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Risk factors associated with contracting dysentery during *Shigella dysenteriae* type 1 outbreak in Harare, 1993

*S MWENYE, *N GUMBO, *M MAVELA, **DE PETERSON, ***S SIZIYA, ***G WOELK

Objectives: To determine risk factors associated with contracting dysentery.

Design: Matched case control.

Setting: City of Harare.

Subjects: 90 cases and 90 matched controls.

Main Outcome Measures: Odds ratios for risk/protective factors for contracting dysentery.

Results: Using conditional multiple logistic regression analysis, significant factors found were having eaten dried meat (OR=15, 95%CI 3 to 64), hands coming in contact with stored water (OR=12, 95%CI 3 to 48) and washing hands prior to eating (OR=0.3, 95%CI 0 to 0.8).

Conclusions: There is a need to increase public awareness on improving personal hygiene. Hygienic ways of drying meat at home should be sought.

Introduction

Towards the end of 1992, there were numerous reports of dysentery cases from Harare and most provinces of Zimbabwe. According to reports from the districts and the media, the disease was characterized by bouts of bloody diarrhoea, vomiting and general body weakness. Of 4 915 patients with dysentery who presented to the two municipal hospitals, 149 died, giving a case fatality rate of 3%.¹ Laboratory investigations confirmed that *Shigella dysenteriae* type-1 was the predominant cause of the dysentery outbreak in Harare.²

A matched case control study, was carried out in the City of Harare from 26 November to 1 December, 1993 in order to document risk factors associated with contracting dysentery in this environment.

Materials and Methods

Case Definition.

Cases (n=90) were selected from both children and adult inpatients and outpatients presenting with dysentery at Beatrice Road and Wilkins infectious disease hospitals during the period 26 November to 1 December.

For the investigation, a case of dysentery was defined as a Harare resident who presented with bloody diarrhoea and stool frequency of three times or more in 24 hours,³ and who had not been outside Harare in the 10 days prior to illness onset.

Control Definition.

Controls (n=90) were selected using the addresses of case persons. Matched controls (by sex and five year age group), who had not been out of Harare in the 10 days prior to the

interview and had not had diarrhoea in the four preceding weeks, were sought from the household closest to each case address. In the event of not finding anybody from the household closest to the case address, a matching control person was sought from the nearest and then next nearest household, until a matching control person was found. Controls were interviewed from 26 November to 1 December.

Data Collection.

Information was collected using a structured questionnaire that included age, sex, address, education level, occupation, history of any family member who suffered from diarrhoea, symptoms of the illness (for cases), and possible risk/protective factors (food stuffs eaten, water and sanitation and preventive knowledge) for the disease experienced five days prior to onset of illness (for cases), and five days prior to interviews (for controls).

Analysis.

A matched two by two analysis for each factor was conducted using the Epi Info software. A multivariate analysis to control for other various risk factors by conditional multiple logistic regression was conducted using Egret software. All variables found to be significant in the matched two by two analysis were entered in the conditional logistic model using stepwise regression. Odds ratios and 95% confidence intervals for variables significant ($p < 0.05$) in the logistic regression model are presented.

Results

Dates of illness onset ranged from 11 to 29 November 1993. Seventy six percent of the cases had tenesmus and 62% experienced fever (temperature $> 37.5^\circ$).

Harare City Health Department.
MPH Coordinator, Ministry of Health and Child Welfare
PO Box CY1122, Causeway
Harare, Zimbabwe
*Department of Community Medicine
University of Zimbabwe Medical School
PO Box A178, Avondale
Harare, Zimbabwe

Correspondence to:
Dr KS Mwenye
No. 8 Chinyika Court
First street
Marondera, Zimbabwe
Telephone: 263-4-2420718

Among the many factors considered in a matched two by two analysis, the factors listed in Table I were significantly associated with contracting dysentery.

Table I: Significant factors associated with contracting dysentery in matched two by two analysis.

Factor	p-value
Hands coming in contact with stored water	<0.001
Eating dried meat	<0.001
Eating dried vegetables	0.001
Being a lodger	<0.001
Storing drinking water in the house	0.019
Washing hands prior to eating	0.003
Eating oranges	0.024
General knowledge about the importance of hand washing	0.008
Being knowledgeable about the importance of covering food stuffs	0.014
Eating apples	0.008
Eating mangoes	<0.001
Eating mazhanje	0.020
Ignorant about modes of transmission	0.017

On conditional multiple logistic regression analysis, significant factors were having eaten dried meat (OR=15, 95%CI: 3 to 64, p=0.005), hands coming in contact with stored water (OR=12, 95%CI: 3 to 48, p=0.001) and washing hands prior to eating (OR=0.3, 95%CI: 0 to 0.8, p=0.008)

Discussion

One of the limitations of our matched study is that we could not ascertain whether age, sex and neighbourhood were risk factors (as we matched on these factors). Interview bias could have contributed to findings of non significant factors such as, use of a communal dish for washing hands. Other non significant findings such as non availability of a toilet at the homestead could have been due to small sample sizes which have also been reflected in the wide confidence intervals.

In our study the major risk factors for contracting dysentery in Harare were eating dried meat and hands coming in contact with stored water. Hand washing prior to eating was found to be a protective factor.

To our knowledge this is the first time dried meat has been found to be a risk factor for dysentery. Dried meat is frequently eaten in Zimbabwe, it is prepared by hanging it in the open air for several days so as to dry it. During this process it can be contaminated by houseflies and other vectors such as cockroaches. Other studies have shown that vectors such as house flies³ and cockroaches⁴ may transfer organisms into non-refrigerated food items, in which they can multiply to an infectious dose.

We found that storing water at home, and especially hands coming into contact with stored water, was associated with the illness. Water storing at home was prompted by water rationing introduced in Harare in 1991, during which time water was available only for a few hours per day. The majority of case patients continued with the practice long after the water rationing was stopped. This practice should be discouraged, especially in a place like Harare where tap water is available in all residential areas.

Our finding of the practice of hand washing prior to eating food as a protective factor for the illness confirms other studies and points at the need for continuing intervention.^{6,4}

In conclusion, there is an urgent need to increase public awareness on improving personal hygiene through health education campaigns on the importance of practices such as hand washing, and hygienic ways of drying meat at home.

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References

1. Harare City Health Department Annual Report. Harare: City of Harare, 1993.
2. Mason PR, Nathoo KJ, Wellington M, Mason I. Antimicrobial susceptibilities of *Shigella dysenteriae* type 1 isolated in Zimbabwe implications for the management of dysentery. *Cent Afr J Med* 1995;41:132-7.
3. Benenson AS. Control of communicable diseases in man. 15th ed. Washington DC: American Public Health Association, 1990:391-4.
4. Burgess NRH, Chetwyn KN. Association of cockroaches with an outbreak of dysentery. *Trans R Soc Trop Med Hyg* 1981;75:332-3.
5. Hennekens CH, Buring JE. Epidemiology in medicine. Mayrent SL, editor. Boston/Toronto: Little, Brown and Company, 1987.
6. Black RE, Dykes AC, Anderson KE, Wells JG, Sinclair SP, Gary GW, et al. Hand washing to prevent diarrhoea in day-care centres. *Am J Epidemiol* 1981;113:445-51.
7. Larson EA. A casual link between hand washing and risk of infection? Examination of evidence. *Infect Control* 1988;9:28-36.
8. Khan MU. Interruption of Shigellosis by hand washing. *Trans R Soc Trop Med Hyg* 1982;76:164-8.



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