Does Microbial Drinking Water Quality affect the Incidence of Diarrhoeal Disease in Khorezm, Uzbekistan?

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Background

area: 4,550 sqkm*
irrigated area: 2,600 sqkm*
saline soils: 80 %*
population: 1.4 Mio*
urban: 33%* [36%]
rural: 67%* [64%]
% population having access to:
tap: 47** [49]
open wells: [14]
hand pumps: [37]
sanitation: 23** [14]

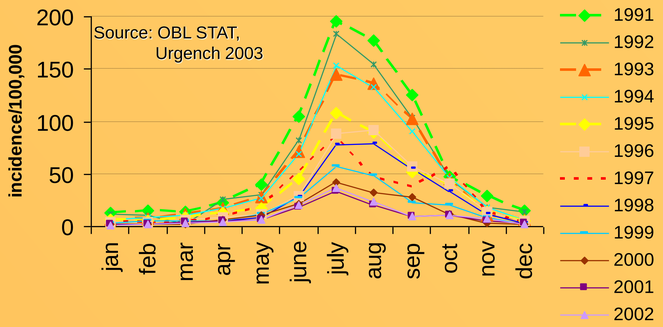
Numbers in brackets refer to the sample

Source: *Ministry of Agriculture and Water Resources, 2000
**OBL SES and OBL STAT, Urgench 2001

Aral Sea area

Introduction

All acute intestinal infections in Khorezm



Methods

➔ **sampling**
a three-stage random sampling was made. Within three pre-selected Rayons (counties) a representative number of communities (Mahallas) was randomly selected. Out of these, 200 households were randomly retained.

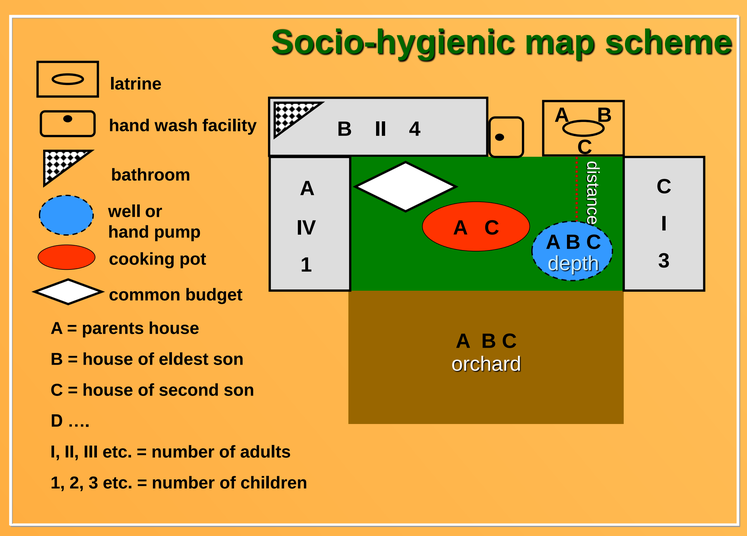
➔ **participatory methods**
diarrhoea cases were registered for 16 weeks (12 in summer, 4 in winter) using self-reporting sheets. Reporting sheets were collected and few additional questions were asked every week

➔ **standardised interviews** were carried out once
water source/storage/treatment, household health related behaviour, diet, illnesses, personal hygiene, sanitation (socio-economic situation, education)

➔ **spot checks**
latrine/toilet and drinking water storage of every household were examined for hygienic conditions twice during the 12-week summer survey

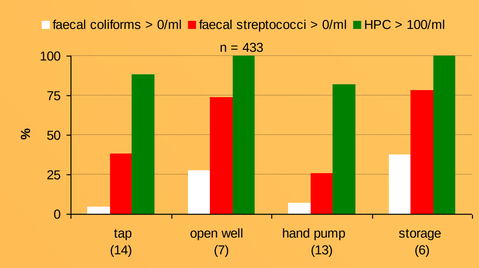
➔ **a socio-hygienic map** was elaborated for every household

example



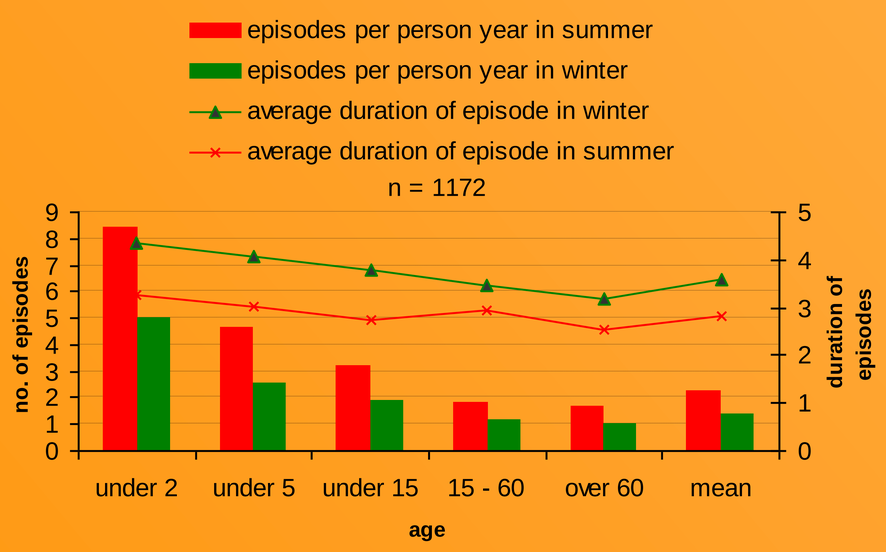
Microbiological methods and results

In 40 out of the 200 households surveyed drinking water from different sources (public supply network, open wells, hand pumps, drinking water storage receptacles) was monitored for faecal coliforms, faecal streptococci and Heterotrophic Plate Count (HPC).

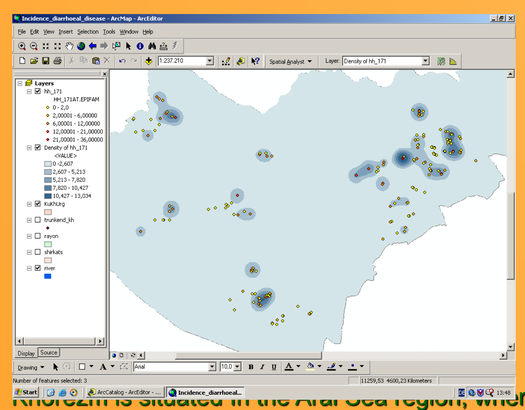


Source: field study 2003

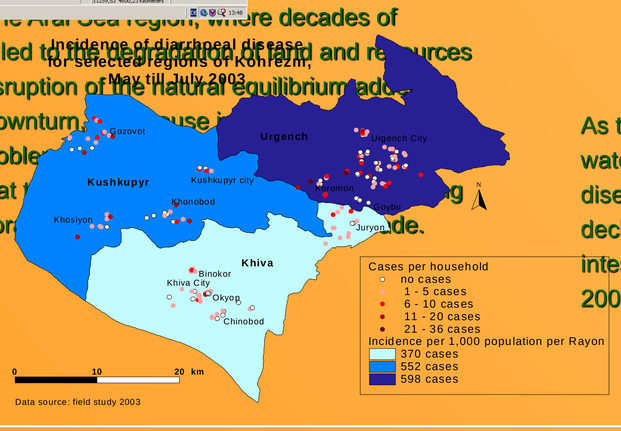
Epidemiological results



Spatial distribution of diarrhoea episodes



Khorezm is situated in the Aral Sea region, where decades of ecological neglect have led to the degradation of land and resources (water and soil). This disruption of the natural equilibrium added to the present economic downturn, ... house ... environmental health proble... Official data prevaled that ... water supply has deterior... ...ade.



Preliminary conclusions

➔ faecal contamination between the different sampling points differs substantially

➔ data show a seasonality in occurrence of diarrhoeal disease and a very high incidence, no matter the season

➔ children two years and younger face the highest burden of diarrhoeal disease, with a one-day longer duration of the episode in winter

➔ no association could be found between the occurrence of diarrhoea and the drinking water source, the food hygiene, the sanitation or home hygiene (linear regression model)

As the consumption of faecally polluted drinking water implies a high incidence rate of waterborne diseases, it is surprising to observe a considerable decline in the incidence of hepatitis A and all acute intestinal infections in Khorezm between 1991 and 2002.

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