

See discussions, stats, and author profiles for this publication at: <http://www.researchgate.net/publication/12817227>

Willingness to pay for the maintenance of equity in a local ivermectin distribution scheme in Toro, Northern Nigeria

ARTICLE *in* PUBLIC HEALTH · AUGUST 1999

Impact Factor: 1.43 · DOI: 10.1038/sj.ph.1900562 · Source: PubMed

CITATIONS

13

READS

15

3 AUTHORS:



Obinna Onwujekwe
University of Nigeria

200 PUBLICATIONS 1,933 CITATIONS

SEE PROFILE



Elvis Shu
University of Nigeria

59 PUBLICATIONS 700 CITATIONS

SEE PROFILE



Paul Obiekwe Okonkwo
University of Nigeria

66 PUBLICATIONS 880 CITATIONS

SEE PROFILE



University of Nigeria

Virtual Library

Serial No	
Author 1	ONWUJEKWE, Obinna Emmanuel
Author 2	SHU E. N.
Author 3	OKONKWO, Paul;
Title	Willingness to Pay for the Maintenance of Equity in a Local Lvermectin Distribution Scheme in Toro, Northern Nigeria
Keywords	Onchcerciasis Ivernection ; Community Financing Willingness to Pay Equity
Description	Willingness to Pay for the Maintenance of Equity in a Local Lvermectin Distribution Scheme in Toro, Northern Nigeria
Category	Medicine
Publisher	Tropical Medicine and International Health
Publication Date	May, 2000
Signature	

54

Willingness to pay for the maintenance of equity in a local ivermectin distribution scheme in Toro, Northern Nigeria

OE Onwujekwe^{1*}, EN Shu¹ and PO Okonkwo¹

¹Health Policy Research Unit, Department of Pharmacology and Therapeutics, University of Nigeria, College of Medicine, PMB 01129, Enugu, Nigeria

The willingness to pay (WTP) for the maintenance of equity in a local ivermectin distribution scheme in the context of a community financing framework was determined in Toro, Northern Nigeria, using 214 randomly selected heads of households, or their representatives. Though WTP of the respondents for their own households was elicited, the focus of this paper is on WTP to maintain equity in a community financing scheme. Contingent valuation was used for the exercise, and WTP was elicited using an open-ended question. 97.2% of the respondents were in favour of allowing those that lack the ability to pay, to benefit from the scheme and the maximum WTP amounts they were willing to contribute annually so that those who lack the ability to pay could benefit from the scheme ranged from 5 Naira (\$0.06) to 100 Naira (\$1.25). The mean WTP to maintain equity was 29.00 Naira (\$0.36) while the median was 20.00 Naira (\$0.25). This study shows that a community financing scheme for local ivermectin distribution will not be inequitable, since enough funds will be realised from well-to-do community members to cover the costs for those who are unable to pay.

Keywords: onchocerciasis; ivermectin; community financing; willingness to pay; equity

Introduction

Nigeria has the world's highest endemic rate for onchocerciasis, with approximately 40 million people at risk of infection.¹ Community-directed treatment with ivermectin (CDTI) is the new system being promoted by the newly created African Programme for Onchocerciasis Control (APOC), which uses ivermectin to control onchocerciasis.² In this new system, communities are expected to bear the local costs of ivermectin distribution, and to organise drug distribution themselves. This is because the resources of the Federal and State governments are limited. Moreover, limited resources do come from donor organisations and countries and therefore communities need to raise additional funds locally. In a previous study,³ we found fee-for-service and pre-payment as the possible payment options for such community-based distribution of ivermectin.

In an earlier study, Akpala *et al*⁴ investigated the level of community participation and financing of mass distribution of ivermectin in Eastern Nigeria. They reported that communities donated land, labour and non-monetary capital for the success of the programme. However an envisaged problem in community financing of ivermectin distribution involving the raising of monetary capital to fund local distribution costs is that those lacking the ability to pay may not benefit from the scheme especially if the fee-for-service scheme is adopted by the community. This may result in an inequitable scheme and prospects of disease elimination may become bleak. Since inequity is a major point against community financing⁵ it became necessary to determine: (1) whether households in a community who can afford treatment are also willing to assist those who are unable to pay to benefit

from the local ivermectin distribution scheme; and (2) the maximum amounts that these households who have the ability to pay are prepared to contribute annually to cover the distribution costs for those unable to pay. This will have effects on the long-term sustainability of the CDTI scheme since total population coverage is essential for onchocerciasis elimination. Therefore, community financing will affect the coverage and onchocerciasis elimination since if those lacking in ability to pay are excluded from receiving ivermectin, the reservoir of infection in the communities will remain and onchocerciasis will not be eliminated.

Subjects and methods

Description of study site

This study was conducted in Toro community which lies in the Sudan-savanna mosaic zone of Northern Nigeria. Toro is semi-urban and it is actually the Local Government headquarters. It is about 110 km from the state capital, Bauchi, and has a population of about 20 000 people organised in households. A household is in this case defined as comprising a man, his wife, their unmarried sons and daughters, domestic servants and live-in-relatives. The average size of a household in Toro is seven. The households reside in many settlements that are grouped under five villages that form the Toro district. All the houses have a primary health centre (PHC) number. The people are predominantly Muslims, and farming and public service work are the most frequent occupations for those people. It should be noted that all occupational groups especially the public servants are actively engaged in subsistence farming in order to supplement the meagre wages they receive from government. Onchocerciasis endemicity level is about 40% and the community has had mass distribution of ivermectin since 1993.

*Correspondence: Dr OE Onwujekwe, Health Policy Research Unit, Department of Pharmacology and Therapeutics, University of Nigeria, College of Medicine, PMB 01129, Enugu, Nigeria.
Accepted: 3 December 1998

Study design

This was a cross-sectional descriptive study. The households were used as the sampling unit while the PHC house numbering system for the households was used as the sampling frame. Using the table for sample size estimation by Eddy⁶, the sample size was 361, but because of non-responses, we eventually had 214 households. The household heads or their representatives were interviewed whether or not any member of their household was infected with onchocerciasis. This study was cleared by the Ethical committee of the University of Nigeria Teaching Hospital, Enugu. Additionally, consent was sought and obtained from the District head before the study commenced, and the individual consent of the respondents was also obtained. None of the respondents declined to participate in this exercise.

Study tool and data analysis

An interviewer-administered structured questionnaire was employed which had questions exploring personal and socio-economic status of the households. It also explored the maximum amount the individuals were willing to pay for themselves, and the maximum amount they were willing to contribute annually for the indigent community members, information which was elicited using an open-ended question. A simple scenario explaining the rationale for looking for additional funds to distribute ivermectin, the benefits of comprehensive long-term community distribution, 100% coverage of community members, and the need to contribute some money so that those unable to pay can benefit from the scheme was presented to respondents before asking them to state the maximum amounts they were willing to contribute annually. Data generated was analysed using percentages and ordinary least squares (OLS) multiple regression analysis.

Results and discussion

Since the focus of this study was household heads, 91.6% of the respondents were males. 64.5% were aged between 20–40 y, 21% between 41–60 y and 10.8% were more than 60 y of age. The rest were aged less than 20 y and it is assumed they were mostly representatives of households. 83.6% were household heads and 16.4% representatives of households. Most (80.8%) were married. 45.8% completed secondary education, 26.6% completed tertiary education, while 10.3% completed primary education, and the rest had no formal education or did not complete primary education. 16.8% of the respondents indicated that farming was their main occupation, and 42.1% were primarily government workers. Other respondents were skilled labourers (10.3%), unskilled labourer/unemployed (8.9%), private company employees (1.9%) and professionals (0.9%). It should be noted that all these occupational groups especially the government workers are engaged in active subsistence farming and their engagement as government workers is a form of 'hidden' unemployment.

In order to estimate the costs of a CDTI scheme which did not exist, modelling of costs was done by Onwujekwe (unpublished work). In the cost modelling, it was found that the unit total direct cost for distributing ivermectin ranged from 8.8 Naira (\$0.11) to 12 Naira (\$0.15) per person depending on the demographic characteristics of a community. Willingness to pay (WTP) for local ivermectin

distribution exists in Toro community⁷. 92.1% of the respondents were willing to pay to cover their personal distribution costs with a mean WTP amount of 28.89 Naira (\$0.36) and a median of 30.00 Naira (\$0.38). There was no statistical relationship between WTP of households with or without direct experience of onchocerciasis. There was also no statistical difference in responses from household heads and representatives of the households. The results of this present study indicate that 97.2% of the respondents were willing to pay to cover the costs to receive ivermectin themselves, and were willing to allow those that lack the ability to pay to benefit from the scheme by contributing a certain amount annually. The mean stated WTP to maintain equity was 29.00 Naira (\$0.36) while the median was 20.00 Naira (\$0.25). The range was from 5.00 Naira (\$0.06) to 100.00 Naira (\$1.25). Using an average household size of five people, the amounts the households will pay for themselves and for those unable to pay which comes to 52.57 Naira (\$0.68) is adequate to cover the costs of CDTI. Therefore, the collective WTP amounts should be adequate to cover the costs of distributing ivermectin to the indigent community members annually. OLS multiple regression analysis did not yield any significant relationship between WTP to maintain equity and independent socio-economic variables. Equity according to the Plan of Action of the Pan American Health Organisation⁸ is one of three essential qualities of health services, efficiency and effectiveness being the other two. This study shows that a community financing scheme may not be infeasible if areas for raising funds for the indigent community members are discovered. This will most likely work in communities where social contact is high and the need to give help to the less privileged is part of normal life as in Toro.

Acknowledgements

This study received financial support from the UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases.

References

- 1 Akpala OC, Okonkwo FO, Nwagbo D, Nwajiyi B. Comparison of three strategies for mass distribution of ivermectin in Eastern Nigeria. *Ann Trop Med Parasitol* 1993a; 87: 399–402.
- 2 TDR. African onchocerciasis control: Patients to take over by 2008. *TDR News* 1996; 49: 4–5.
- 3 Onwujekwe OE, Shu EN, Okonkwo FO. Community financing of ivermectin distribution: Willingness and payment mechanisms. *Trop Doc* 1997; in press.
- 4 Akpala OC, Okonkwo FO, Nwagbo D. Mobilization for mass distribution of ivermectin in Eastern Nigeria. *J Health Policy and Plan* 1993b; 8: 78–81.
- 5 Stinson W. Potential and limitations of community financing. *World Health Forum* 1984; 5: 123–125.
- 6 Eddy KG. *Sampling Methods and Sampling Size*. Paper presented at the WHO/IMR Regional Center in-service course on Research design and Methodology, IMR, Kuala Lumpur April 1983.
- 7 Onwujekwe OE et al. Willingness to pay for community based local ivermectin distribution: a study of three onchocerciasis endemic communities in Nigeria. *Trop Med Health*. In press.
- 8 Pan American Health Organisation. *Health for all by the Year 2000: Plan of Action for the Implementation of Regional Strategies*. Washington D.C., PAHO 1982; Official document no. 178.

Study design

This was a cross-sectional descriptive study. The households were used as the sampling unit while the PHC house numbering system for the households was used as the sampling frame. Using the table for sample size estimation by Eddy⁶, the sample size was 361, but because of non-responses, we eventually had 214 households. The household heads or their representatives were interviewed whether or not any member of their household was infected with onchocerciasis. This study was cleared by the Ethical committee of the University of Nigeria Teaching Hospital, Enugu. Additionally, consent was sought and obtained from the District head before the study commenced, and the individual consent of the respondents was also obtained. None of the respondents declined to participate in this exercise.

Study tool and data analysis

An interviewer-administered structured questionnaire was employed which had questions exploring personal and socio-economic status of the households. It also explored the maximum amount the individuals were willing to pay for themselves, and the maximum amount they were willing to contribute annually for the indigent community members, information which was elicited using an open-ended question. A simple scenario explaining the rationale for looking for additional funds to distribute ivermectin, the benefits of comprehensive long-term community distribution, 100% coverage of community members, and the need to contribute some money so that those unable to pay can benefit from the scheme was presented to respondents before asking them to state the maximum amounts they were willing to contribute annually. Data generated was analysed using percentages and ordinary least squares (OLS) multiple regression analysis.

Results and discussion

Since the focus of this study was household heads, 91.6% of the respondents were males. 64.5% were aged between 20-40 y, 21% between 41-60 y and 10.8% were more than 60 y of age. The rest were aged less than 20 y and it is assumed they were mostly representatives of households. 83.6% were household heads and 16.4% representatives of households. Most (80.8%) were married. 45.8% completed secondary education, 26.6% completed tertiary education, while 10.3% completed primary education, and the rest had no formal education or did not complete primary education. 16.8% of the respondents indicated that farming was their main occupation, and 42.1% were primarily government workers. Other respondents were skilled labourers (10.3%), unskilled labourer/unemployed (8.9%), private company employees (1.9%) and professionals (0.9%). It should be noted that all these occupational groups especially the government workers are engaged in active subsistence farming and their engagement as government workers is a form of 'hidden' unemployment.

In order to estimate the costs of a CDTI scheme which did not exist, modelling of costs was done by Onwujekwe (unpublished work). In the cost modelling, it was found that the unit total direct cost for distributing ivermectin ranged from 8.8 Naira (\$0.11) to 12 Naira (\$0.15) per person depending on the demographic characteristics of a community. Willingness to pay (WTP) for local ivermectin

distribution exists in Toro community⁷. 92.1% of the respondents were willing to pay to cover their personal distribution costs with a mean WTP amount of 28.89 Naira (\$0.36) and a median of 30.00 Naira (\$0.38). There was no statistical relationship between WTP of households with or without direct experience of onchocerciasis. There was also no statistical difference in responses from household heads and representatives of the households. The results of this present study indicate that 97.2% of the respondents were willing to pay to cover the costs to receive ivermectin themselves, and were willing to allow those that lack the ability to pay to benefit from the scheme by contributing a certain amount annually. The mean stated WTP to maintain equity was 29.00 Naira (\$0.36) while the median was 20.00 Naira (\$0.25). The range was from 5.00 Naira (\$0.06) to 100.00 Naira (\$1.25). Using an average household size of five people, the amounts the households will pay for themselves and for those unable to pay which comes to 52.57 Naira (\$0.68) is adequate to cover the costs of CDTI. Therefore, the collective WTP amounts should be adequate to cover the costs of distributing ivermectin to the indigent community members annually. OLS multiple regression analysis did not yield any significant relationship between WTP to maintain equity and independent socio-economic variables. Equity according to the Plan of Action of the Pan American Health Organisation⁸ is one of three essential qualities of health services, efficiency and effectiveness being the other two. This study shows that a community financing scheme may not be equitable if areas for raising funds for the indigent community members are discovered. This will most likely work in communities where social contact is high and the need to give help to the less privileged is part of normal life as in Toro.

Acknowledgements

This study received financial support from the UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases.

References

- 1 Akpala OC, Okonkwo FO, Nwagbo D, Nwajiyi B. Comparison of three strategies for mass distribution of ivermectin in Eastern Nigeria. *Ann Trop Med Parasitol* 1993a; 87: 399-402.
- 2 TDR. African onchocerciasis control: Patients to take over by 2008. *TDR News* 1996; 49: 4-5.
- 3 Onwujekwe OE, Shu EN, Okonkwo FO. Community financing of ivermectin distribution: Willingness and payment mechanisms. *Trop Doc* 1997; in press.
- 4 Akpala OC, Okonkwo FO, Nwagbo D. Mobilization for mass distribution of ivermectin in Eastern Nigeria. *J Health Policy and Plan* 1993b; 8: 78-81.
- 5 Stinson W. Potential and limitations of community financing. *World Health Forum* 1984; 5: 123-125.
- 6 Eddy KG. *Sampling Methods and Sampling Size*. Paper presented at the WHO/IMR regional center in-service course on Research design and methodology, IMR, Kuala Lumpur, April 1983.
- 7 Onwujekwe OE et al. Willingness to pay for community based local ivermectin distribution: A study of three onchocerciasis endemic communities in Nigeria. *Trop Med Health*. In press.
- 8 Pan American Health Organisation. *Health for all by the Year 2000: Plan of Action for the Implementation of Regional Strategies*. Washington D.C., PAHO 1982; Official document no. 178.