



THE CENTRAL AFRICAN JOURNAL OF MEDICINE

Vol. 43, No. 3

CONTENTS

March, 1997

ORIGINAL ARTICLES

- | | | |
|--|---|----|
| Once versus thrice daily intramuscular gentamicin in children with systemic infections | WM Were, KJ Nathoo, CH Bannerman, S Siziya, A Tarumbwa, S Chigonde, CC Maponga | 63 |
| The arcuate line and the sensate deep inferior epigastric musculocutaneous flap: a quantitative anatomical study | G Mawera, SA Asala, EF Mbajiorgu | 68 |
| Community perception of mosquitoes, malaria and its control in Binga and Gokwe Districts, Zimbabwe | HT Masendu, BL Sharp, CC Appleton, SK Chandiwana, C Chitono | 71 |
| Depression in Zimbabwe: a community approach to prevention and treatment | J Broadhead, W Acuda, P Mbape, G Khumalo-Sakatukwa, M Chigwanda, D O'Ryan, E Garura, S Dodzo, M Mandaba, M Abas | 75 |
| Species specific and shared antigens of <i>Schistosoma haematobium</i> | P Ndhlovu, H Cadman, M Chidimu, B Vennervald, NO Christensen, SK Chandiwana | 80 |

CASE REPORTS

- | | | |
|--|--|----|
| Actinomycotic osteitis in the lower extremity | K Jönsson, FN Owori, AC Harid | 86 |
| Dual infection with <i>Cryptococcus neoformans</i> and <i>Histoplasma capsulatum</i> in human immunodeficiency virus infection | AM Coutts, VJ Robertson, P Musvaire, C Douie, JA Matenga | 88 |
| Adenosquamous cell carcinoma of the renal pelvis with clear cell pattern | K Ramesh, NH Sarma | 89 |

BOOK REVIEWS

- | | | |
|---|--------------------|----|
| Reflex sympathetic dystrophy: a reappraisal, edited by W Janig, M Straton-Hicks | B Adamolekun | 92 |
|---|--------------------|----|

Community perception of mosquitoes, malaria and its control in Binga and Gokwe districts, Zimbabwe

*HT MASENDU, **BL SHARP, ***CC APPLETON, *SK CHANDIWANA, †C CHITONO

Objectives: To determine the community's knowledge about mosquitoes, the cause, treatment, prevention and control of malaria in two endemic areas in Zimbabwe.

Design: Field survey.

Setting: Villages in Siabuwa, Binga district and Chireya, Gokwe North district.

Subjects: 38 male and female adult residents from two rural communities.

Results: Mosquito awareness was high and so was knowledge about the role played by mosquitoes in malaria transmission. The reason behind house spraying was known by most of the respondents but the attitude towards the spraying was negative and the benefit supposed to be derived from this control method was not perceived by many. The use of personal protective measures ranged from nil to low; for example only 21% of the respondents used bed nets. Indications of community willingness to pay for the spraying and to participate in larviciding provide hope for future greater family role in the primary health care delivery system.

Conclusion: Appropriate health education and community participation are essential to stimulate changes in both knowledge and behaviour in malaria control activities.

Introduction

The success of community participation in primary health care depends on the peoples' knowledge, attitudes and practices in relation to the diseases that affect them. Given the changing health care delivery system in Zimbabwe, greater self reliance on the part of affected communities is expected to play a greater role in future. As far as malaria prevention and control is concerned, this is designed to operate in largely marginalized communities which have previously relied on state run control operations. Annual indoor house spraying using residual insecticide remains the main method for malaria control in Zimbabwe but the trend is shifting towards integrated control encompassing the use of personal protection for prevention and environmental and biological means for source reduction of vector mosquitoes. The use of insecticide impregnated bed nets has gained popularity with the World Health Organization as a malaria control measure following successful trials in West and East Africa.^{1,2}

This study was designed to investigate what the affected people know, perceive and do about mosquitoes and malaria; the behaviour that would predispose them to infection, and some indicators of their socio-economic profiles.

Study Areas.

The study was conducted in two areas, namely Chireya and Siabuwa in the north west of Zimbabwe in the Zambezi escarpment. Chireya and Siabuwa were sprayed for malaria vector control with deltamethrin in December 1993. Both Chireya and Siabuwa were in their fourth cycle of annual spraying with deltamethrin; dichlorodiphenyltrichloroethane

(DDT) had been used erratically prior to this. In addition these areas fall within the region which had been subjected to aerial and ground spraying with organochlorides endosulfan and DDT during anti-tsetse fly exercises launched by the Tsetse and Trypanosomiasis Control Department of the Ministry of Lands, Agriculture and Rural Development in the early 80s.

Chireya, Gokwe North: The study was conducted in five villages adjacent to Chireya Mission Hospital, namely Taka, Nenhere, Kaparapate, Matashu and Venganayi. Chireya is approximately 450 km from Harare, lies at 670 m above sea level and is characteristically hot and subject to seasonal malaria episodes. The area falls under Natural Region IV which is characterized by an annual rainfall of 450 to 650 mm. The rainy season starts in October and ends in March/April. **Siabuwa, Binga:** Six villages, Zeula, Guteni, Machebuka, Male, Banenge and Siamtenge near Chief Siabuwa's homestead, were involved in the study. Some of the people living here were moved from the banks of the Zambezi river as a result of the construction of the Kariba Dam in the late 1950s. The area lies below 690 m above sea level, 80 km west of Chireya and 80 km from the district headquarters in Binga.

Materials and Methods

This study formed a component of an investigation into the role of *Anopheles arabiensis* in malaria transmission in the same areas.³ Adults from the exit window trap bearing households were interviewed in order to assess their knowledge, attitudes, practices and nocturnal behaviour of the people relative to malaria transmission, treatment,

*Blair Research Laboratory

P O Box CY573

Causeway

Harare, Zimbabwe

**National Malaria Control Programme

South African Medical Research Council

P O Box 17120, Congella

4013 South Africa

***Centre for Integrated Health Research

University of Natal

Dalbridge, 4014

† Siabuwa Clinic

c/o Binga District Hospital, Zimbabwe

Correspondence to:

Mr HT Masendu

prevention and control. The information was obtained using a questionnaire designed for the study. The questionnaire was divided into three sections as follows:

1. background information, with emphasis on demographic data.
2. Nocturnal distribution and activities by age and sex of the household occupants.
3. Residual spraying and other antimalarial practices as previously investigated,⁴⁻⁸ but modified to suit this study. The interviewer recorded the appropriate responses using pre-coded forms suitable for data entry and analysis by the computer programme SPSS (Statistical Package for the Social Sciences). Interviews were conducted in the Shona language (by HTM) in Chireya, while a local health officer (CC) conducted the interviews in the Tonga language in Siabuwa.

Results

Thirty eight adults (19 from each area) were approached and all responded to the survey questionnaire through interviews. Twelve of the 19 respondents were males in Chireya whereas only five males were interviewed in Siabuwa. This statistically significant ($\chi^2 = 5.21$; $p = 0.022$) difference in the sex ratio among respondents will be discussed. Eleven of the respondents from each area had stayed in their respective localities for more than five years. Eight remaining respondents from either study area had been in the area for less than five years. Fifteen of the respondents from both areas had attained at least primary level education with three and one in Chireya who had secondary and tertiary education respectively. The majority of the respondents (17 of 19) from the two areas were self employed, making a living from subsistence farming.

Knowledge about Mosquitoes.

Asked what causes malaria, 15 and 14 of the 19 respondents from Chireya and Siabuwa respectively, correctly indicated that mosquitoes were involved. One person from each of the study areas admitted that they did not know, while three and four out of 19 from Chireya and Siabuwa, respectively gave an incorrect answer. Other causes for malaria mentioned included the consumption of greens, mostly vegetables and *ipwa*, the sweet cane stem of *Sorghum bicolor* which are, coincidentally, available during the rainy season. The extent of the mosquito problem and other mosquito related issues were interpreted from the responses and rated.

Malaria.

Three malaria symptoms that were mentioned individually were fever (one, three: Chireya, Siabuwa), vomiting (one from Siabuwa) and weak joints (one from Chireya). Two-symptom combinations that were mentioned were weak joints/headache (two and three for Chireya and Siabuwa respectively); vomiting/fever (two and one for Chireya and Siabuwa) and vomiting/headache (three and one for Chireya and Siabuwa, respectively). Fever/headache was mentioned by three respondents in Siabuwa. Ten and five of the respondents from Chireya and Siabuwa, respectively, mentioned a combination of three or more symptoms.

Asked to state the number of febrile bouts they had experienced during the preceding two months, an average of two episodes was mentioned, but episodes ranged from zero

Table 1: An evaluation of the mosquito problem by locality, 1994.

Question category	Chireya	Siabuwa
Knowledge about malaria cause	<i>n</i> = 19	<i>n</i> = 19
mosquitoes involved	12	13
incorrect causes	6	5
do not know	1	1
Respondent rating of mosquito problem		
severe	9	18
moderate	5	0
mild	5	1
Most active time of day for mosquitoes		
day	0	0
night	19	18
day and night	0	1
Age group most affected by mosquitoes		
children	2	9
adults	1	1
all ages	16	9
Respondent estimation of intensity of mosquito bites		
high	9	2
moderate	1	2
nil-to-low	9	14

to eight. Some people referred to the febrile episodes as *nyongo* (*kusvorwa* usually accompanied by vomiting bile), although probing revealed the term was indicative of an entirely different ailment. Norolon^R (chloroquine) was the drug the respondents used for the treatment of malaria; 12 of 19 of the respondents in Chireya mentioned this as compared to eight in Siabuwa. Eight (42.1%) of the respondents from Siabuwa did not know the drug used in the treatment of malaria. Only one respondent from Chireya mentioned the use of herbs, while one from Siabuwa mentioned prayer as a remedy. Chloroquine in combination with analgesics was also mentioned in both study areas. In Chireya medicines were obtained free from the Mission Hospital upon the production of proof that one was not employed. Only one person from Chireya stated that he was on malaria prophylaxis. Twelve and 15 respondents from Chireya and Siabuwa, respectively, felt that the local health centre was near to their homes, with four and three (from Chireya and Siabuwa, respectively) rating the clinic distance as average and the remainder considering the distance as far. The recommended furthest walking distance to a health facility is eight to 10 km, and the studies were conducted within an eight km radius from the local health centre.

Malaria Control and Prevention.

Most (14 out of 19) of the houses in Chireya had been sprayed; in contrast, only nine of the houses in Siabuwa had been sprayed. In Chireya these figures indicate an inadequate spray coverage whereas in Siabuwa this was a reflection of houses deliberately not sprayed in order to assess the efficacy of the alternative use of repellent soap for malaria prevention. The peoples' impressions of the annual indoor house spraying exercise of the National Malaria Control Programme was categorized into attitude, perceived benefit and rationale. Greater positive attitude (63.2%) was reflected in Siabuwa

only 42.1% in Chireya. The responses arranged from positive, moderate to negative were as follows: 12, one and one in Siabuwa; and eight, three, eight in Chireya. More respondents (10 of 19) from Chireya felt the spraying was of no benefit to them, whereas eight of 19 believed it was of some benefit. In contrast, the majority of respondents (14 of 19) in Siabuwa felt they were benefiting from house spraying. Only two people, one from each area, felt they could not determine this aspect. Overall, most of the respondents (12 and 17 from Chireya and Siabuwa, respectively) correctly stated the reason behind the spraying exercise. More people from Chireya (six of 19) gave the wrong reason behind the house spraying; cockroach control was mentioned. The difference between areas was, however, not statistically significant. Two individuals, one from each area, admitted they did not know the reason behind the spraying.

A statistically significant difference was obtained between the two areas in replies in response to the question whether they were willing to pay for the spraying of their homes ($\chi^2 = 6.755; p = 0.009$). Those willing to pay constituted a majority (14 of 19) in Siabuwa as compared to only six of 19 in Chireya. The remainder of the people felt they were not willing to pay for the service. On the subject of source reduction, all 19 respondents from Siabuwa and 16 from Chireya indicated their willingness to participate in community based physical destruction of mosquito breeding sites.

The use of personal protective measures by the communities was assessed specifically with respect to bed nets and repellents (soap, lotion and coils) against the background of a complete absence of mosquito proofing on rural housing.³ Mosquito repellent soap was the only personal protection used to any appreciable level in Siabuwa where 36.8% of the respondents mentioned its daily use. In contrast only 5.3% of the respondents in Chireya stated that they used repellent soap on a daily basis. Mosquito repellent lotion and coils are hardly used in the two study areas. Most people do not use bed nets because they do not have them. From 19 respondents, those without nets constituted 14 and 15 in Chireya and Siabuwa, respectively. Only four (21%) respondents from each area indicated they used bed nets on a daily basis. The one individual who used nets often explained that she sometimes forgot or felt too tired to set the net. There was no occasion when more than one bed net was encountered per household, implying that the single net available was either used by the parents or the children, or the mother and children in cases where the father was away. All the bed nets available were locally made from white polyester netting material, and definitely no sheets were used as was sometimes the case in The Gambia.⁹

Human Behavioural Aspects.

Asked about their sleeping habits, all people from Siabuwa indicated that they had slept indoors in the night preceding the interview and that they always slept indoors. In contrast 14 of the 19 respondents from Chireya had slept indoors the previous night, and 89.5% indicated that sleeping indoors was a habit. Those who were inclined to spend time outdoors cited guarding their crops against wild animals and waiting for a bus as two of the reasons for their doing so. Fetching water and bathing at dusk was common in both areas. Most respondents rose between 05.30 and 06.00 hours and retired indoors between

19.00 and 20.00 hours. Sunrise and sunset was at 05.45 and 18.35 hours respectively at the time of the interviews.

Socio-economic Aspects.

The socio-economic status of the respondents was estimated from the number of houses at their homesteads, recent and expected crop yields, and the numbers of livestock owned. There were more huts per household and more people per household in Chireya than in Siabuwa. Crop yields and livestock were higher in Chireya than in Siabuwa. The results are summarized below for the two study areas (Table II).

Table II: Some traditional and modern indicators of wealth in Chireya and Siabuwa.

Aspect	Chireya	Siabuwa
Family size (number \pm std. dev./house)		
under fives	2.00 \pm 1.64	0.95 \pm 0.85
girls	1.28 \pm 0.96	0.74 \pm 0.93
boys	1.56 \pm 1.69	0.84 \pm 1.07
men	1.72 \pm 1.60	1.42 \pm 1.17
women	2.32 \pm 1.80	1.37 \pm 1.38
Houses (number/household)		
pole-dagga & thatch	2.89 \pm 2.23	2.68 \pm 2.00
brick & thatch	0.68 \pm 1.00	0
brick & iron sheets	0.11 \pm 0.32	0.05 \pm 0.23
Livestock (number/household)		
cattle	3.37 \pm 3.45	1.79 \pm 3.98
goats	3.16 \pm 3.89	9.21 \pm 8.26
donkeys	0.79 \pm 1.75	0.42 \pm 1.43
Cash crops (bales or bags/household harvested in 1993 season)		
maize	17.32 \pm 12.12	3.26 \pm 15.62
cotton	3.05 \pm 3.27	0.21 \pm 0.71
Cash crops (bales or bags/household expected in 1994 season)		
maize	13.16 \pm 7.47	1.68 \pm 2.31
cotton	5.37 \pm 8.36	0.42 \pm 1.17

Discussion

The people in both localities were familiar with the basics of malaria transmission, treatment and control efforts. The fact that malaria was not associated with supernatural causes like ancestral spirits and witchcraft¹⁰ augurs well for appropriate treatment behaviour. The range and frequency of symptoms recorded here are similar to those observed in Mashonaland Central Province.¹¹ The only difference is that loss of appetite, diarrhoea, shivering and rigors were not mentioned in this study. The general absence of prophylaxis is in line with national policy which recommends that (rural) residents of malaria endemic areas should not be on malaria prophylaxis.

The night time activities that could dispose people to becoming infected include the fetching of water (mostly womenfolk), bathing and occasional social gatherings. While sleeping outdoors occurred to a limited extent in Chireya (five of 19), all 19 respondents from Siabuwa indicated they slept indoors. However, one person found sleeping outside gave her reasons as the oppressive heat, and bedbug nuisance in the hut. Some buses servicing remote parts of Gokwe start operating around midnight which compels people to venture

outdoors at a time when the vector mosquito is active. In Chireya the practice of preparing the evening meal outdoors is common, thus allowing at least three hours of outdoor biting time for both vector and nuisance mosquitoes. Children get indoors earlier than adults and these would be better placed to benefit from insecticide impregnated fabrics used indoors. That children constituted one age group most affected by mosquitoes in Siabuwa is probably because more women respondents were available in this locality than in Chireya.

The apparently indifferent attitude towards house spraying probably reflects the people's endurance of the seemingly unending programme. It has been noted that non-compliance with house spraying sets in once people do not recognize the need nor see any tangible benefits of spraying that has been in practice for a long time.¹² Moreover, the spraying coincides with the period when people are busy preparing for the festive season, or are eking out a living in the fields. Spraying also necessitates the moving of furniture and other possessions and the provision of generally scarce water for the sprayers. This can lead to apathy, such as was noticed in the very early days of spraying in Zimbabwe.¹³

Despite the benefits, the spraying exercise per se is an inconvenience to the householder, and therefore tact, diplomacy and good public relations should accompany the basic malaria education provided by the spray men. Synthetic pyrethroids in current use in the spraying programme have the distinct advantage over DDT in that they leave no unsightly deposits on walls which often prompted the disastrous replastering of walls soon after the spraying thereby negating the whole purpose of the exercise.

The value of the plain as well as the chemical treated bed net as malaria control measures, coils, and repellents as protection against mosquitoes is well documented.¹⁴ These different personal protective measures are considered of low priority in the present study localities despite the apparent awareness of the role played by mosquitoes both in malaria transmission and as a nuisance. Various personal protective items were observed to be available in the local shops at prices comparable to those in major cities.

In West Africa low use of bed nets was compensated for by the easily accessible mosquito repellents.⁸ In Zimbabwe, the use of bed nets is not associated with any socio-cultural value, unlike what was found in The Gambia.⁸ Bed nets have been found useful for malaria control in those communities where the nets are accepted items of living. This is unfortunately not the case in rural Zimbabwe. In The Gambia and Guinea Bissau bed nets were also associated with additional benefits like privacy, warmth and protection from falling roof debris.⁸

The last aspect is one of the features in the pending evaluation of the novel insecticide impregnated ceiling net for collective protection (The impregnated ceiling net (IICN) for collective protection against malaria vector mosquitoes: Part 1. Description and mode of action. Masendu, in prep.). The efficacy of repellent soap might be improved by the provision of adequate supplies of the soap and, most importantly, strict compliance with the timing of its application to take into account the peak biting times for both nuisance and malaria vector mosquitoes at each locality. This should reflect the average six hours' protection time¹⁵ and also recognition of a possible shift in the biting cycle as a result of insecticide use.¹⁴ The provision of the repellent soap, Mosbar[®],

was unfortunately observed to be erratic during the trial in Siabuwa.

It is presently not known whether inhaled smoke emanating from coils presents any health hazard. Irritation of the eye and nose similar to hay fever has been reported by people sleeping in a room where coils containing pyrethrins were burned. The constituents of the smoke other than the insecticides should not be assumed harmless, since Schoent and Hibbard,¹⁶ after consideration of the high incidence of nasopharyngeal cancer amongst the Chinese, found carcinogens in the smoke from incense sticks.¹⁷

Other aspects of this study attempted to ascertain the willingness of the people to participate in community based control measures; source reduction (with its rather limited applicability) and introduction of an element of self-reliance. The concept of primary health care is emphasized in the Ministry of Health's equity in health plans (Planning for equity in health. Department of Health Services, Planning and Management, 1992. Unpublished.). The requirement that people pay for goods and services is not at variance with the culture of the recipients, and this is an objective emphasized for sustainable health delivery in the 1987 UNICEF Bama Initiative.¹⁸ The health for all by the year 2000 concept envisages a greater role in the participation of individuals and families in disease prevention.^{19,20} A multi-pronged approach is required for future sustainable malaria control; and this encompasses health education, environmental management, use of bed nets, patient management and vector control by chemical and biological agents.

Can the rural people afford to pay for their health needs? In the absence of health insurance, community financing could draw lessons from successfully run burial societies. Table II illustrates some factors that might be indicative of wealth in the rural set up where there is no fixed and regular income. Traditionally, men derived social prestige expressed by housing, number of wives and children, the livestock and crop yields under their domain. Despite the observation that some figures are revealed modestly, the general picture is that of poverty. Money is freely spent after the harvest as witnessed by the wanton alcohol consumption, which money could be invested in health instead.

Acknowledgements

This report constituted a component of a study on the role of *Anopheles arabiensis* in malaria transmission which received financial support from the World Health Organization, ODA and the Government of Zimbabwe, for which we are grateful. We would like to thank the following: Ms Pauline Gwatinis for her inputs during the development of the questionnaire, Ms Viola Manokore for her helpful comments on the manuscript and the respondents from Chireya and Siabuwa for their time and patience. We would like to thank the Secretary for Health for his kind permission to publish the paper.

References

1. Sexton JD, Ruebush TK, Brandling-Bennett JN. Permethrin impregnated curtains and bed net prevent malaria in western Kenya. *Am J Trop Med Hyg* 1990;43:11-18.

2. Curtis CC. Impregnated bednets for malaria vector control. *Bayer, Public Health* 1996;12:23-9.
3. Masendu HT. The role of *Anopheles arabiensis* in malaria transmission and control in Gokwe and Binga Districts in Zimbabwe. MSc Thesis, University of Natal 1996.
4. Elliott R. Studies on man-vector contact in some malarious areas in Colombia. *Bull WHO* 1968;38:239-53.
5. Robinson WH, Atkins RL. Attitudes and knowledge of urban homeowners towards mosquitoes. *Mosq News* 1983;43:38-41.
6. Gardiner C, Biggar RJ, Collins WE, Nkrumah FK. Malaria in urban and rural areas of southern Ghana: a survey of parasitaemia, antibodies, and antimalarial practices. *Bull WHO* 1984;62:607-13.
7. John KH, Stoll JR, Olson JK. The public's view of mosquito problems in an organized control district. *J Am Mosq Contr Assoc* 1987;3(1):1-7.
8. Aikins MK, Pickering H, Greenwood BM. Attitudes to malaria, traditional practices and bednets (mosquito nets) as vector control measures: a comparative study in five West African countries. *J Trop Med Hyg* 1994;97:81-6.
9. Aikins MK, Pickering H, Alonso PL, D'Alessandro U, Lindsay SW, Todd J, Greenwood BM. A malaria control trial using insecticide-treated bed nets and targeted chemoprophylaxis in a rural area of The Gambia, West Africa. 4. Perceptions of the causes of malaria and of its treatment and prevention in the study area. *Trans R Soc Trop Med Hyg* 1993;87: (supplement 2) 25-30.
10. Munyaadzi OM. The African's attitude to disease. *Cent Afr J Med* 1975;21(6):137-9.
11. Van Geldermalsen AA, Munochiveyi R. Knowledge, attitude and practice (KAP) relating to malaria in Mashonaland Central, Zimbabwe. *Cent Afr J Med* 1995;41(1):10-14.
12. Reuben R. Obstacles to malaria control in India- the human factor. In: Demography and vector-borne diseases. MW Service, editor. Florida: CRC Press. Boca Raton, 1989;143-54.
13. Alves W, Blair DM. An experiment in the control of malaria and bilharziasis. *Trans R Soc Trop Med Hyg* 1953;47:299-308.
14. WHO. The use of impregnated bednets and other materials for vector-borne disease control. *WHO/VBC/89.98* 1987.
15. Mani TR, Reuben R, Akiyama J. Field efficacy of "Mosbar" mosquito repellent soap against vectors of Bancroftian filariasis and Japanese Encephalitis in Southern India. *J Am Mosq Contr Assoc* 1991; 7:565-8.
16. Schoental R, Gibbard S. Carcinogens in Chinese incense smoke. *Nature* London 1967;216:612.
17. Hudson JE, Esozid S. The effects of smoke from mosquito coils on *Anopheles gambiae* Giles and *Mansonia uniformis* (Theo.) in verandah-trap huts at Magugu, Tanzania. *Bull Ent Res* 1971;61:247-65.
18. Van der Geest S. Is paying for health care culturally acceptable in sub-sahara Africa? Money and tradition. *Soc Science Med* 1992;34(6):667-73.
19. Gratz NR. The future of vector biology and control in the World Health Organization. *J Am Mosq Contr Assoc* 1985;1:273-8.
20. WHO. Implementation of the global malaria control strategy. Report of a WHO Study Group on the Implementation of the Global Plan of Action for Malaria Control; 1993-2000. WHO Technical Report Series N° 839. WHO, Geneva 1993.



This work is licensed under a
Creative Commons
Attribution – NonCommercial - NoDerivs 3.0 License.

To view a copy of the license please see:
<http://creativecommons.org/licenses/by-nc-nd/3.0/>

This is a download from the BLDS Digital Library on OpenDocs
<http://opendocs.ids.ac.uk/opendocs/>