregnancy, undermines the chance of survival<sup>1</sup>. Murray et al. estimated global malaria mortality as 1.24 million in 2010, which is almost double the estimate reported by the World Malaria Report's. This implies that malaria may impose even greater burden on populations living in endemic areas<sup>2</sup>.

In Pakistan, malaria has been a major public health problem, threatening million of people due to prevailing socioeconomic conditions and the epidemiological situation. The estimated annual number of malaria cases in Pakistan has been reported as 1.6 million. The disease is now emerging as a prominent public health problem in Balochistan and the Federally Administered Tribal Areas (FATA), particularly along the international border with Afghanistan<sup>3</sup>.

In spite of growing efforts at the global level to increase malaria knowledge among the endemic countries, many communities throughout the world lack even basic knowledge of the natural history of malaria, its relationships with mosquitoes, and the methods for its treatment and prevention. It has been documented that even when prevention and treatment are accessible, some communities do not utilize these services effectively because of their sub optimal perceptions about malaria<sup>4</sup>. Many studies have found numerous factors associated with treatment-seeking behavior for malaria. The factors include affordability of treatment, availability and effectiveness of drugs, geographic accessibility, and perception of severity of the illness, quality of care and cultural beliefs about the cause. Many of these factors are specific to the local context<sup>5</sup>. An effective malaria control strategy, thus, requires accurate information on local

## INTRODUCTION

Malaria is responsible for huge morbidity, mortality and enormous

economic losses worldwide especially in the poor and developing countries. According to the World Malaria Report 2011 there were about 216

perceptions and practices regarding malaria<sup>6</sup>. In many malaria-endemic countries, however, key challenges have been the lack of human capacity and health systems for delivering essential interventions<sup>7</sup>.

The main objective of this study was to assess the community knowledge about sign symptoms, risk factors and health seeking behavior with regard to malaria, to assess the adaptation by the households for preventive measures against malaria and to assess the availability of inputs (Microscopes, anti malarial RDTs) at the health facility level.

This study investigated the local communities understanding of malaria transmission, recognition of signs and symptoms, perceptions about causes of malaria, treatment-seeking patterns, preventive measures and practices in order to assess the uptake of malaria control interventions being implemented by the Malaria Control Programme in Killa Saifullah district of Balochistan.

## MATERIAL & METHODS

This was a descriptive Cross Sectional Community Study conducted between May-August 2013. Sample size was calculated assuming 50% of community having good knowledge about malaria with 95% confidence interval, 5% confidence level and 10% non-response. The sample size thus calculated was 422 persons. According to the recently done poverty score card survey by the BISP, there are 35 villages in the Union Council Saddar. We selected 10% of the villages through simple random sampling for our study because of limitation of resources, time and other constraints. Therefore, a total number of 4 villages were selected for the study.

Information was collected and recorded on a specially designed structured questionnaire with close ended questions. The questionnaire was translated into local language and was pre-tested on 15-20 persons of same community and was then refined accordingly.

The respondents comprised of 50% males and 50% females. In the selected villages from half of

the households a male member (preferably Head of Household) and from the other half a senior female member (preferably grandmother) was interviewed. Where head of household was not available, another senior member of the family was interviewed.

There were only 02 health facilities in the Union Council (an EPI Centre and a private clinic) therefore, data on patient (number of patients treated for malaria in the last one year) and inputs (availability of anti malarial drugs, bed nets, microscopes, slides, RDTs and their stock out position) was collected from these two facilities only. To ensure collection of quality data, at the end of each working day all filled questionnaires were rechecked by the Survey Coordinator for validation purposes.

Data was entered and analyzed using SPSS version 17. Descriptive analysis was done. Frequency and percentages of different variables were calculated.

## RESULTS

The mean age of respondents was 46.5 years. Ninety five percent respondents were married while, 5% were unmarried. Majority of them (88.9%) were living in Kacha houses. Most (74.4%) of the respondents were illiterate.

Majority of the respondents (75.4%) knew about malaria and most of them heard about it from family members (39%). Most (48%) of the respondents knew that malaria is transmitted to humans by mosquitoes although still 30% didn't know about it.

When the respondents were asked about the sign and symptoms of malaria, majority (38.2%) didn't know about the common sign and symptoms of malaria. The most frequently mentioned symptoms in the descending order were fever (29%), vomiting (19%), loss of appetite (16%), loss of energy (14.6%), body pains (13.5%) and chills (12.3%). Only small proportions (3.3%) mentioned "all of the above" symptoms.

About one third (36%) knew that malaria can kill if not treated but,

about a quarter (22%) still believed that malaria cannot kill and the rest (58.3%) did not know whether it can kill or not.

About equal proportion of respondents i.e. 28% each preferred public sector facilities (BHU, THQ, and DHQ) and private practitioners/clinics for treatment of malaria. A considerable proportion of people seek treatment from "spiritual" and "traditional healers" (19.2% & 14% respectively). Regarding promptness in seeking treatment only 10% stated that they seek treatment within 24 hours, 26% reported delay of 2-3 days whereas, majority of the respondents (48%) reported delay of 4 days or more before seeking treatment which can have serious consequences. Importantly, 49.7% of the respondents stated that they manage malaria cases at home by using traditional methods (47%) or by self-medication (32%) which is a serious concern

To probe as to why there was as delay in the treatment seeking, the distance to the nearest health facility emerged as an important factor in the delay. Majority (69%) of the respondents reported nearest government health facility at a distance of more than 20 KM, while, only 1.2% stated that the distance of 2-5 KM and that too for private facility.

The study revealed that majority of respondents (56%) were not aware that malaria can be prevented, Although bed nets (treated/ untreated) were mentioned as the key preventive measure by 51% of the respondents but in actual 45.5% of the households had the nets. The other protective measures used by the community included repellents (18.4%), and closing the windows and doors (13.5%).

Those who had the bed nets (n=190) majority (71 %) had only one net, 20% had two nets and only 7% had three or more nets.

Of the respondents those possessed the bed nets 89% (n-169) reported that their family members slept under the LLINs a night before the interview. Among the family members who slept under the LLIN included, fathers (13%), mothers (9%), children over the age of five years

(7.3%), children under 5 years of age (5.4%) respectively. Other relations (mainly guests) slept under ITNs the previous night were 25%.

For health facility information, data was obtained from 01 EPI centre and 01 Private clinic as only these two health facilities were available in the

Union Council. Questions were asked from the care provider regarding sanctioned staff, number of patients treated for malaria in the last one year and inputs provided by the Malaria Control programme in terms of availability of anti malarial drugs, bed nets, microscopes, slides, RDTs. The anti

malaria drugs were not available on the day of visit in this EPI centre. The most important observation was that the rapid diagnostic test kits (RDTs) for malaria diagnosis were also not available and the volunteer did not receive any training either on the use of RDTs or treatment of malaria.

FIG 1: HEALTH SEEKING BEHAVIOR REGARDING MALARIA

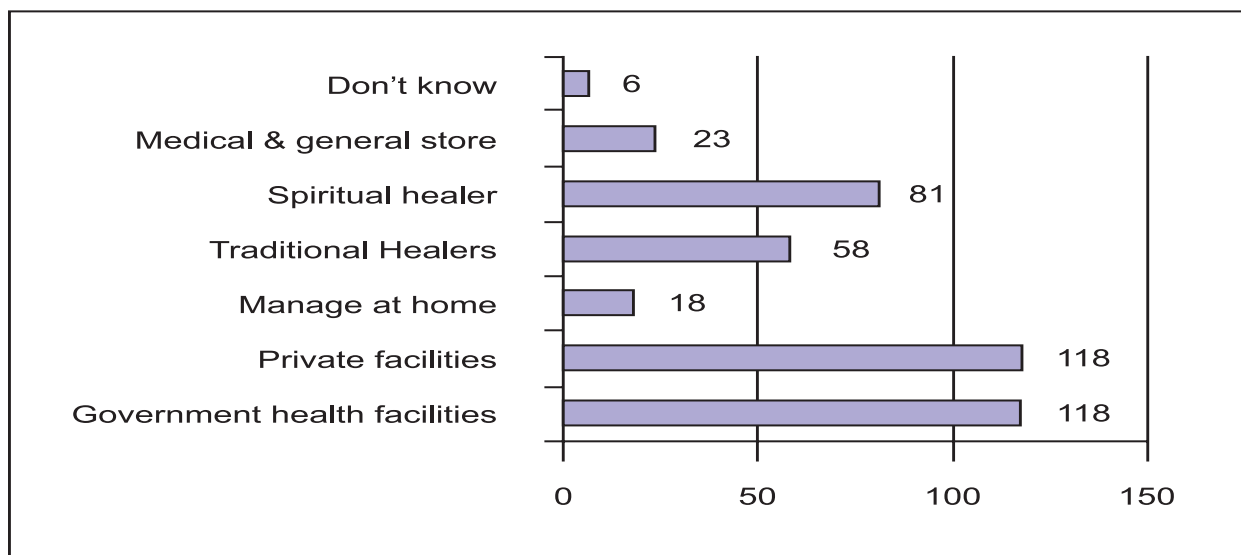
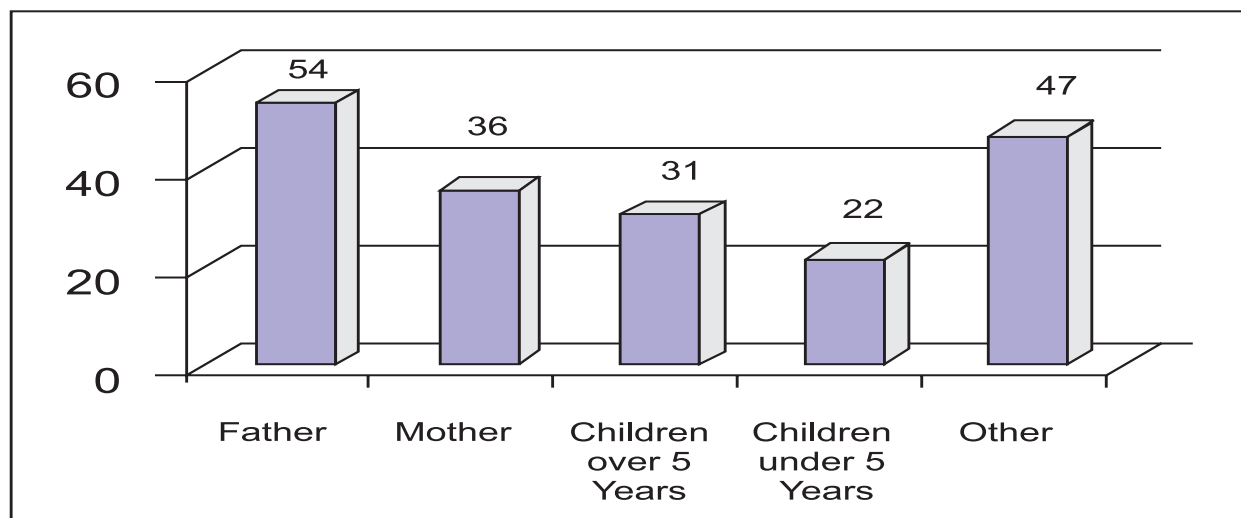


FIG 2: PEOPLE WHO USED TO SLEEP UNDER BED NETS A NIGHT



## DISCUSSION

District KillaSaifullah, is among the 19 highly endemic districts for malaria and therefore union council Saddar of this district. The socioeconomic status of majority of the people interviewed

was generally low, and their basic occupation was mostly farming and they lived in "mud houses". Overall literacy rate was very low and this seems to be one of the reasons for less knowledge and awareness among the community regarding health and diseases

including malaria. Education as predictive of knowledge about malaria and use of protective measures like bed nets has been documented<sup>9</sup>.

It is a well-documented fact that health education interventions should

be designed according to the existing knowledge and awareness level of vulnerable population as well as their current treatment-seeking practices, and should be implemented for sufficient length of time to be effective<sup>9</sup>.

About 22% respondents demonstrated a gap of knowledge on malaria transmission by stating that the malaria is transmitted through bad air or cockroaches and about 30% respondents did not know the mode of transmission. Our findings are close to those reported in a study from Zanzibar where 34 percent population made correct association between malaria and mosquitoes<sup>10</sup>. However, findings of the current study are contrary to the findings of a study conducted in Bangladesh where over 90% population knew that malaria is transmitted by mosquitoes.

A considerable proportion of respondents (48%) associated mosquito bites with malaria transmission, which is a common observation in malaria endemic areas where people frequently suffer from this disease. The respondents level of awareness about mode of malaria transmission was very low when compared to the findings in other studies carried out elsewhere e.g. in Bangladesh<sup>11</sup>, Ethiopia<sup>12</sup>, Malawi<sup>13</sup> and Turkey<sup>14</sup> which, reported awareness levels of up to 90%, 93%, 55% and 67% respectively. Our findings are close to those reported in a study from Zanzibar where 34 percent population made correct association between malaria and mosquitoes. It is pertinent to mention here that community health education intervention should be designed in a way to cover the existing knowledge and should be implemented for a sufficient length of time for it to be effective<sup>15</sup>.

Regarding "treatment and treatment seeking behaviors", majority of the respondents preferred private practitioners and traditional and spiritual healers for treatment of malaria, and to a lesser extent the government health facilities because of far distances. Our findings are in line with the studies conducted in most sub-Saharan African countries, where treatment is sought mainly in non-public sources<sup>16,17,18,19</sup>. However,

in a study conducted in Ethiopia, majority of the respondents preferred to seek treatment in the government health facilities rather than approaching traditional healers<sup>20</sup>. The low preference to public sector health facilities could be due to the fact that there was only one government facility located in the study area and that too was not a regular primary health care facility but an EPI centre. Long distances, long hours waiting time and non-availability of free of cost medicines at the government health facilities seem to be yet another factor that prompted the people to seek treatment from the private practitioners.

Barriers and area specific difficulties in early diagnosis and treatment of malaria has been also reported from different parts of the world. For example in a study in Uganda, Nuwaha reported long-waiting time and health workers abusing patients as important barriers for health seeking from government facilities<sup>21</sup> whereas, in another study from Ghana Hill et al<sup>22</sup> found financial access as a major barrier to care seeking.

Self medication for malaria was practiced by a considerable proportion of people in our sampled households. This type of behavior generally exists in the socially and financially deprived communities, and is also influenced by the local taboos. This act of self-treatment is consistent with findings from study done in other part of Uganda<sup>23</sup>, India<sup>24</sup>, Tanzania<sup>25</sup>, Bangladesh<sup>26</sup> and Sudan<sup>27</sup>. Similarly A study from Pakistan also documented self medication among communities in semi-urban areas of Karachi and pointed out the "drug retail shops" are the public first point of contact responsible for this behavior<sup>28</sup>.

Majority of the respondents did not have knowledge whether malaria can be prevented or not, they also lacked knowledge about protective measures. This in contrast to a study conducted in Swaziland, where majority (78.1%) believed that malaria is a preventable disease<sup>29</sup>. In this study 51% of the respondents had the knowledge about bed nets and almost 45% possessed one or more nets. In Swaziland 65.3% respondents

reported use of insecticide bed nets for protection against malaria. Indeed, several studies across the globe particularly including studies conducted in Afghan refugees in Pakistan by Mark Rowland et al<sup>30</sup> evidently suggest that Bed nets/Insecticide-treated nets are regarded as one of the most effective prevention methods and sleeping under the protection of bed nets could substantially reduce the malaria burden.

## CONCLUSION

The overall knowledge about malaria prevention and control was generally low, and it did not translate into good practice behaviors, hence the uptake of control interventions by the community was sub-optimal. Therefore, public education is necessary to address the knowledge gaps highlighted by the study. There is need to raise awareness and also educate all women of child-bearing age about preventing malaria during pregnancy. People must be made aware that children below 5 years and pregnant women are most vulnerable to malaria and they should be given priority to sleep under the LLINs.

Since most of the residents were not aware of the risks associated with suffering from malaria, therefore, they had a sloppy attitude towards preventive and control behavior as well as prompt treatment seeking. There is need to reinforce good behavior and clear the misconceptions held by residents about malaria prevention and control measures. Examples of misconceptions here included the fear of suffocating in mosquito bed nets, shortness of breath as these are insecticide treated. Therefore, there is a strong need for information, education and communication materials for addressing their concerns about the use of LLINs. BCC campaign about malaria targeting among residents should raise awareness about seeking proper treatment and also tackle the relaxed attitude of residents in order to promote prompt treatment for malaria (within 24 hours).

## REFERENCES

- World Health Organization Malaria Report 2011
- Murray CJ, Rensfeldt LC, Lim SS, Andrews KG, Foreman KJ, Haring D, Fullman N, Naghavi M, Lozano R, Lopez AD: Global malaria mortality between 1980 and 2010: a systematic analysis. *Lancet* 2012, 379(9814):413-431.
- Mehboob Sultan SMA. Pakistan Demographic and Health Survey 2006-07, National Institute of Population Studies Islamabad, Pakistan. 2008:147
- Timothy DV Dye RA, Eric S Lugada. Before we used to get sick all the time, Perceptions of Malaria and use of (LLINs) in a rural Kenyan Community. *Malaria Journal* 2010. 2010:2
- Chuma J, Abuya T, Memusi D, Juma E, Akhwale W, Ntwiga J, Nyandigisi A, Tetteh G, Shretta R, Amin A: Reviewing the literature on access to prompt and effective malaria treatment in Kenya: implications for meeting the Abuja targets. *Malaria J* 2009.
- Hlongwana KW, Mabaso ML, Kunene S, Govender D, Maharaj R: Community knowledge, attitudes and practices (KAP) on malaria in Swaziland: a country earmarked for malaria elimination. *Malaria J* 2009
- Rolling back Malaria-next 10 years. *Lancet* 2008.
- Uza M, et al. knowledge and behavior relating to malaria in endemic villages of Khammooouane Province, Lao PDR, southeast Asian J Trop Med Public Health 2002;33:246-254.
- Kroeger A, Meyer R, Mancheno M, Gonzalez M: Health education for community-based malaria control: an intervention study in Ecuador, Columbia and Nicaragua. *Trop Med Int Health* 1996, 1:836-846
- Alilio MS, Bammek J: A KAP study in Zanzibar: Implications for prevention and control: A study conducted for UNICEF suboffice Zanzibar. *Evaluation and Programme Planning* 1998,21:409-413.
- Jima, D., Tesfaye, G., Deressa, W., Woyessa, A., Kebede, D., Ali, A. and Enquoselassie, F. (2003) timalarial drugs in a rural community. *Ethiopian Journal of Health Development*, 17(2), 99-104
- Jima, D., Tesfaye, G., Deressa, W., Woyessa, A., Kebede, D. and Alameraw, D. (2005) Baseline survey for the implementation of insecticide-treated mosquito nets in malaria control in Ethiopia. *Ethiopian Journal of Health Development*, 19 (1), 16-23. Ziba, C., Slutsker, L., Chitsulo, L. and Steketee, R.W. (1994)
- Use of malaria prevention measures in Malawian households. *Trop Med Parasitol*, 45(1), 70-73. [19] Simsek, Z. and Kurcer, M.A. (2005) Malaria: knowledge and behaviour in an endemic rural area of Turkey. *Public Health*, 119(3), 202-208.]
- A. Kroeger, R. Meyer, M. Mancheno, and M. Gonzalez, "Health education for community-based malaria control: an intervention study in Ecuador, Colombia and Nicaragua," *Tropical Medicine and International Health*, vol. 1, no. 6, pp. 836-846, 1996).
- Dunyo SK, Afari EA, Koram KA, Ahorlu CK, Abubakar I, and Nkrumah FK: Health centre versus home presumptive diagnosis of malaria in southern Ghana: implications for home-based care policy. *Trans R Soc Trop Med Hyg* 2000, 94:285-288.
- Deressa W, Ali A, Enquoselassie F: Knowledge, attitudes and practices about malaria, the mosquito and antimalarials drugs in a rural community. *Ethiop J Health Dev* 2003, 17:99-104.
- Müller O, Traoré C, Becher H, Kouyaté B: Malaria morbidity, treatment-seeking behaviour, and mortality in a cohort of young children in rural Burkina Faso. *Trop Med Int Health* 2003, 8:290-296.
- Nuwaha F: People's perception of malaria in Mbarara, Uganda. *Trop Med Int Health* 2002, 7:462-470.
- K. Karunamoorthi and Abdi K. Knowledge and health seeking behavior for malaria among the local inhabitants in an endemic area of Ethiopia: implications for control. *HEALTH* 2 (6): 575-581. 2010 (<http://www.scirp.org/journal/HEALTH>)
- Nuwaha F. People's perception of malaria in Mbarara, Uganda. *Trop Med Int Health* 2002; 7: 462-70..
- Hill Z, Kendali C, Arthur P, Kirkwood B, Adjei E. Recognizing childhood illness and their traditional explanations: exploring options for care-seeking interventions in the context of IMCI strategy in rural Ghana. *Trop Med Int Health* 2003; 8: 668-76
- A. K. Mbonye, S. Neema, and P. Magnussen, "Treatment seeking practices for malaria in pregnancy among rural women in Mukono district, Uganda," *Journal of Biosocial Science*, vol. 38, no. 2, pp. 221-237, 2006
- L. L. Sabin, A. Rizal, M. I. Brooks et al., "Attitudes, knowledge, and practices regarding malaria prevention and treatment among pregnant women in eastern India," *American Journal of Tropical Medicine and Hygiene*, vol. 82, no. 6, pp. 1010-1016
- D. M. Humphrey, O. Emmanuel, M. Wilhelmus et al., "Knowledge, attitudes, and practices about Malaria and its control in rural Northwest Tanzania," *Malaria Research and Treatment*, vol. 2010, Article ID 794261, 2010.
- S. M. Ahmed, R. Haque, U. Haque, and A. Hossain, "Knowledge on the transmission, prevention and treatment of malaria among two endemic populations of Bangladesh and their health-seeking behaviour," *Malaria Journal*, vol. 8, no. 1, article 173, 2009
- Comoro C, Nsimba SED, Warsame M, Tomson G: Local understanding, perception and reported practices of mothers/guardians and health workers on childhood malaria in Tanzania district-implications for malaria control. *Acta Trop* 2003, 87:305-313
- Rao MH, Soomro IBM. Attitude and practice pattern of urban population in the use of local pharmacy in treatment seeking process and its comparison with the semi urban population of Karachi. *Pakistan J Med Res* 2004; 43:1e9.
- Khumbulani W, Hlongwana Lh, et al. Community Knowledge, Attitudes And Practices (KAP) On Malaria In Swaziland: A Country Earmarked For Malaria Elimination. *Malaria J*. 2009 Feb. 19; 8:29.1
- Rowland Et Al; Pyrethroid-Impregnated Bed Nets For Personal Protection Against Malaria For Afghan Refugees 1996;