Gender, Health, and Sustainable Development

Proceedings of a Workshop held in Nairobi, Kenya, 5–8 October 1993

Edited by Pandu Wijeyaratne, Lori Jones Arsenault, Janet Hatcher Roberts, and Jennifer Kitts
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Abstracts from an Essay Competition Sponsored by IDRC and TDR
Gender and Acceptance of Technologies for Tropical Disease: Impregnated Mosquito Bednets for Malaria Control

Martin Sarikiaeli Alilio

Introduction

The prospects for malaria control implemented by international and national efforts remain more elusive now than ever before. In many countries these programs have lost momentum due to a number of reasons, including: (i) cuts in national and international organisations’ expenditures; (ii) refusal of householders to allow spraying because nuisance insects are not killed, objections to strangers entering their houses, and because of unsightliness or odour of the older types of insecticide; and (iii) resistance of some vector populations to some insecticides and the tendency of some species not to rest long enough inside houses to pick up a lethal dose (Curtis 1993). The question now, therefore, is, are there alternative techniques of proven effectiveness which well-motivated communities would be willing and able to apply for themselves, with minimum training and assistance from central authorities?

One possibility may be the use of the mosquito bednets, particularly when treated with insecticide, as a means to reduce man/mosquito contact. It has been repeatedly shown that permethrin-impregnated mosquito nets are effective not only against mosquitoes but also against one of the most irritating of biting insects — bedbugs, Cimex (Charlwood and Gagaro 1989; Lindsay et al. 1989; Njunwa et al. 1991).

A number of factors have been identified as necessary for active and sustained community participation in disease prevention and control. These include knowledge, competent technical assistance, an appreciation of long-term benefits, and a strong sense of community. While these factors may be necessary, they may not be sufficient for cooperation to prevail. More recently, a number of other factors have been identified, including the need to incorporate gender-related issues within and outside the household. Since malaria affects men and women differently, socially, economically and physically, gender is an important aspect to be considered when planning any intervention measures for malaria. This paper highlights gender issues related to malaria control.

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Malaria and Traditional Sex Roles

While the exact number of people infected with malaria each year remains unknown, this number is hardly less than 100 million, 2/3 of whom are women and children. Indeed, some estimates based on alternative methods of statistical evaluation suggest that there may be over 400 million cases per year (TDR 1989). Malaria is the major cause of mortality in tropical areas, especially in Africa. Not only is malaria the most serious of the diseases faced by the tropical world community, it is also the most tricky. Both parasite and vector are opportunists with a high rate of reproduction, with a resultant high rate of genetic rearrangement. Thus a wide repertoire of possible genotypes exist that can confer adaptation or resistance to any weapons which are developed.

As many institutions, especially non-governmental, now focus on projects aimed at placing malaria prevention and control in the hands of individual families and communities, it is becoming clear that there is a need to examine the social relations of members of the individual household/family. Indeed, data from recent studies show that there are marked gender differences in the risks of exposure, vulnerability and access to protective measures against malaria (Alilio 1990).

The depressed health of women for example, which in Africa is related to general malnutrition and infection, as well as complications of pregnancy and child birth, are some of the reasons for the high levels of mortality and morbidity in women from malaria. These conditions also occur in the context of poor socio-economic situations where education, health and other social services are very limited for women. Some of these underlying causes have their roots in socio-cultural beliefs and practices that adversely affect the status of women in society (Mpanju 1992).

The average African woman has 6 or 7 children, and therefore goes through many cycles of pregnancy and lactation. Between the ages of 20 and 45 years, women are bearing children at a very short intervals, breastfeeding them, and at the same time continuing to perform energy-consuming work loads. Studies in Tanzania show that most women continue to carry out energy-consuming work even to their last days of pregnancy, without adequate caloric intake. Accordingly, they continue to fetch water and firewood for fuel, to farm, to cook and wash, to take care of children and sick members of their families, among other tasks (Mpanju 1992). A malnourished woman does not necessarily reduce her workload, rather, she takes longer to accomplish it. In this context, resting during pregnancy which is not associated with overt disease is seen as sign of laziness. Such attitudes contribute to maternal depletion syndrome, which results from a chronic imbalance in the energy demands on the bodies of women. Other factors which contribute to the negative energy imbalance in pregnancy include: (i) inadequate food intake; (ii) frequent infections; and (iii) cultural practices and food taboos. However, poorly nourished women may feel less inclined to participate in activities such as attending prenatal care, taking their children for growth-monitoring and immunization, or paying attention to health education messages essential for their own health.
Anemia, particularly nutritional anemia, is known to contribute considerably to recurrence of malaria episodes. Studies in Tanzania indicate that anemia results from a combination of factors which include (i) low intake and low bio-availability of dietary iron; (ii) protein-energy malnutrition; and (iii) effects of parasitic infections, especially malaria, schistosomiasis and intestinal worms. Malaria appears to be the single most important factor related to the geographical variability in the prevalence of anemia (Mpanju 1992). In one study conducted in Nzega, in central Tanzania, anemia, clinical malaria and fevers during pregnancy where identified in 87% of 1072 women surveyed. Malaria and anemia were also found to be the most important determinants of pregnancy outcome in a study in Ilula, in southern Tanzania, further emphasising the importance of anemia in pregnancy.

**Women and Malaria Control Technologies**

In Thailand, South China, and parts of Latin America and Africa where the nuisance of mosquitoes is particularly severe, the use of mosquito bednets is already common, even among poor people. The cost of sufficient pyrethroid for impregnation is small compared with that of a net, and the cost of treating the nets in a house is less than the cost to spray the same house with DDT. (Li Zuizi in Curtis et al. 1990). Net treatment is also much more acceptable to people than DDT house spraying. However, the problem with bednets compared to other malaria control measures like DDT spraying, is that most poor households cannot afford to buy sufficient bednets for everyone in a family. In this case, the sharing of few nets tends to reflect the inequality which often exists between men and women within the family, in which men tend to be the decision-makers and therefore the benefactors.

The situation is worse in the parts of Africa where perennial malaria exists, and where bednets are thought of as a luxury item for rich men. Findings from a study conducted in Muheza, Tanzania suggest that the "issue" is not whether people will accept or reject protective measures against mosquitoes, but rather whether they can afford them for all family members (Allilio 1990). The study also revealed that mosquito bednets are expensive when one takes into account the total turnover of the household economy. Hence bednets may not be high in the order of priorities of the household. The outlay required to buy a net is perceived as beyond the means of the poor. Malaria incidence, therefore, has as much to do with poverty as with other ecological factors. Poor families simply do not have the resources to protect every member of the family from malaria.

**Is Appropriate Policy Missing?**

There are a number of policy issues which need to be examined in the context of bednet use. There is a strong argument in favour of subsidizing the cost of bednets if only to the wholesale price in order that they be more widely accessible, although this might be resisted by those who favour commercial, as opposed to socialised, medicine. If the nets were sold at a lower price by village health workers, this would add one more to their many responsibilities and a small incentive payment would probably be required. Such sales would
undercut the commercial market in mosquito nets and could be an additional cause of friction between village health workers and economically powerful members of the community (MacCormack 1990).

Bednets might also be considered by governments as a medical appliance and not a luxury item and could, therefore, be free of sales tax and customs import duty. It is in everyone’s interest for there to be a high level of usage of impregnated nets in a community, as this ensures that many mosquitoes are killed by contacting insecticidal nets (Curtis 1991a).

To encourage widescale use, communities might be encouraged to form small groups to manufacture mosquito bednets for local community use. Instead of importing industrial-made nets, local tailors could be encouraged to make mosquito bednets so that people can have the size and types of nets they prefer. This approach could stimulate further economic benefits to trickle down through the local economy.

Formal surveys (e.g. Desfontaine et al. 1990) and casual conversations show that it is the nuisance of insects (including disturbance of sleep by noise of mosquitoes) which is of more immediate concern to most people than their vectorial role. Charlwood and Dagaro (1989), and Lindsay et al. (1989) report that headlice infestation rates were reduced by use of impregnated nets, presumably because dust containing pyrethroid enters the sleeper’s hair. To induce acceptance, all such authenticated beneficial side effects of impregnated nets should be incorporated in information packages to be provided to the communities.

If people are unwilling to sleep under conventional bednets because they obstruct ventilation, they may find it more acceptable to use impregnated curtains over doors, windows or eaves gaps (Majori et al. 1988; Sexton et al. 1990), or impregnated broad mesh nets (Kurihara et al. 1985; Hossain and Curtis 1989). Broad mesh nets may also be more portable by people who spend nights away from home to guard crops or for other reasons. However, if broad mesh nets are adopted by a community, their timely reimpregnation is particularly important as they provide only a chemical barrier and not a physical one.

If nets are to be marketed and impregnated at prices affordable by the very poor through the primary health care system, one should also consider doing the same with other forms of personal protection such as deet repellent, good quality mosquito coils or substitutes for them such as insecticide impregnated rope (Sharma et al. 1989). With all these methods it is most important that primary health care workers are provided with understandable, accurate and commercially unbiased information on the need for personal protection and how the various methods are used.

Primary health care workers are generally expected by the public to provide curative medical services and are often under severe pressure in their communities (MacCormack, 1990). They cannot therefore be expected to impose preventive vector control activities on
an unwilling or apathetic community. Therefore, if vector control is to be carried out via the primary health care system, it is essential that it has the active support of public opinion, as well as the necessary skills and materials.

Good educational material is of great importance if primary health care workers are to play any role in encouraging communities to use impregnated mosquito nets. Some people do not know that mosquitoes come from aquatic larvae and many do not know about the different kinds of breeding sites occupied by the vectors of malaria, filariasis, dengue and Japanese encephalitis. In informing people about these matters, it is important that educational material does not give an over-optimistic impression about the feasibility of effective disease control via larval control. There have been innumerable disappointments because people did not realise how intensive the searching for breeding sites must be, that some mosquitoes can fly considerable distance, and that where transmission is intense, a very large reduction in adult vector density is necessary to have any impact on the prevalence of malaria.

It is important that studies now compare the cost of mosquito bednets per capita vis-à-vis per capita treatment cost of antimalarial drugs. There is some evidence which shows that mosquito bednets are more cost-effective. If the same could be found to be true in other malarious regions, the evidence might be used to convince policy-makers to promote mosquito bednet usage.

Research Gaps

A number of research gaps still exist, particularly related to gender differentials in the prevention and control of malaria. There is urgent need for information about the burden which will be added to women if malaria control responsibility is placed on the shoulders of families, especially in the rural areas. More information on the gender implications of such a strategy is needed. If governments and public authorities are no longer willing or able to invest in malaria control activities, placing the malaria control burden on the shoulders of household and families will inevitably have detrimental effects on women, although the nature and degree of these effects is not yet known.

In addition, very little is actually known about the decision-making process within the household. This process has a direct effect on who in the family benefits from any particular malaria control strategy. More research needs to be done in order to better understand and incorporate these processes into any intervention strategy, so that it may be both culturally appropriate and gender-sensitive.
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