Ministry of Science and Technology

The Impact of Endemic Fluorosis on Early Retirement of the Work force of Wonji/Shoa Sugar Factory: The Case Study of Wonji/ Shoa area, the Ethiopian Rift Valley

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Presentation outline

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2. Objective of the Survey
3. Socio-Economic impacts of Endemic Fluoride
4. Results and discussion
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1. INTRODUCTION

• Flurosis is a silent disabler

• Its adverse effects not visible immediately

• It harms gradually

• Almost impossible to treat once it infects

• Not dully addressed

• It is worldwide problem mainly affecting humans

• Affects a large number of people in Ethiopia

• Efforts have been made to curb the problem

• But still need much attention
2. Objective of the Survey

The aim of this study is to investigate the impact of endemic fluorosis on early retirement in Wonji/Shoa area of the Central Ethiopian Rift Valley where ground water is heavily enriched with fluoride.
3. Socio – Economic Impacts of Endemic fluorosis

- Health
- Education
- Early retirement
- Job Opportunity
- Marriage etc
3.1 The Impacts of Endemic Fluorosis on Early Retirement

- The Wonji Sugar identifies 530 victims of factory workers due to disability associated with fluorosis and requests Black Lion Hospital for clinical/radiological and neurological fluorosis investigation of the victims.
3.2 Prevalence of endemic fluorosis and neurological complications in the Ethiopian Rift Valley

<table>
<thead>
<tr>
<th>No.</th>
<th>Survey area/year</th>
<th>Fluoride (ppm)</th>
<th>Symptomatic person</th>
<th>Clinical/Radiological fluorosis</th>
<th>Neurological manifestations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>No.</td>
<td>(%)</td>
</tr>
<tr>
<td>1</td>
<td>Wonji/Shoa (2002-2011)</td>
<td>4.5 - 17.7</td>
<td>530</td>
<td>244</td>
<td>46</td>
</tr>
<tr>
<td>2</td>
<td>Wonji/Shoa (2012)</td>
<td>4.5 - 17.7</td>
<td>106</td>
<td>70</td>
<td>66</td>
</tr>
</tbody>
</table>
4. Results and discussion

A total of 530 sample population was surveyed among Wonji/Shoa Sugar Factory workers after 10 years of exposure to water with more than 10 mg/l of fluoride intake between 2002 and 2012.

The study showed that 75 % sugar factory workers of Wonji/Shoa Sugar Estate retired at the age of 48, 15% at the age of 45, 6% at the age of 50 and 4% at the age of 55 due to disability associated with fluorosis.
Of these, 46% had radiological (X-ray) evidence of skeletal fluorosis and 0.6% with the crippling form.

In 2012, 106 samples were taken and subsequently examined,
- 66 percent were diagnosed with skeletal fluorosis, and
- 15 percent with the crippling form complicated by neurological symptoms and signs.

Over these years, they lead a very difficult life due to their severe disabilities which require assistance even to go the toilet.
It was most distressing to see these people with crippling fluorosis who are doomed to a very miserable life of total dependence on their relatives even unable to collect pension benefits.

Persons who develop skeletal fluorosis have reduced productivity because of their physical disabilities.
5. Case Studies

The study team had the opportunity to visit Gefersa village at the periphery of Wonji factory village where many of the Wonji pensioners have settled.

Ato A. K a 55 year old man born in one of the plantation villages at the Wonji Sugar Estate.
I met him near the Wonji Hospital on his way to home (Gefersa village) from the hospital. He told us that was forced to seek early retirement at the age of 48 year old which resulted in his vacating his house which was within the sugar estate.

He had worked on the boiler stations of the factory for several years where temperature was extremely high.
Ato Y.G a 65 year old man, forced to seek early retirement at the age of 50 year old.

His disabilities developed insidiously with progressive difficulties with mobility and walking. He had to rent rooms in the satellite sub-town of Gefersa near Wonji and lived on meager retirement benefits.
It was most distressing to see these people with crippling fluorosis who are doomed to a very miserable life of total dependence on their relatives even for the simple activities of getting out of bed or feeding.

For the last 15 years he lead a very difficult life due to his severe disabilities which require assistance even to go to the toilet. He walks with the help of one cane. His situation was slowly getting worse like their compatriots who have become bedridden and incontinent.
The desperate situation is compounded by the small social benefits that these people manage to get. This will certainly be the case in the majority of the rural people of the Rift Valley if they were to develop crippling skeletal fluorosis.
Incidentally, the Sunday issue of the Amharic newspaper “Reporter” give an extensively coverage on the plight of the Wonji people with crippling fluorosis.

It had a graphic description of the pathetic conditions of the afflicted people. The study team discovered that most readers of the article he talked to were shocked to realize that such problems existed in the country.
The high water consumption in the hot climate of the Rift Valley contributed to the development of skeletal fluorosis which was seen more frequently among factory workers who were posted for many years at the boiler stations in the factories where the temperature was extremely high.

The same was true with agricultural laborers worked in the sugar cane field performing physically strenuous manual work.
The study undertaken by Assefa G. et. Al., 2004 on 263 employees of wonji /shoa sugar estate retired during 1995/96 revealed that skeletal fluorosis was more evident among males and the prevalence was higher among the factory and agricultural workers.
6. Conclusion and Recommendation
6.1 Conclusion

- A direct relationship between the development of skeletal fluorosis, fluoride concentration of drinking water and length of exposure.
- Early retirement of the productive age of the work force demand expensive medical care for prolonged periods.
- These consequences of skeletal fluorosis in the rift valley will negatively affect the economic development of the country.
- The issue of fluoride and fluorosis need to be on the national agenda and program because of its serious impact on the socio-economic development.
- The implementation of a defluoridation programme would face serious constraints if there is lack of sustained government and community commitment.
- Community participation is the most essential factor in the success of the program.
6.2 Recommendations

- The National, Regional and Woreda Water levels must be involved and play an active role in finding mitigating strategies to the problems.

- It is necessarily that their efforts are coordinated by autonomous fluoride mitigation unit.

- The establishment of autonomous fluoride mitigation office/unit within the ministry of Water, Irrigation and Energy is proposed to:
  
  - Coordinate development and research activities and align strategically to common policy goals towards the purpose that adequately address the tasks.
✓ Facilitating coordination and linkage among sectors and stakeholders which include public organization, civil societies, bilateral organizations, private entities.

✓ Continuously review, examine and report on the effects of Fluoride mitigation to the policy.

☑ Build National and regional capacity of implementing organizations.
Thank You for your attention