

PREVALENCE OF LOW BACK PAIN AT AN AGRO-INDUSTRIAL COMMUNITY IN THE RIFT VALLEY

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ABSTRACT: A descriptive cross-sectional study is carried out at the Wonji Shoa Sugar Estate in the Rift Valley region of Ethiopia. A total of 1939 adults were surveyed with respect to Low Back Pain, LBP. The overall prevalence of LBP is 21.7 %. The prevalence is only slightly higher in males than in females. The highest frequency of low back pain (28.7 %) was found in the age group 50 years and above. The frequency of LBP is associated with duration of residence in the fluorotic Estate. 25.4 % of the Estate population seem to be completely ignorant the fluoride problems and the on going defluoridation program.

Keywords: Low back pain; Fluoride; Defluoridation program; Rift Valley; Ethiopia

INTRODUCTION

Endemic fluorosis is widespread in the East African Rift system including the Ethiopian Rift Valley, where it is associated with high fluoride content in drinking water in areas of acidic volcanic rocks. Fluoride concentration between 1 and 20 mg/L have been reported from areas of endemic dental and skeletal fluorosis in the Ethiopian Rift Valley.¹

Prolonged and excessive fluoride ingestion after ten to twenty years results in the development of skeletal fluorosis.² Early skeletal involvement by fluorosis is not clinically obvious even though radiographical changes are discernible in the skeleton at early stages. In the later stages. Skeletal fluorosis manifests with restriction of movement of the spine and of the joints of the extremities and with neurological complications as a results of compression of the spinal cord and the spinal nerves.

The spine being one of the areas which is frequently affected by skeletal fluorosis, we have carried out this study to determine the prevalence of low back pain in an area in the Ethiopian Rift Valley with a high fluoride content and compared it with a similar study carried out in an area outside the Rift Valley. Additionally, the knowledge of the community about fluoride and its consequences has been evaluated.

MATERIALS AND METHODS

This is a descriptive cross-sectional study, which was carried out at the Wonji and Shoa villages of the Wonji Shoa Sugar Estate (WSSE). A major agro-industrial community situated in the Rift Valley region of Ethiopia, between July 1997 and October 1997.

Target Population: All adults aged 18 or above and residing in the Wonji and Shoa villages of the WSSE at the time of the survey.

Sampling: Four villages, amongst nine were selected by simple random sampling using a lottery method.

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Method of data collection: Data was collected, using a pre-tested Questionnaire by trained interviewers on house-to-house basis under the supervision of one of the investigators.

A total of 1939 adults were included in the survey. Baseline characteristics of the respondents are given in Table 1. The overall response rate is 92.3 %.

TABLE 1. Characteristics of study population and frequency of Low Back Pain.

Characteristics	Study Population		With LBP		Without LBP	
	No.	%	No.	%	No.	%
Age (years)						
< 20	266	13.7	42	15.6	240	84.4
20-29	465	24.0	103	22.1	362	77.9
30-39	617	31.8	162	26.3	455	73.7
40-49	368	19.0	50	13.6	318	86.4
> 50	223	11.5	64	28.7	159	71.3
Sex						
Male	1105	56.6	213	19.3	892	80.7
Female	842	43.3	138	16.4	704	83.6
Duration of residence (years)						
< 10	369	19.0	42	11.3	327	88.7
11-19	644	33.3	96	14.9	549	85.1
> 20	926	47.7	283	30.6	643	69.4
Total	1939	100.0	421	21.7	1519	78.3

RESULTS

The frequency of low back pain is given in Table 1. The overall prevalence of low back pain in the study population is 21.7 %. The prevalence of low back pain is slightly higher in males than in females (19.3 % vs. 16.4 %) but this was not found statistically significant. The highest frequency of low back pain (28.7 %) was found in the age group 50 years and above followed by those between 30 and 39 years (26.3). With regard to duration of residence the highest prevalence was noted in those who have been residing in the area for more than 20 years (30.6 %), and the lowest in those who have been residing in the area for less than 10 years (11.3 %).

Table 2 summarises the low back pain frequency in the different villages. The difference in the prevalence of low back pain amongst the different villages included in the study was not found statistically significant.

The overall awareness of the community about the presence of excess fluoride in drinking water in the areas and its consequences was examined. 74.6 % were aware, 25.4 % were not.

DISCUSSION

Low back pain is common in the general population resulting in suffering, appreciable disability, and social costs in developed countries,³ whereas very little is known about the epidemiology of low back pain in the developing countries. The prevalence of

low back pain reported from developed countries is varied from depending on the type of population studied and the methodology. There are no studies from other developing countries for comparison, but studies from USA indicate that the prevalence in whites is one and half times greater than the prevalence among African-Americans.

In this survey the overall prevalence rate of low back pain was 21.7 %, which is much higher than the results of a similar community. In a study carried out at Maskan and Mareko district, in an area which is situated outside of the Rift Valley region where the prevalence rate of low back pain was found to be 5.7 % (unpublished data).

Since there is no difference in terms of other variables such as sex, history of past trauma and type of bed used in these two surveys, the most probable explanation for the higher prevalence of low back pain in this survey is the high fluoride content of drinking water in the area resulting in deposition of fluoride in the lumbar spine and the surrounding ligaments. This is supported by the finding of a higher prevalence (30.6 %) in those residing in the area for more than 20 years compared to (11.3 %) those living in the area for less than 10 years. These findings are similar to the results of a study carried out in Wonji Sugar Estate in 1990. In which amongst 328 adults examined, physical impairment indicative of skeletal fluorosis was found in 6.7 % of those who resided in the area for less than 10 years and in 63 % of those resided in the area for more than 20 years.⁴

Similar to other studies on LBP, in this study women and men are affected with low back pain with approximately equal frequency. Our finding of a decline in frequency of low back pain amongst middle age is consistent with the findings of previous studies.⁵

The awareness to the fluoride problem, where 25.4 % of the estate population seems to be completely ignorant, warrants strengthening the existing health education system at the Sugar Estate to increase the awareness in the public about this important health problem. Probably this will have a great impact on the proper utilization and success of existing and future defluoridation programs and the mitigation of low back pain problems.

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TABLE 2. Frequency of patients with low back pain by village.

Village	Population	% with LBP
Wonji F	610	24.0
Wonji G	547	19.3
Shoa 1	358	23.4
Shoa 4	424	20.0
Total	1939	21.7

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