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## **Use and Relevance of Stated Preference Methods in Determining Willingness to Pay for Insecticide Treated Bed Nets in a Rural Area in Tanzania**

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Studies conducted in Africa and other places in the developing world have shown that insecticide treated nets (ITNs) and other insecticide treated materials (ITMs) provide significant protection against malaria in many environmental and epidemiological situations. In Tanzania for instance, studies have shown that ITNs reduce child mortality by 25-30%, parasiteamia and malaria related anaemia by 60% and 50% respectively. The technology has now been adopted by the Roll Back Malaria programme as a priority method in protecting people against mosquito bites, and consequently, malaria. However, ITNs are new to many people, and there are many people who are vulnerable to malaria, who are too poor to afford one. The government cannot also afford to give free nets to all. Hence, an ITN market needs to be established. In the absence of observable market transactions, researchers and public policy analysts have resorted to stated-preference methods (SP). We therefore used SP methods to explore the willingness to pay (WTP) for ITNs and its determinants in a rural population in Kisarawe District of Tanzania.

A random sample of 501 adults from four villages in four divisions of Kisarawe district was selected for the study. A test-retest of two weeks interval design was used to collect information. Respondents were interviewed twice in a two-week interval. In the second round, 98% of the respondents were available for interview. A take-it-leave-it (TIOLI), where an ITN and a sachet of insecticides were shown to the respondent, and open-ended (OE) elicitation methods were used to elicit WTP values.

Results show that about 50.5% and 49.5% of the respondents were male and female respectively. And, 58% and 75% were heads of households and married respectively. More than 80% were predominantly peasants depending on subsistence farming as their main source of food and income for a living. About 67% had at least a primary school education. Malaria was reported by about 90% of the respondents as the most prevalent disease in their communities, and 37% reported at least one household member to have had malaria in the last three months prior to the interview. Only about 20% of the respondents owned a mosquito net. Humidity, seasonality (low density) of mosquitoes and inability to pay were mentioned to be among major reasons that impeded net use.

More than 80% and 75% were able to reproduce their WTP and choice-based responses respectively between rounds. Responses were consistent (reproducible) and stable between the two rounds of the survey. More than 75% of the respondents also could reproduce reasons that induced them to make the choices they had made in both rounds.

Above that, we did not find evidence for “strategic”, “learning effect” and “starting point” biases. Respondents were found to be “economically rational”: consistent and transitive in responding to the discrete WTP questions. Responses were economically, intuitively and logically valid, consistent with consumer behaviour in economic theory. The mean estimated from OE method was always lower than that from DC questions. Using three models, Ordinary Least Squares, Random Effects (GLS) and the Logistic Regression Models, we found that individual and ITN characteristics would influence WTP and choice of ITNs. We find that WTP measures estimated from OE were lower than those from TIOLI format. Results from the multivariate analyses show that, nuisance of mosquito bites, age of the respondent, knowledge of malaria transmission, self rated health status, prior possession of a bed net, distance to the usual health facility and self rated ability to pay were significantly associated with individual’s maximum WTP obtained by the OE elicitation format ( $p < 0.005$ ). We also found that a recent experience with a malaria episode, nuisance of mosquito bites, distance to the usual health facility and the price of an ITN were associated with the probability of giving an affirmative response for the TIOLI format ( $p < 0.005$ ). Factors that would influence WTP are likely to differ depending on the approaches used to elicit WTP. Our results imply that respondents would give different responses depending on the method used to elicit WTP.. Apart from individual’s, social and economic characteristics, characteristics of an ITN had a great impact on WTP for an ITN. We found that if the same price is charged to ITNs of different attributes, the size (4-feet), colour (blue) and shape (rectangular), in that order, were “relatively more important” attributes in determining the choice of an ITN. The round-shaped net, a white net, and red colour net were the most unpopular. The WTP study generated vital information useful for designing social marketing messages for promotion of ITN demand and sustainability of ITN interventions in poor rural area. More research is required to confirm WTP prior and after ITN intervention.