community. The basis for including a self assessment variable as an explanatory variable in the model can be justified on two grounds, namely, permanent income and life cycle hypotheses [24,25]. On the basis of both permanent income and life cycle hypotheses, wealth level of a consumer is an important explanation of his consumption expenditures with a higher stock of wealth resulting in higher level of real consumption expenditure from a given level of current real income [24,25]. But experience has shown that most Nigerian respondents would not readily give information on the stock levels of their wealth and a proxy measure will have to be used. It is for the same reason that respondents' incomes are determined via the indirect expenditure approach. In such a circumstance, there may be no better measure of one's stock of wealth than his/her self-assessment. Thus, we expect those who assess themselves to be relatively well-to-do in their societies to be willing to pay more for malaria eradication. We also expect those who currently spend high sum on malaria protection and malaria treatment to be willing to pay more for malaria eradication. Furthermore, we expect households with married persons to be willing to pay more – because pregnant women and children are at the greatest of risk and such households have more of these than households with single persons.

We expect that those using public health facilities, where the cost is relatively cheaper and who sometimes enjoy some subsidies, should be willing to pay relatively less. Also, those who bear high indirect costs (measured either by distances to medical facility, lost work days or number of sick days), should be willing to pay more. And finally, we expect strangers in the community (say, those who have stayed less than one year) to have lower altruistic attachment to the community and therefore less willing to pay for more social-oriented programme components of total malaria control menu but relatively more willing to pay for more self-centered prevention methods like bed nets, window/door nets, etc. Similar specifications are found in the literature. For instance, a model of willingness to pay for insecticide-treated nets (ITNs) in Nigeria included education level, marital status and expenditure to treat malaria as explanatory variables, among others [17]. We note however that the variable "number of household residents" included in the model is highly correlated with other household-size-related variables like household's cost of treating malaria, their cost of protection and the indirect cost of malaria. Its inclusion as an explanatory variable in any model that has the above-mentioned variables as explanatory variables will result in a serious multi-colinearity problem, hence, it was excluded from our model. Similarly, because the income variable is included in our model, it will be superfluous to include annual expenditure on school fees as done in the earlier model. In addition, the importance of wealth level in the willingness to pay specifications is recognized in the literature [5]; we only differ on how best the wealth variable should be measured. We use our measure of wealth because in the settings of the study some households have substantial financial assets that are only known to them while others do not hold financial assets but hold physical assets instead. Consequently, self-assessments by households themselves are expected to give a more representative indicator of their stock of wealth.

Informed by these considerations, we specify household's WTP for malaria control (WTPMC) as a positive function of household's income (Y), its level of education (EDUC), its current cost of malaria protection methods (MPROTEC), its current cost of treating malaria cases (MALCOST), the indirect costs of malaria attacks (INDIRECTCOST) and level self assessment (SELF). Furthermore, WTPMC is specified to be positively related to marital status (MARRIED), negatively related to stranger variable (STRANGER) and public medical facility variable (PUBMED). Thus, we write:

WTPMC = WTPMC (Y, EDUC, MPROTEC, MALCOST, INDIRECTCOST, SELF, MARRIED, STRANGER, PUBMED)..... (1)

where the partial derivatives of the dependent variable with respect to Y, EDUC, IMPROTEC, MALCOST, INDIRECTCOST, and MARRIED are expected to be positive and negative for others (i.e. for SELF, STRANGER and PUBMED). It is worth noting that it is for the same reasons that MALCOST variable enters the model that INDIRECTCOST and PUBMED enter the model – those currently bearing higher cost of the malaria disease are willing to pay more for its eradication or treatment.

Method of estimation and data measurements

The methods of estimation involve first using the methods of ordinary least squares to obtain initial estimates of parameters. Thereafter, ordinal regression (that uses a multivariate ordered logit procedure) is used to confirm whether or not the regression analysis is appropriate. The results of such analysis indicate the Ordinary Least Square (OLS) regression estimates have the same signs as estimates from ordinal regression. Consequently, the OLS estimates are adopted and reported in this study. Also, the functional form of the model is empirically determined – whether linear or log linear. It is worth noting that taking the log of SELF variable poses no danger as its values varies from 1 to 5. Though a discrete variable, the logs of 1 through 5 are order-preserving and therefore constitute no problem for estimation. However, care and caution should be exercised when interpreting the coefficient of its log value.