Data in Brief 18 (2018) 1122–1126

Contents lists available at ScienceDirect

Data in Brief

journal homepage: www.elsevier.com/locate/dib

Data Article

Data on microbiological quality assessment of rural drinking water supplies in Tiran County, Isfahan province, Iran

Khadijeh Jafari [a], Ali Akbar Mohammadi [b,d], Zahra Heidari [c], Farzaneh Baghal Asghari [d], Majid Radfard [f,d], Mahmood Yousefi [d], Mahmoud Shams [e,*]

[a] Students Research Committee, Department of Environmental Health Engineering, Hormozgan University of Medical Sciences, Bandar abbas, Iran
[b] Department of Environmental Health Engineering, Neyshabur University of Medical Sciences, Neyshabur, Iran
[c] Bachelor of Environmental Health, Department of Health, Isfahan University of Medical Sciences, Isfahan, Iran
[d] Department of Environmental Health Engineering, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran
[e] Department of Environmental Health Engineering, School of Health, Mashhad University of Medical Sciences, Mashhad, Iran
[f] Torbat Heydariyeh University of Medical Sciences, Torbat Heydariyeh, Iran

ARTICLE INFO

Article history:
Received 29 January 2018
Received in revised form
31 March 2018
Accepted 3 April 2018
Available online 6 April 2018

Keywords:
Microbiological quality
Drinking water
Turbidity
pH and chlorine
Tiran

ABSTRACT

A lack of access to safe drinking water can lead to adverse health effects such as infection, disease, and undesirable aesthetic problems. The current study focused on the investigation of groundwater quality in Tiran's villages (Isfahan province, Iran). To determine essential microbiological quality, water samples were collected from 46 randomly-selected water wells during a one-year period. The parameters of pH and chlorine were measured on-site. Turbidity was measured at 420 nm using a DR5000 spectrophotometer. Microbiological tests including general thermoforms, *Escherichia coli*, and thermophiles were carried out according to the National Iranian Standard Method 3759. Data showed that 1.8% of the villages under study had contaminated water resources. The turbidity values for 94.5% of the resources were within recommended limits (< 5NTU). In 20.6% of the samples, the residual free

* Corresponding author at: Department of Environmental Health Engineering, School of Health, Mashhad University of Medical Sciences, Mashhad, Iran.
E-mail address: Shamsmh@mums.ac.ir (M. Shams).

https://doi.org/10.1016/j.dib.2018.04.004

chlorine was in the range of 0 to 0.2 mg/L, 8.79% of samples had values greater than the recommended limits, and18.5% had no free residual chlorine.

Specifications table

Subject area	Water microbiology
More specific subject area	Microbiology
Type of data	Tables, Figure
How data was acquired	A total of 552 drinking water samples were collected from 46 villages of the city during a one-year period and on a certain date in standard containers of 500 cc containing sodium phosphate. The remaining free chlorine, pH, and turbidity were recorded by portable kits in the sampling area and measured in the sample vessel. Turbidity was measured at 420 nm using a DR5000 spectrophotometer
Data format	Raw, Analyzed
Experimental factors	The mentioned parameters above, in abstract section, were analyzed according to the standards for water and wastewater treatment handbook.
Experimental features	The levels of physical and chemical parameters were determined.
Data source location	Tiran County, Isfahan province, Iran
Data accessibility	The data are available whit this article

Values of data

- Assurance that water is microbiologically safe for drinking has traditionally been determined by measuring bacterial indicators of water quality, most commonly, total coliforms and fecal coliforms.
- Data analysis showed that between residual chlorine and fecal coliform there is a significant relationship, so that by increasing the amount of residual chlorine, fecal coliform is reduced.
- According to the results, the amount of residual chlorine should be within standard limits (0.2–0.8 mg/L) in order to protect the health of consumers against pathogens such as fecal coliform.

1. Data

The data presented here deals with the monitoring of the microbiological quality properties of pH, residual chlorine, and turbidity as shown in Tables 1 and 2. The Pearson correlation between all parameters is shown in Table 3.

Table 1
Mean, range and standard deviation of measured microbiological parameters in villages of Tiran city.

Month	Free residual color		Coliform	
	Mean ± SD	Range	Mean ± SD	Range
September	0.39 ± 0.37	0–2	1.89 ± 11.18	0–75
October	0.45 ± 0.46	0–2	9.45 ± 38.06	0–240
November	0.43 ± 0.37	0–2	47.46 ± 204.35	0–1100
December	0.39 ± 0.40	0–2	57.39 ± 227.56	0–1100
January	0.39 ± 0.35	0–2	9.53 ± 51.01	0–460
February	045 ± 0.47	0–2	29.21 ± 164.14	0–1100
March	0.36 ± 0.37	0–2	3.56 ± 15.6	0–75
April	0.32 ± 0.28	0–1.2	37.35 ± 176.32	0–1100
May	0.36 ± 0.49	0–3	3.74 ± 13.89	0–75
June	0.52 ± 0.46	0–3	4.48 ± 20.86	0–120
July	0.48 ± 0.26	0–1	21.84 ± 102.65	0–523
August	0.59 ± 0.51	0–3	104.00 ± 333.92	0–1500

Table 2
Mean, range and standard deviation of measured microbiological parameters in villages of Tiran city.

Month	Fecal coliform		Turbidity	
	Mean ± SD	Range	Mean ± SD	Range
September	0	0–0	1.63 ± 2.05	0.25–8.23
October	1.13 ± 4.28	0–240	1.41 ± 0.89	0.36–4.50
November	12.22 ± 115.95	0–1100	1.72 ± 1.88	0.25–8.23
December	13.55 ± 116.5	0–1100	1.52 ± 1.57	0.25–8.23
January	0	0–0	1.68 ± 1.87	0.25–8.23
February	0.06 ± 0.38	0–2.6	1.69 ± 1.90	0.25–8.23
March	0	0–0	1.46 ± 1.54	0.25–7.93
April	0	0–0	1.82 ± 1.92	0.36–8.23
May	0	0–0	1.38 ± 1.28	0.25–7.93
June	0.07 ± 0.45	0–3	1.84 ± 1.45	0.25–7.93
July	0	0–0	1.65 ± 2.05	0.25–8.23
August	86.66 ± 333.97	0–1500	1.50 ± 1.80	0.25–7.93

Table 3
Pearson correlation between all parameters.

	Cl	Turbidity	Coliform	Fecal coliform
Cl	1			
Turbidity	0.016	1		
Coliform	0.020	−0.023	1	
Fecal Coliform	−0.2*	0.042	0.619**	1

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

2. Experimental design, materials and methods

2.1. Study area description

The center of the county of Tiran is located at 51°9′6.84″ N and 32°42′12.96″ E and is 1640 m above sea level. The county is located 50 km west of Isfahan (Fig. 1).

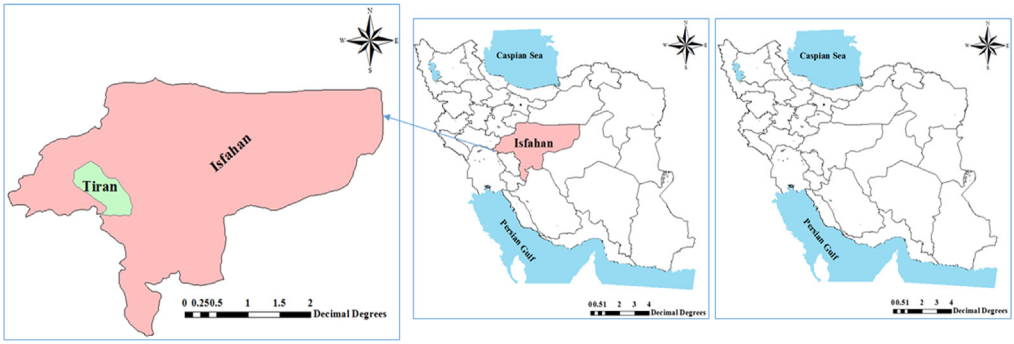

Fig. 1. Study area.

2.2. Determination of microbiological contamination in drinking water

Samples of drinking water were taken from wells selected in rural areas of Tiran. A total of 552 drinking water samples were collected from 46 villages of the city during a one-year period and on a certain date in standard containers of 500 cc containing sodium phosphate. The remaining free chlorine, pH, and turbidity were recorded by portable kits in the sampling area and measured in the sample vessel. Turbidity was measured at 420 nm using a DR5000 spectrophotometer [1–12]. Microbiological tests included general thermoforms and *Escherichia coli*. *E. coli* and general thermophilic formulations were carried out according to the National Iranian Standard Method 3759 (multitube method, confirmatory and supplementary tests). According to the World Health Organization (WHO), the total number of thermal and *E. coli* forms per 100 milliliters of drinking water should be zero. After collection, all data was analyzed by Excel software, SPSS version 22, and statistical analyses. A level of less than 0.05 was considered significant [1,2,13–17].

Acknowledgments

The authors want to thank the Isfahan University of Medical Sciences and the Healthcare Network of Tiran for their comprehensive support for this study.

Transparency document. Supporting information

Supplementary data associated with this article can be found in the online version at http://dx.doi.org/10.1016/j.dib.2018.04.004.

Appendix A. Supplementary material

Supplementary data associated with this article can be found in the online version at http://dx.doi.org/10.1016/j.dib.2018.04.004.

References

[1] M. Ghaderpoori, M.H. Dehghani, M. Fazlzadeh, A. Zarei, Survey of microbial quality of drinking water in rural areas of Saqqez, Iran, Survey of microbial quality of drinking water in rural areas of Saqqez, Iran, Am. Eurasian J. Agric. Environ. Sci. 5 (2009) 627–632.

[2] M. Yousefi, H. Najafi Saleh, M. Yaseri, A.H. Mahvi, H. Soleimani, Z. Saeedi, S. Zohdi, A.A. Mohammadi, Data on microbiological quality assessment of rural drinking water supplies in Poldasht County, Data Brief 17 (2018) 763–769.
[3] M. Yousefi, H. Najafi Saleh, A.A. Mohammad, A.H. Mahvi, M. Ghadrpoori, H. Suleimani, Data on water quality index for the groundwater in rural area Neyshabur County, Razavi province, Iran, Data Brief 15 (2017) 901–907.
[4] A.A. Mohammadi, H. Najafi Saleh, A.H. Mahvi, M. Alimohammadi, R. Nabizadeh, M. Yousefi, Data on corrosion and scaling potential of drinking water resources using stability indices in Jolfa, East Azerbaijan, Iran. Data Brief 16 (2018) 724–731.
[5] M. Yousefi, A.A. Mohammadi, M. Yaseri, A.H. Mahvi, Epidemiology of fluoride and its contribution to fertility, infertility, and abortion: an ecological study in West Azerbaijan Province, Poldasht County, Iran, Fluoride 50 (2017) 343–353.
[6] A.A. Mohammadi, K. Yaghmaeian, H. Faraji, R. Nabizadeh, M.H. Dehghani, J.K. Khaili, A.H. Mahvi, Temporal and spatial variation of chemical parameter concentration in drinking water resources of Bandar-e Gaz City using geographic information system, Desalin. Water Treat. 68 (2017) 170–176.
[7] A. Amouei, A. Mohammadi, Z. Koshki, H. Asgharnia, S. Fallah, H. Tabarinia, Nitrate and nitrite in available bottled water in babol (Mazandaran; Iran) in Summer 2010, J. Babol Univ. Med. Sci. 14 (2012) 64–70.
[8] M. Yousefi, M. Yaseri, R. Nabizadeh, E. Hooshmand, M. Jalilzadeh, A.H. Mahvi, A.A. Mohammadi, Association of hypertension, body mass index and waist circumference with fluoride intake; water drinking in residents of fluoride endemic areas, Iran, Biol. Trace Elem. Res. (2018).
[9] A. Abbasnia, M. Alimohammadi, A.H. Mahvi, R. Nabizadeh, M. Yousefi, A.A. Mohammadi, H. Pasalari H, M. Mirzabeigi, Assessment of groundwater quality and evaluation of scaling and corrosiveness potential of drinking water samples in villages of Chabahr city, Sistan and Baluchistan province in Iran, Data Brief 16 (2018) 182–192.
[10] A.A. Mohammadi, M. Yousefi, A.H. Mahvi, Fluoride concentration level in rural area in Poldasht city and daily fluoride intake based on drinking water consumption with temperature, Data Brief 13 (2017) 312–315.
[11] F.B. Asghari, J. Jaafari, M. Yousefi, A.A. Mohammadi, R. Dehghanzadeh, Evaluation of water corrosion, scaling extent and heterotrophic plate count bacteria in asbestos and polyethylene pipes in drinking water distribution system, Hum. Ecol. Risk Assess.: Int. J. 24 (2018) 1138–1149.
[12] M. Yousefi, M.H. Dehghani, S.M. Nasab, V. Taghavimanesh, S. Nazmara, A.A. Mohammadi, Data on trend changes of drinking groundwater resources quality: a case study in Abhar, Data Brief 17 (2018) 424–430.
[13] M. Yousefi, M. Ghoochani, A.H. Mahvi, Health risk assessment to fluoride in drinking water of rural residents living in the Poldasht city, Northwest of Iran, Ecotoxicol. Environ. Saf. 148 (2018) 426–430.
[14] A. Takdastana, M. Mirzabeygi (Radfard), M. Yousefi, A. Abbasnia, R. Khodadadia, A.H. Mahvi, D.Jalili Naghan, Neuro-fuzzy inference system Prediction of stability indices and Sodium absorption ratio in Lordegan rural drinking water resources in west Iran, Data Breif 18 (2018) 255–261.
[15] H. Soleimani, A. Abbasnia, M. Yousefi, A.A. Mohammadi, F.C. Khorasgani, Data on assessment of groundwater quality for drinking and irrigation in rural area Sarpol-e Zahab city, Kermanshah province, Iran, Data Brief 17 (2018) 148–156.
[16] M. Mirzabeygi, M. Yousefi, H. Soleimani, A.A. Mohammadi, A.H. Mahvi, A. Abbasnia, The concentration data of fluoride and health risk assessment in drinking water in the Ardakan city of Yazd province, Iran, Data Brief 18 (2018) 40–46.
[17] F.B. Asghari, A.A. Mohammadi, M.H. Dehghani, Data on assessment of groundwater quality with application of ArcGIS in Zanjan, Iran, Data Brief 18 (2018) 375–379.