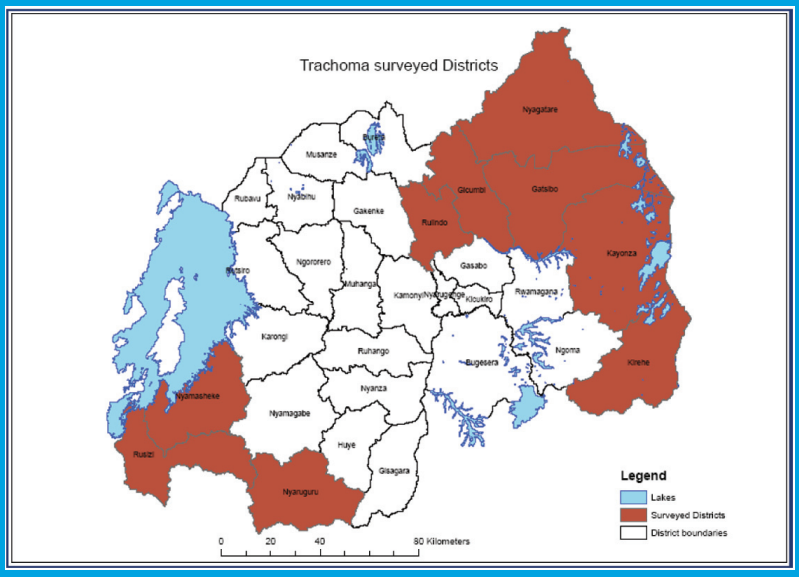
MINISANTE

REPORT



TRACHOMA RAPID ASSESSMENT

RWANDA, 2008

TABLE DES MATIERES

LIST OF ABREVIATION AND ACRONYMS

CHUB : Centre Hospitalier Universitaire de Butare
CO: Corneal Opacity
GIS: Geographical Information System
GNNTDC: Global Network for Neglected Tropical Disease Control
GPS: Geographical Program System
GTZ: Deutsche Gessellschaft für Technische Zusammernarbeit
H.C: Health Center
HMIS: Health Management Information system
IRB: Institutional Review Board
IEC: Information-Education-Communication
ITI: International Trachoma Initiative
LQAS: Lot Quality Assurance Sampling.
MINISANTE: Ministère de la Santé
MOH: Ministry of Health
NISR: National Institute of Statistics of Rwanda
NRL: National Reference Laboratory
NTD: Neglected Tropical Diseases
NUR: National University of Rwanda
TF: Trachoma Inflammation-Follicular
TI: Trachomatous Inflammation-Intense
TT: Trachomatous Trichiasis
TRA: Trachoma Rapid Assessment
SAFE: Surgery for trichiasis, Antibiotics to treat C.trachomatis infection, and Facial cleanliness and Environmental improvement to reduce transmission of C. trachomatis from one person to another.
RA: Rapid Assessment
RAAB: Rapid Assessment of Avoidable Blindness
VA: Visual Acuity
WHO: World Health Organization

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ABSTRACT

Background: Trachoma is the world's leading cause of preventable blindness and occurs where people live in poor conditions with limited access to water and health care. It was considered up to recently, an eliminated disease in Rwanda; however it is still prevalent in some areas of the country.

Objectives: To determine the pattern of active trachoma, trichiasis and trachoma related risk factors in 9 selected districts in Rwanda. The objective is also to produce by spatial analysis a map of the distribution of trachoma based on the result of this TRA.

Methods: A cross-sectional study, based on TRA, was conducted from December 2007 to January 2008, in 9 selected districts of Rwanda. 50 children from 15 to 20 households per selected village were examined and environmental factors were collected from households. All children aged 1 to 9 years were examined for active trachoma and all persons aged 15 years or more for TT and CO.

Results: In total, 102 of the 1375 examined children had active trachoma and 20 adults had trichiasis. Trachoma was described as a public health problem in 2 districts (Gatsibo and Nyaruguru). It was found a positive association between active trachoma and children with unclean faces; however no correlation was found between active trachoma and absence of functional latrine or water source more than one half hour walk. Kayonza and Gicumbi districts had a higher number of trichiasis and 5.2% of these developed corneal opacity, with only 1 patient who got surgery.

Conclusion: Trachoma, was considered up to recently eliminated from Rwanda; but was found as a public health problem in 2 of the 9 selected districts, so there is a need of a baseline survey and the SAFE Strategy in these 2 districts so that Rwanda can be a trachoma free country as proposed by the WHO vision 2020.

I. INTRODUCTION

I.1. Background

The WHO estimates that 1.3 million people world wide are blind due to trachoma [1] and 7.6 million have trichiasis, the potentially blinding stage of the disease [2]. WHO estimates also that 150 million people currently have active disease [3]. Trachoma, a chronic keratoconjunctivitis, is caused by repeated episodes of infection with the bacterium Chlamydia trachomatis (serotypes A,B,Ba and C), transmitted from the eyes of a patient to an other by flies, fingers or shared cloths or towels that may result in blindness [4]. It is the world's leading cause of preventable blindness and occurs where people live in overcrowded conditions with limited access to water and health care. C. trachomatis infections of the eye are commonly found in young children. They are associated with a group of clinical signs known as "active trachoma". The condition in which the eyelashes are turned inwards is called "trichiasis". A person's risk of trichiasis probably increases in relation to the total number, duration and intensity of C. trachomatis infections during his /her lifetime [3]. As a result, trichiasis tends to occur more in women, because they tend to spend more time than men do with children, who are most frequently infected. It also becomes more and more common with increasing age. Implementation of active trachoma control activities is prioritized in communities where the prevalence of active trachoma in children aged 1-9 years is 10% or higher or where the prevalence of trichiasis in people aged 15 years and over is 1% or higher [4]. In Rwanda, the magnitude and prevalence of active trachoma and trachomatous trichiasis (TT) is unknown, no survey of blindness has been conducted. Results from the 2002 national census suggest that 13,100 of the total population of 8.1 million were blind, giving a prevalence of blindness of

0.16% [5, 6]. This is likely to be underestimated, as the criteria used was the complete inability to see, rather than the standard definition of visual acuity less than 3/60 in the better eye. Meanwhile, the WHO data suggest that 1% of all people in Rwanda are blind, corresponding to 86, 000 people, and that 9% of people aged over 50 years are blind [7]. Also, a recent research in the Western province of Rwanda showed a prevalence of 1.8% of blindness in a population aged 50 years or more [6]. But this study has also the same limitations. The RAAB methodology, used in this study focuses on the prevalence and causes of visual impairment in people aged ≥ 50 years and so does not produce estimates for childhood blindness or blindness in adults aged less than 50 years.

Blindness due to trachoma is irreversible once it has occurred, but it can be prevented. The SAFE strategy (Surgery for trichiasis, Antibiotics to treat C. trachomatis infection, and Facial cleanliness and Environmental improvement to reduce transmission of C. trachomatis from one person to another) is recommended for the control of trachoma.

The aim of this research is to determine the pattern of active trachoma in children aged 1 to 9 years as this is the key index for determining whether an area needs intervention or not.

I.2. Justification of the study

According to WHO [4], Rwanda is one of the countries where C. trachomatis is found. Prior to the war and the genocide of 1994, there existed a national program for the control of blindness in the country. Annual reports from that period revealed significant morbidity due to trachoma, but no documents are otherwise available on the control strategy. In addition, the availability of ophthalmic services is extremely limited in Rwanda. There are only ten ophthalmologists in Rwanda, five of whom are based in the capital Kigali. Much of the trained staff was affected in one way or the other by the war and genocide. In the absence of a national survey, it is difficult to establish the real magnitude

of the problem of trachoma. Given the lack of control measures, it is most likely an important, but hidden public health problem. This survey will help to establish the pattern of the problem in the population.

The findings of this national trachoma rapid assessment will help guide program and healthcare providers in Rwanda to identify and prioritize interventions in the communities using the SAFE strategy, and in particular to identify communities with active trachoma in order to implement antibiotic distribution, face cleaning and environmental changes and those where trichiasis surgery is required. This study will also provide clinical, and research capacity building in Rwanda.

I.3. Objectives

Main objective: to provide information on the possible magnitude of Trachoma in Rwanda.

Specific objectives:

- To enhance knowledge of the risk factors that influence Trachoma infection in Rwanda
- To facilitate, after the identification and prioritization of communities, more detailed evaluation of community resources and needs for the implementation of the SAFE strategy.
- To produce by spatial analysis a map of the distribution of trachoma based of the “available data” from the rapid assessment.

II. METHODOLOGY

II.1. Study setting

A survey using a Trachoma Rapid Assessment methodology was conducted from December 2007 to January 2008 in 9 districts of Rwanda; districts in which trachoma was likely to be endemic.

II.2. Study design

This was a cross-sectional study based on trachoma rapid assessment throughout the country. It was carried out among village residents, by a team from the Access Project in collaboration with the National Blindness Control Program (Ministry of Health) and the district administrations.

II.3. Inclusion criteria

Children aged 1 to 9 years, examined for active trachoma and any persons aged 15 years or more for TT and CO among resident in selected villages. A resident was considered as a person who is living in the village for at least 6 months.

II.4. Exclusion criteria

People living in the village for less than 6 months

II.5. Sampling procedure

Sampling frame

The sampling frame was a list of all villages in the 9 districts, from which the

TRA villages were selected. The sampling frame was recent and complete as possible, to avoid bias. The sampling frame included: the name of each village, the cell, sector and district in which each village was located, the identification code of each village, and the total number of residents in each village. The selection of 9 districts was the result of 5 days workshop during which a list of villages to be visited was compiled and village names were pinpointed on a map. Community and hospital based information on trachoma were reviewed and analyzed by a team led by an ophthalmologist and a WHO expert. At the end of the workshop and before the TRA, an inter-observer agreement exercise involving a reference (gold standard) grader of proven accuracy was conducted and all the examiners recorded their findings on an inter-observer agreement form. From every selected village, 50 children aged 1 to 9 years, coming from 15 to 20 households were examined for active trachoma.

Data collection and analysis

On the arrival in the field, the village information was completed by the team leader, while the geographic co-ordinates of the village were entered using a GPS. The team was made by an Ophthalmologist and 2 Ophthalmic Clinical Officers; however, the Ophthalmologist was not available for data collection of all the villages. During the meeting with the community, the village leaders, together with any others residents who were of help, were clearly briefed on the purpose of the visit and encouraged to assist the field team. The examination was conducted house to house, using a loupe 2.5 magnification and each eye was examined separately. Trachoma was classified using the WHO grading system. Environmental factors were defined as: lack of functional latrines, presence of solid waste or animal pens and water source more than one half hour walk; data was collected from 15 to 20 households. Unclean face was

defined as the presence of flies or discharge on the face or on the eye or the ear. All data obtained were put in questionnaires and analyzed using SPSS.

II.6. Ethical considerations

The protocol was sent to the Rwanda National Ethics Committee (NEC) and the Institutional Review Board of Columbia University (IRB) for review and approval. The individual persons were explained about the study in a non-scientific language, and signed a consent form before his/her participation in the study. Participants with age less than 21 years old were asked their assent and consent from their parents. All people with operable trichiasis or other treatable conditions were referred for treatment. It was made clear to all participants as well as all other concerned parties that the survey is for the communal good of all the Rwandans and not individual gains, and that none of them will benefit merely by virtue of having participated in the survey.

III. RESULTS

We examined 1375 children aged 1 to 9 years, from 9 selected districts of Rwanda, with a total population of 20417 people. From the same population were described 20 patients with trichiasis, from a total of 96 examined adults.

Table 1: Clinical rapid assessment of trachoma in 9 districts of Rwanda

Clinical rapid assessment of trachoma in 9 districts of Rwanda

District	Population	Examined Children	Active Trachoma	Children with unclean faces	Patient with Trichiasis
	Freq	Freq	%	%	Freq
GATSIBO	2817	150	15.3	15.3	0
GICUMBI	3029	155	4.5	3.9	5
KAYONZA	2135	155	5.8	2.6	7
KIREHE	1644	156	5.8	12.2	0
NYAGATARE	1531	158	8.2	11.4	3
NYAMASHEKE	2804	149	4.7	17.4	2
NYARUGURU	2692	151	12.6	18.5	1
RULINDO	1317	151	3.3	10.6	2
RUSIZI	2448	150	6.7	2.7	0
Total	**20417**	**1375**	**102 (7.4%)**	**144 (10.5%)**	**20**

The highest percentage of active trachoma was found in Gatsibo and Nyaruguru districts (respectively 15.3% and 12.6%). However, one of the 3 villages of Kirehe district had 18% (9 cases) of active trachoma, whereas the whole district had 5.8% of cases. The rate of active trachoma was still over 5% in Kayonza, Kirehe, Nyagatare and Rusizi districts. Kayonza and Gicumbi districts had the highest number of trichiasis (respectively 7 and 5 cases). It was described 5.2% of patient with trichiasis who developed corneal opacity and only 1 of them had surgery. A high rate of children with unclean faces was found in Nyaruguru, Nyamasheke, Gatsibo and Kirehe (respectively 18.5%, 17.4%, 15.3% and 12.2%). Districts with high percentage of children with unclean faces presented the same pattern for active trachoma.

Table 2: Community profile for environmental factors in 9 districts of Rwanda

Community profile for environmental factors in 9 districts of Rwanda

District	Households visited	Absence of functional latrine	Presence of solid waste or animal pens	Water source more than half an hour walk
	Freq	%	%	%
GATSIBO	90	16.7	48.9	6.7
GICUMBI	90	14.4	77.8	78.9
KAYONZA	150	47.3	55.3	64.0
KIREHE	122	49.2	41.8	59.0
NYAGATARE	85	47.1	27.1	62.4
NYAMASHEKE	66	12.1	25.8	0.0
NYARUGURU	48	41.7	52.1	70.8
RULINDO	78	3.8	87.2	42.3
RUSIZI	70	10.0	1.4	35.7
Total	**799**	**-**	**-**	**-**

Absence of functional latrine was found in high percentage in Kirehe, Kayonza Nyagatare and Nyaruguru respectively 49.2%, 47.3%, 47.1% and 41.7%. Presence of solid waste or animal pens was found in high percentage in almost all the districts except Rusizi. Water sources more than half an hour walk was found in all the districts with 2 exceptions: Nyamasheke and Gatsibo.

Table 3: Correlations between active trachoma and risk factors

		Active trachoma TF (1) TI (2)	Presence of solid waste or animal pens Yes(1) No (2)	Water source more than half an hour walk Yes(1) No (2)	Unclean faces Yes(1) No (2)	Absence of function al latrines Yes (1) No (2)
Active trachoma TF (1) TI (2)	Significant (2-tailed)	.	.452	.907	.043	.537
	N	102	89	89	96	89
Presence of solid waste or animal pens Yes(1) No (2)	Sig. (2-tailed)	.452	.	.000	.344	.000
	N	89	91	91	87	91
Water source more than half an hour walk Yes (1)	Sig. (2-tailed)	.907	.000	.	.204	.000
	N	89	91	91	87	91
Unclean faces Yes(1) No (2)	Sig. (2-tailed)	.043	.344	.204	.	.913
	N	96	87	87	1353	87
Absence of functional latrines Yes (1) No (2)	Sig. (2-tailed)	.537	.000	.000	.913	.
	N	89	91	91	87	91

* Correlation is significant at the 0.05 level

It was found a positive association between active trachoma and children

It was found a positive association between active trachoma and children with unclean faces (p=0,043). However, no correlation was found between active trachoma and presence of solid waste or animal pens, water source more than half an hour walk or absence of functional latrines (p=0,452, 0,907 and 0,537 respectively)

IV. DISCUSSION

IV.1. Pattern of trachoma

Trachoma is considered as a public health problem in many developing countries, whereas it has disappeared in the western world. In Rwanda, the TRA showed the highest pattern in Gatsibo and Nyaruguru districts, with rates of 15.3% and 12.6% respectively. Trachoma is considered therefore as a public health problem in these 2 districts (more than 10%). A study done at CHUB in 1982 mentioned trachoma as the third blinding eye disease, with more than half of the examined patients having irreversible corneal lesions [11]; nowadays, trachoma is almost not seen at this hospital; this being the result of probably the effort made in the reduction of trachoma related risk factors; through outreach programs. Rwanda being a small country, it is not difficult to educate population even in the remote rural areas.

The present study showed similar results with what was found in Shabwah district/ Yemen (17% of active trachoma by TRA) [12]. However, these results are lower compared to many TRA performed in endemic countries. In Egypt, 36.5% of children aged 10 years or less had active trachoma [13] and in Mali, 29% of them had this disease [13]. A TRA performed in the southern Zambia showed 55.5% of children with active trachoma; and 2 years after the implementation of SAFE strategy, the overall percentage of trachoma was reduced to 10.6% [14]. The Ethiopian study mentioned 51.1% of children having active trachoma [15]. Another rapid assessment of trachoma done in Yemen

showed a higher rate among rural children (73.2%) compared to urban children (23.1%) [12]. Unexpected results have shown higher pattern of trachoma in districts where trachoma was considered eradicated, so the necessity of performing more collection of information, and more assessment.

In the 3 following districts, Nyagatare (8.2%), Kayonza (5.8%) and Kirehe (5.8%), the percentage of active trachoma was still more than 5%. It is important to mention the unexpected results from Kirehe district: Zero, 0 and 9 cases from respectively the first, second and third village, with a mean of 5.8% for the whole district. This could be due to the fact that people living in the same district may have the same habits of life; but some may be more educated than others; this means less exposed to poor condition related disease, like trachoma. Kayonza and Gicumbi districts had a higher number of trichiasis (respectively 7 and 5). It was found out that 5 patients (5.2%) with trichiasis had developed corneal opacity. Only 1 patient with trichiasis had surgery. These cases of trichiasis should be treated by outreach program or referred to the nearest health facility for SAFE strategy; if surgery is not provided there is a risk of developing corneal opacity leading to visual loss and blindness. It is important to mention that during many outreach surgeries in Rwanda, isolated cases of trichiasis were found, and surgeries were done at the district hospitals.

It was found a correlation between active trachoma and unclean face; unclean faces being observed in more than 10%, in 4 of the 9 districts. This correlation was observed in almost all the studies performed in developing countries (Ethiopia, Egypt, Mali, Yemen studies…) [15]. This highlights the importance

of focusing on health education in these 4 districts about face and environmental cleanliness.

Surprisingly there was no correlation between active trachoma and trichiasis, this may be due to the fact that trichiasis, being a chronic disease takes many years to be in place; and in a post conflict country like Rwanda, people are not necessarily leaving in districts where they used to leave before war and genocide.

IV.2. Risk factors

Trachoma remains a blinding disease in communities with living conditions facilitating continuous transmission of C. trachomatis among family members. Determination of trachoma related risk factors have guided the current recommendations for intervention strategies to control the disease [15].

The absence of functional latrine was found in high percentage in Kirehe, Kayonza, Nyagatare and Nyaruguru respectively 49.2%, 47.3%, 47.1% and 41.7%. This study did not find a direct relation between the absence of functional latrine and a high prevalence of active trachoma as seen in many endemic countries (e.g.: Malawi, Tanzania) [16]. However, this could be explained by the fact that the presence of functional latrine alone does not mean a low prevalence of active trachoma; there are other associated factors like the socioeconomic status, high level of education [17].

The presence of solid waste or animal pens was found in high percentage in almost all the districts except Rusizi. Water sources more than half an hour walk was found in all the districts with 2 exceptions: Nyamasheke and Gatsibo. We did not find a positive association between active trachoma and the presence of solid waste or animal pens and the water source more than half an hour walk. This was different from many studies done which found this correlation [16]. However, other research suggested that the water may be available, but a decision of using water to improve hygienic conditions is the most important factor [16].

V. CONCLUSION

Trachoma was considered up to recently an eliminated disease in Rwanda; however it has been described as a public health problem in 2 districts (Gatsibo and Nyaruguru). A positive association between active trachoma and children with unclean faces was noticed; but no correlation was found between active trachoma and absence of functional latrine or water source more than an hour walk. Kayonza and Gicumbi districts had a higher number of trichiasis and 5.2% of them developed corneal opacity, with only 1 patient who got surgery.

VI. RECOMMENDATION

There is a need of performing a baseline survey followed by a SAFE strategy in the 2 districts where trachoma was described as a public health problem.

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ANNEXES

Appendix A: Village information form

1. Village name:

2. Village identification number: Enter unique identification number

3.Name of community leader (s)

4. Province

5. District

6. Date of visit: / / Enter date (dd / mm / yy)

Geographical co-ordinates

7. Degrees South at time of arrival: . Decimal degrees

8. Degrees East at time of arrival: . Decimal degrees

9. Degrees South at time of departure: | | | | . | | | | | | | | | | Decimal degrees

10. Degrees East at time of departure: | | | | . | | | | | | | Decimal degrees

11. Altitude | | | | | m

Water

12. Is there a water source in the village? ☐ No ☐ Yes

Yes

13. Are there water sources close to the village? ☐ No ☐ Yes

14. Type(s) of water source

Sanitation

15. Are there latrines in the different households? ☐ No ☐ Yes

16. Condition of latrines

Village infrastructure			***Accessibility (travel time)***
17. Primary health care center	☐No	☐Yes	……
18. Village pharmacy (drugstore)	☐No	☐Yes	
19. Market	☐No	☐Yes	
20. School	☐No	☐Yes	
21. Others (specify)			

Villagers enrolled/present

17. Households in the village:		Enter numbers of upper and lower classes
18. Total mens enrolled in the village:		Enter number
19. Total womens enrolled in the village:		Enter number
Children enrolled / present		Enter number
20. Total boys 1-9 years present		Enter number
21. Total girls 1- 9 years present		Enter number

Appendix B: Trichiasis form

Community…….. Household number …….

Date ……/……. /…….. Head of household ……..
Examiner …… Field assistant ……..……

[Right eye] [Left eye]

No	Name	Gender	Date of birth	TT	CO	TF	TT	CO	TF	Comments/ remarks

Appendix C: Active trachoma form

Village/ Community…… … **Household number ……**

Date ……/……. /…….. **Examiner ……**

Field assistant ……

Name of head household [1]	Child's name[2]	Active trachoma[3]	Unclean face[3]			Comments/ remarks
		TF	TI	YES	NO	
TOTAL						
Percentage (%)			☐		☐	

1. At least 20 household will be visited
2. At least 50 children will be examined
3. Tick the box that applies. Record the result of the worst eye

Notes and Remarks

Appendix D: Household survey (environmental factors)

Number[1]	Name of household head	Water source more than half an hour walk [2]		Presence of solid waste or animal pens [2]		Absence of functional latrine [2]	
		YES	NO	YES	NO	YES	NO
TOTAL							
Percentage of «YES»							

[1]Give a unique identification number for each household visited

[2] Tick the box that applies

Notes and Remarks