Table 1 The association between different forms of violence and mental distress: Agaro Town, February 2007

Types violence ever experienced	Mental distress		Crude OR (95% CI)	Adjusted OR (95%* CI)
	Yes	No		
Emotional abuse				
Yes	82	151	2.58 (1.7, 3.8)	2.35 (1.5, 3.6)
No	48	228	1	1
Physical abuse				
Yes	70	96	3.44 (2.27, 5.21)	3.48 (2.26, 5.35)
No	60	283	1	1
Sexual abuse				
Yes	74	97	3.84 (2.53, 5.83)	3.80 (2.5, 5.9)
No	56	282	1	1
Any forms of violence				
Yes	94	170	3.2 (2.0, 4.9)	3.0 (1.9, 4.8)
No	36	209	1	1

OR, odds ratio; CI, confidence interval
*Adjusted for age, educational status and excessive alcohol use

the cross-sectional nature of the study, it may not be possible to infer causality. We tried to foresee the temporal sequences of violence and mental illness, but this may not justify the inference of causality. Mental health problems, such as depression and mental distress, could be predictors of rather than outcomes of violence. However, many published reports confirm that violence against women impacts on their mental health (depression, anxiety and suicidal ideation).[7–10]

Conclusion

In conclusion, all types of IPV (physical, sexual and emotional abuses) were significantly associated with mental distress, suicidal ideation and/or depression. Information education communication is needed in order to educate the community about IPV and its mental health consequences. We recommend the screening of victims of violence at primary health-care centres for the early diagnosis and treatment of common mental illnesses such as depression and suicidal ideation.

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Table 2 The association between different forms of violence and depression, Agaro town, February 2007

Types violence ever experienced	Dispression		Crude OR (95% CI)	Adjusted OR (95%* CI)
	Yes	No		
Emotional abuse				
Yes	26	207	2.19 (1.1, 4.2)	1.86 (0.96, 3.7)
No	15	262	1	1
Physical abuse				
Yes	21	145	2.34 (1.2, 4.4)	2.17 (1.1, 4.2)
No	20	324	1	1
Sexual abuse				
Yes	22	149	2.48 (1.3, 4.7)	2.26 (1.12, 4.4)
No	19	320	1	1
Any forms of violence				
Yes	31	233	3.1 (1.5, 6.5)	2.8 (1.3, 5.9)
No	10	236	1	1

OR, odds ratio; CI, confidence interval
*Adjusted for age, educational status and excessive alcohol use

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Risk perception and water purification practices for water-borne parasitic infections in remote Nepal

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SUMMARY This study assesses water-borne infection risk perception and water boiling habits in a remote Sankhuwasava region of Nepal using a brief interview-style questionnaire. All subjects were aware of the risks

associated with drinking unpurified water, but a majority (65%) reported they did not boil water regularly, and almost 60% of villagers interviewed had history of infection despite their boiling practices. In contrast to reports from other communities in Nepal, risk awareness was sufficient in this region. Water boiling alone did not confer protection. Future efforts should target sanitation, screening, and other sources of contamination.

Introduction

Gastrointestinal parasitic infection is a primary source of morbidity in Nepal.[1] It contributes to anaemia, malnutrition and a high six-month infant mortality due to maternal infection.[2–3] However, a clean water supply and good sewage disposal can help to prevent infection.

The reported prevalence of school children with enteric parasitic infections in rural regions of the Kathmandu Valley was 71%, consistent across sex, age, family size, sewage disposal and water source; prior knowledge of water-borne illnesses has not decreased the prevalence.[4] In a nation where enteric parasites are endemic, some communities near Kathmandu consider helminth gastrointestinal inhabitation vital for survival.[5] The purpose of this study was to assess water-borne infection risk perception and water boiling habits in the remote Khandbari region of Nepal.

Subjects and methods

The target location included two villages (Khandbari and Dhupoo) of the isolated Sankhuwasava region in far eastern Nepal. Boiling water is the primary purification method available for villagers. Neither village has sewage lines – the region uses holding tanks or pit latrines.

A brief questionnaire assessing the participants' perception of parasitic infection, willingness to accept to treatment, and potential sources of infection was administered during June 2006. The sampling of patients visiting the Khandbari clinic was randomized over a two-week period. Permission was requested before the start of the survey. The instrument was also administered in the neighbouring village of Dhupoo at the village's primary water pump. Each individual who visited the water pump agreed to participate. A history of infection was recorded as positive if the participant had received a confirmed medical diagnosis or had observed worms in the stools. Age, gender and village of residence data were collected without identifiers.

Results

Nearly two-thirds of the participants visiting the Khandbari clinic took precautions before water consumption: 40% (15) regularly boiled water before drinking; 25% (9) boiled water during sickness and 5% (2) filtered their water. Women (58%) were more than twice as likely to drink boiled water than men (25%). Participants reported inconsistent boiling practices due to time constraints, the cost of wood or fuel, their belief that boiled water would lose its natural flavour and minerals and the perception that their water source was safe.

More than half of the participants (22, 60%) had current or past parasitic infection, either confirmed by a physician or by the presence of worms in their stools. This was independent of their boiling practices. All participants reported they would accept medical treatment for 'juka'. However, 14% reported they would not take additional precautions such as modifying their hygiene practices or water treatment methods.

Only 15% (3) of Dhupoo households consistently boiled the family water, although an additional 65% (3) boiled water on certain occasions (e.g. during pregnancy, for children and elderly, during sickness or during the rainy season). The remaining 20% (4) did not take any precautions. The primary reasons reported for inconsistent or absent precautions were time constraints, the unnatural or unpleasant flavour of boiled water, the cost and the size of the family. Two-thirds of the villagers who always boiled water had history of infection, as did half of villagers who boiled inconsistently.

Discussion

Reported infection was high in both groups, as 60% of Khandbari clinic patients and 55% of Dhupoo villagers interviewed had suffered current or past infections. While reporting of past or current infection was similar in both villages, it is likely that the true number of those infected was higher due to occult or latent infection.

Boiling water alone did not confer protection. The rate of infection was similar among all categories of boiling practices, possibly because the families who reportedly boiled all of their drinking water probably drank from other sources when travelling or at their workplace. Other sources of infection include the use of unpurified water for washing dishes or produce. Shedding from infected family members or livestock may also explain similar reporting of current or past infection despite boiling practices. The likelihood of drinking boiled water was twice as high in women; this may be explained by their predominant roles in food preparation and domestic sanitation.

While studies of other regions of Nepal have found that infection by juka was perceived as necessary or harmless, this perception did not overtly exist among visitors to the Khandbari clinic. All participants felt infection by juka was detrimental to health, and all were amenable to treatment and intervention. This may be attributed to the fact that Khandbari is the district headquarters and has more advanced schools and medical services. In the past, it also served as a starting point for many international mountain expeditions. This study did not assess what perceptions may have formerly existed.

It was observed that, in both Khandbari and in Dhupoo, some families had begun an albendazole prophylaxis every six months. Within the last decade a prophylaxis programme has been initiated for all pregnant women, and the medication is available unprescribed in Khandbari's pharmacies.

Conclusion

In contrast to some communities near Kathmandu,[5] villagers near Khandbari are aware of the health risks of enteric parasitic infection. Despite risk awareness, significant morbidity still exists, though likely a result of available hygiene habits instead of inappropriate perception of risk. A targeted educational intervention explaining the risks of parasitic infection may not be sufficient to decrease morbidity of enteric parasitic infection.

Water boiling alone does not confer protection. Lifestyle makes purification of all water consumed virtually impossible. The impracticalities of making available means for purification suggest the need for alternative water purification and

self-protection modalities. The identification of other major vectors and the development of alternative purification and self-protection modalities will need to be further studied.

In the interim, the introduction of the periodic screening of children and the elderly to enable treatment of the infection should be considered. While this will not guarantee that re-infection will not occur, it may reduce morbidity from current infection, particularly in children during their developmental years. If resources are insufficient for screening, a targeted prophylaxis for children and an annual disbursal of medication for the treatment of anyone who is symptomatic could decrease morbidity without introducing as much risk of the emergence of resistance caused by arbitrary six-month prophylaxis provided for entire families, a practice that seems to be on the rise.

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Incidence of skeletal deformities in endemic fluorosis

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SUMMARY An investigation was undertaken in three endemic fluorotic areas of Punjab State, India, to assess the prevalence of skeletal deformities. The concentration of fluoride in drinking water varies from 2.3 to 22.5 mg/L. The patients affected with skeletal fluorosis revealed joint pain in both upper and lower limbs, numbing and tingling of the extremities, back pains and knock-knees. Prevalence of skeletal fluorosis was found to be 29% of grade-I, 51% of grade-II and 20% of grade-III and was higher in males (63%) compared with females (37%).

Introduction

A variant of a severe form of skeletal fluorosis, termed *genu valgum* (knock-knee syndrome) has been reported from certain endemic areas including India.[1] Children and adolescents were found to be the chief victims. A number of scientists have reported symptoms such as vague pains in hands, feet and knees, numbing of extremities, tingling sensations, restricted movements of the trunk, hips and neck, kyphosis, the inability to close the fist, rigidity of spine, difficulty in walking and crippling with varied severity.[2] Complaints of abdominal pain, constipation, intermittent diarrhoea, a bloated feeling, loss of appetite, a feeling of nausea and mouth sores were reported under the heading of gastrointestinal disturbances.[3]

The present study was undertaken in order to find out the relationship between the prevalence of skeletal fluorosis and skeletal deformities in three fluorotic areas of Punjab, India.

Patients and methods

One hundred and three patients with clinically defined skeletal fluorosis aged between 20 and 80 were selected for the study from three fluorotic areas of Punjab State, India. The subjects had been exposed to fluoride (2.3–22.5 mg/L) through drinking water for more than 15 years. The symptoms and sign of skeletal fluorosis were classified into three grades according to the Teotia *et al.*[4] method. Data was analysed statistically using SPSS windows, version 10.0.

Results

The percentage distribution of skeletal fluorosis was found to be high in the 30–40 and 50–60 (18%) age groups and lower in the 70–80 age group (14%). Z (mode) analysis ($Z = 5.15$) of the data showed that there was significant difference between males and females observed which indicated that the percentage of people suffering from skeletal fluorosis was greater in males than females (Figure 1).

The incidence of the disease was found to be highest in the low economic group, followed by middle class group and lowest in the high socioeconomic group. The chi-square analysis. ($\chi^2 = 27.40$) revealed that the low income class group was most prone to skeletal fluorosis. The results were statistically significant ($P < 0.001$). Those suffering from skeletal fluorosis were divided into two groups: normal body mass index and observed body mass index. Chi-square analysis of the data indicated highly significant ($P < 0.001$) differences between the actual and the recorded body mass index of the patients. The prevalence of skeletal fluorosis was higher in males (63%) compared with females (37%) and was significant at $P < 0.001$.

Clinical skeletal symptoms

The largest number suffered from:

- lower back pain (73%)
- leg pain (71%)
- arm pain (67%)
- tingling sensations in the hands and feet (48%)
- neck pain (34%)
- muscle weakness (38%)
- loss of appetite (44%)
- feelings of nausea (31%)
- abdominal pain (24%)
- polydypsia (27%)
- polyuria (29%).

Only 19% suffered from constipation.