
QUALITY OF WATER FOR HUMAN CONSUMPTION IN RURAL COMMUNITIES IN BANDEIRANTES – PR

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SUMMARY

Human consumption water can be obtained from several different sources. One of these sources, the underground source, which due to its low cost, easy perforation and water capitation from the free water-bearing (flat well) is more frequently used in Brazil. The water's good aspect gives the consumers a purity sensation, what leads them not to treat water, not even for a disinfection process, what would certainly minimize diseases spreading. Microbiologically contaminated water can cause a large variety of diseases. The goal of this study is to evaluate water quality relating PID (Parasite Infectious Diseases) medication consume. There were evaluated 385 water findings from rural communities from the city of Bandeirantes – PR, coming from artesian or flat wells (brute water), it was evaluated also the PID medication consume from Municipal Health Office from Bandeirantes – PR – SUS Drugstore of Bandeirantes – PR. The results have shown that the waters presented high Coliforms sample percentage. From those, 47,79% indicated inappropriate to human consumption water. Low medication consume variation may show an endemic side of PID. Water filtration and cloration, along with an

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ambient and sanitary education for rural population, may reduce hydro transmitted diseases occurrence and lower medication consume.

Key-words: water quality; rural sanitation; well contamination; hydro transmitted diseases

INTRODUCTION

The warranty of human consumption water according to suitable potability patterns is a major question to public health. In Brazil, the rule for Water Quality for Human Consumption, the portray 518/GM/2004 from Health Ministry, defines the acceptable limits from bacteriological, physic and chemical characters for potable water. (BRASIL, 2004).

Human consumption water may be obtained from different sources. One of these sources, the underground well, is a widely used source for Brazilian population. Underground water may be caught from confined or artesian water fonts, which locates between two relatively impermeable layers, what makes difficult its contamination, or be caught in the non-confined water font, or free that is near the surface and, for so, more susceptible to contamination. Due to low cost, easy perforation, free water sources catching is frequently used in Brazil. (SILVA; ARAUJO, 2003).

By putting limits to the soil filtrating power, sources get exposes to contamination, mainly by superficial flowing waters and from those that infiltrate in the ground. (AMARAL et al, 2003).

Good water aspect gives the users a purity sensation and it is believed that these facts hinder the users to add a value notion in the matter of treating the water, at least for a disinfection process, what would certainly minimize the risks of disease spreading (Ibid).

Hydro spreading diseases are the group of diseases in which the pathogenic agent is inserted along with the water. The prevalence of hydro spreading diseases, mainly in Latin America, Africa and Asia, is a strong indicative of the public sanitation systems fragility. Such fragility shows itself in the lack of sewer collecting services and, above all, at the quality of the water distributed to the population, when the supplying systems are present. The conjunction of these facts helps, although not isolated, for the high children mortality levels in Brazil, which are among the higher in the world. (DANIEL, 2001).

Supplying services in rural area are still far from those in urban centers. But, to provide water supply, at an accessible cost, for poorer

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and each time more populous urban areas, has been also a challenge (OPAS, 2001).

Microbiologically contaminated water may cause a large variety of infectious diseases, from several ways: directly from the water (by ingesting contaminated water); caused by the lack of cleaning and hygiene with water, caused by parasites found in water living organisms. The WHO's "Potable Water Criteria" emphasizes the microbiological quality of potable water, since this is the kind of contamination responsible for main parasitic and infectious diseases (Ibid).

Every eight seconds, one child dies due to a hydro related disease. (Ibid).

The most usual disinfecting used for water disinfections is chlorine, liquid or in gases. It has been used as a primary disinfecting in most superficial water treatment stations, much as pre-disinfecting as post-disinfecting (residual keeping in the net). All chemical agents used for disinfection has the main function to control hydro spreading diseases and to deactivate pathogenic organisms in water potabilization. (DANIEL, 2001).

The first measure to minimize the contamination risks at the border of the well by coating the walls with masonry or concrete, avoiding pluvial water infiltration to the inside of the well. A second excavation with 10cm wide, throughout the initial 3m of the wall to be filled, preferentially by clay or concrete, will minimize the well's contamination possibility. At last, a concrete top installation and the usage of manual or electrical plumps – avoiding the use of buckets and ropes. (Ibid).

OBJECTIVE

The objective of this study was to evaluate the bacteriological quality of the water used for human consumption that comes from underground fonts used by rural families and communities of Bandeirantes – PR, relating the consumption of medication distributed by the SUS' Public Pharmacy for Parasite Infectious Diseases (PID).

MATERIAL AND METHODS

Bandeirantes has nowadays about 33 thousand inhabitants, it's located on the North region of Paraná Province, 430km far from Curitiba and 450km far from Sao Paulo, with agricultural vocation for Sugar-Cane, and Cane industry.

The microbiological quality survey was made by a research at the water quality control laboratories' quantity of the Autonomous Water and Sewer Service – SAAE, water findings from rural communities in the city of Bandeirantes – PR, coming from artesian or flat wells. Samples goes from January 1998 to December 2003 and the findings study was done in the second half of 2005.

To evaluate medication consumption for PID it was consulted the distribution control of the Municipal Health Office – SUS Drugstore of Bandeirantes – PR, from January to December 2003.

RESULTS

After the data collection and analysis, the results are the ones shown at Table 1.

Table 1 - Number and Percentage of Coliforms in underground water samples from rural proprieties (brute water) of Bandeirantes - PR.

Year	Positives	%	Negatives	%	Total of Findings
1998	39	60	26	40	65
1999	24	34,78	45	65,22	69
2000	14	37,84	23	62,16	37
2001	41	55,41	33	44,59	74
2002	30	38,46	48	61,54	78
2003	36	58,06	26	41,94	62
Total	184	47,79	201	52,21	385

It was shown that 47,9% of the samples presented contamination, indicating inappropriate to human consumption water.

Fecal Coliforms presence indicates the possibility of excrement contamination and, for so, by pathogenic microorganisms existing in the excrements. (SILVA; ARAUJO, 2003).

Table 2 shows PID related medication consumption data, which can be considered directly proportional to these diseases incidence in the city. Low monthly variation on medicine consumption may be due to an endemic characteristic of PID, fact that is almost always neglected in Health Systems as far as teir occurrence is concerned.

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Tabela 2 - Used medicine survey at Public Drugstore of SUS in Bandeirantes-PR, 2003.

Month	Medicine		
	Antibiotic	Vermifuge	S.R.O.
Janeiro	4739	2387	243
Fevereiro	5069	365	231
Março	3896	1960	143
Abril	5726	1757	176
Maio	3764	2961	181
Junho	5819	2605	91
Julho	5252	2972	177
Agosto	8011	2069	294
Setembro	4753	2063	379
Outubro	6495	2576	370
Novembro	5332	1819	144
Dezembro	6039	1598	96
Total	64895	25132	2525

* Survey for the following Medicines: Antibióticos: Sulfa, Cloranfenicol and Gentamicina; Vermifuge: Albendazol, Mebendazol and Metronidazol; S.R.O. (Oral Re-hydration Serum).

All over the world, it happens 4 billions cases of diarrhea per year, with 2.2 millions of death cases, mostly among children up to five years of age. “Safe” water, which in this case is a non risk water to health, hygiene and adjusted sanitation may reduce from one fourth to one third the diarrhea illness. (OPAS, 2001).

The Health Ministry 518/GM/04 norm establishes that in water for human consumption including natural sources ass wells, it is not allowed the presence of Fecal Coliforms or Thermo-tolerant in 100ml of water. (SILVA; ARAUJO, 2003).

From 385 analyzed samples, 184 indicated water impropriated for human consumption.

CONCLUSION

The study, through bacteriological analysis of water collected in wells of rural area from Bandeirantes – PR, points to contamination of the water in the underground levels. The water does not fit into the potability patterns established at the 518/GM/2004 Health Ministry norm. So, human consumption of this water may represent health risks. (BRASIL, 2004).

The lack of some sources, from all protection factors that are told as major importance in water quality preservation, shows the need

of a orientation work with the people who uses these waters, to keep their quality (AMARAL, et al, 2003).

Water filtration and clorination, along with an environmental and sanitation education process of the rural area, may prevent water spreading diseases and lower medicine usage.

Ask the consumer to control water quality is an incorrect posture, once its knowledge about the risks water may offer to health is nearly none. Therefore, an intensive job must be done in the sense to monitoring rural area used water and to implant actions in a way to teach the population, and then change it's behavior.

Medicine consumption may be directly related to PID diseases, being able to indicate lack of Rural Sanitation in the City.

ABSTRACT

The water for human consumption can be gotten of different sources. One of these sources, the underground source, in function of the low cost, perforation easiness, water exploration of infiltration water systems (flat well) is more frequently used in Brazil. The good aspect of the water provides to the consumers a pureness sensation, taking them not to treat it the water for consumption, nor at least for a disinfection process, what certainly it would minimize the risk of propagation of diseases. The water contaminated, with microbial organisms, can transmit great variety of infectious illnesses. The aim of this work was to evaluate the quality of the water relating the medicine consumption for "DIP (Doenças Infecto Parasitárias)". Had been evaluated 385 water samples of agricultural communities in Bandeirantes city - PR, proceeding from artesian or flat wells ("rude" water), were also evaluated the medicine consumption for DIP of the City Department of Health - Pharmacy of the SUS of Bandeirantes - PR. The gotten results evidenced that the waters had presented high percentage of samples with presence of Coliformes. Of these, 47.79% indicated improper water for the human consumption. The discrete one monthly variation of the consumption of medicines it can indicate to a characteristic of endemic disease of the DIP. The filtration and the chlorination of waters together with a process of ambient and sanitary education, for the population of the agricultural zone, can prevent the occurrence of illnesses for the water propagation and reduce the medicine consumption.

Key words: Quality of Water; Agricultural Sanitation; Contamination of Wells; Illnesses for the Water Propagation.

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