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Household Drinking Water Treatment Practices and Associated factors in the Case of Harar City, Eastern Ethiopia.

Ermiyas Worku Wegayehu[1*], Degu Bekele Nigatu[2]

[1]Ethiopian Civil Service University, Department of Environment and climate Change management, Addis Ababa, Ethiopia.

[2]Assistant Professor of Urban Planning and Development, college of Urban Development and Engineering, Ethiopian Civil Service University, Addis Ababa, Ethiopia.

[*]Corresponding author: ermiyashiwete@gmail.com

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Abstract

Household water treatment containing boiling, chlorination, filtration and solar disinfection, can improve water quality at the point of use to prevent post-collection contamination. It is among the seven points of strategic areas announced by World Health Organization and United Nations Children's Fund for prevention of diarrhea and other water borne diseases through community full participation. It is also a priority area of a current national drinking water quality monitoring strategic direction at country level which is implemented through the health extension program packages. This study assessed the households drinking water treatment practice and the factor that affect them in case of Harar Town; Eastern Ethiopia. A community based cross-sectional design was conducted in Harar town January-01-28, 2021. A total of 418 randomly selected households were involved in the study with response rate of 100%. Data were collected by using questionnaire and it was administer by face-to face interview. The data were analyzed using descriptive statistical tests and binary logistic regression. All independent variables with p- value of < 0.25 at bi-variate analysis were included in the multivariate model to determine the predictors of the outcome variable, and to control the confounding factors. For all statistical tests, a P value of ≤0.05 was a cut off point for statistically significant. The finding of the research indicates that level of household water treatment practice was 44.6%. Educational status of being literate (AOR = 1.877, 95 % CI = 0.71-5.015), pouring fetching water (AOR = 3.013, 95 % CI = 1.845-4.922), wash hands before collecting water (AOR = 1.833, 95 % CI = 1.1–3.052) and liquid waste disposal (AOR = 0.418, 95 % CI = 0.22-0.793) were significantly associated with household water treatment practice.

Keywords: water treatment, household, safe storage, sanitation, hygiene

INTRODUCTION

The 2030 Sustainable Development Agenda agreed by United Nations (UN) Member States in 2015 calls for universal access to safe drinking water, and the proposed indicator of 'safely managed drinking water services will require direct measurement of drinking water quality (WHO/UNICEF, 2015a). Improved protection and management of drinking water supplies, including at the household level, will therefore gain increasing importance for achieving the new Sustainable Development Goal targets. Long-term, this can be achieved through increased use of risk

management approaches like Water Safety Planning, but in the short- and medium-term household water treatment (HWT) and safe storage can play an important role.

Household water treatment (HWT) is method for treating water at the household level or at the point of use in schools, healthcare facilities and other community locations. It is also called domestic water purification or point of use water treatment. Even tapped water in urban areas is not always as a safe source of water due to inappropriate treatments or microbial contamination during the delivery and improper storage at a point of use. HWT interventions may protect public health where water is untreated, not treated properly or become contaminated during distribution or storage. Nowadays, simple, low-cost and acceptable household water treatment technology are available which can recover the microbial quality of stored water and decrease the risks of diarrheal disease.

Potable water is a basic need for human life; however, most household residents in both urban (88%) and rural (92%) areas report that they do not treat their water prior to drinking. Overall, 7% of households in Ethiopia (11% in urban areas and 6% in rural areas) are using an appropriate treatment method. Appropriate treatment methods include boiling, adding bleach/chlorine, straining through a cloth, filtering, solar disinfecting, and letting it stand and settle.

The method of household purification includes filtration, boiling, ultraviolent radiation and chemical treatment to disengage the pathogen. In many communities, there is limited knowledge and poor practice for water treatment. Therefore, this study was conducted To evaluate the level of household drinking water treatment practice and associated factors in the case of Harar City; Eastern Ethiopia. February, 2021.

Methods

The study was conducted in urban area of Harari Region (Figure 1), Eastern Ethiopia which is located at 9º18''40″''N & 42º07''40″''E latitude & longitude. Harari region is one of the nine regional states of Ethiopia which is bordered on the north by Kombolcha and Jarso woreda, on the south by Fedis woreda, on the East by Gursum and Babile woreda, on the west by Haramaya district. Harar was formerly the capital of Hararghe and now the capital of the modern Harari Region of Ethiopia. The city is located on a hilltop in the eastern extension of the Ethiopian Highlands, about five hundred twenty five kilometers from the national capital Addis Ababa at an elevation of 1,885 meters.

Study population

All Households in Harar were source population. All households in the selected kebeles were the target population who were directly the data collected from. During the time of data collection a member of a household who fulfill the inclusion criteria (i.e, a husband, wife or/and >18 years old child) were involved to respond the questioner.

Study design

In order to analyze properly the influence of different variables on the practice of drinking water treatment at household level, predominantly a community based cross sectional study design was employed. This research design helps to learn about a large population by surveying their representative sample, summarizing those using statistical tools

In this study, descriptive survey research design was adopted as it is economical in approach to obtain information from wider areas and large population and tries to describe a certain problems, phenomenon, or situations. The method is time efficient and can easily draw inferences. Besides, the descriptive survey research design would be employed in order to

collect, extract, and process and analyze the information obtained from the town residents.

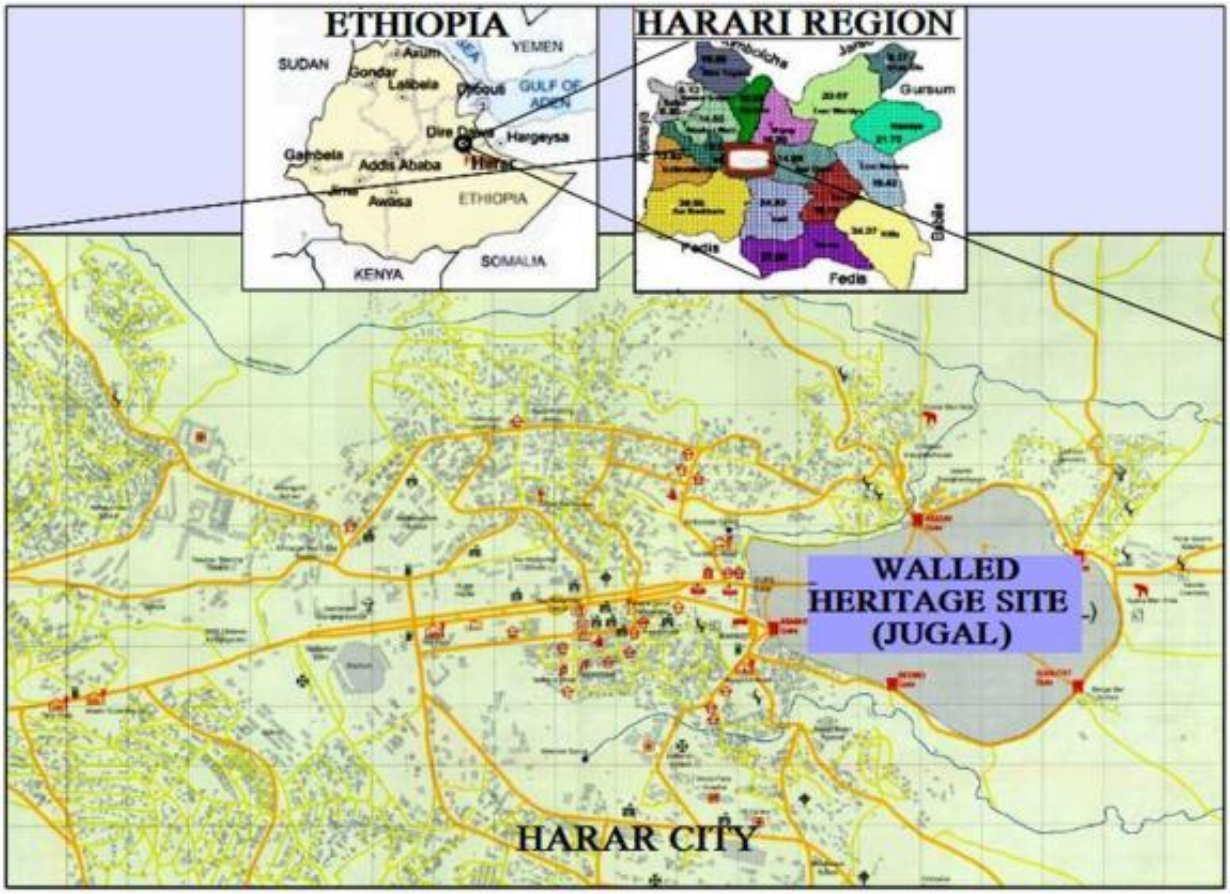

Figure 1 Location of the study area

Sample size determination

Sample size determination is a very crucial step and it involves the number of household respondents who would participate in the study.

The required sample size was determined using formula for single population proportion ($n = (Z/2)^2pq/d^2$) with the assumptions of Confidence level at 95% (1.96), Margin of error (0.05 or 5%), and Contingency for non-response rate (10%).

$$n = \frac{\left((\frac{Za}{2})^2\right)p(1-p)}{d^2}$$

Thus, about **380** households (n) was determined. Where; Z = 1.96 with 95% of confidence interval, P - proportion water samples from level of household water treatment practice (0.448), q = 1-p = 1-0.448 = 0.552, d = margin of sampling error tolerated (0.05) and n - the required sample size. By considering of 10 % non-response rate a total sample study participant of **418** was calculated.

Sampling techniques

A study population was selected using multi-stage sampling technique; in the first stage using simple random sampling technique 6 kebeles (the smallest administrative unit in Ethiopia) was chosen from the total 19 kebeles in Harar city. In the second stage, using lists of household heads from community health information system; the first household was selected by simple random sampling technique

(lottery method) from the first list of the sampling interval.

Data collection instruments

The data was collected by using structured questionnaires and personal observation, specially developed from literature and prior similar studies in Ethiopia. Data on socio-demographics and economic variables was collected by using structured Amharic version questionnaires adapted from different literature review (Usman. M. A et al., 2016).Five Grade 12 completed female students to interview questionnaire, one BA degree holder was also recruited and trained for supervising data collectors. A two days training was given about interviewing technique and filling questionnaires, and how to approach respondents.

Questionnaire

Questionnaire is a useful tool for collecting information in face-to-face, email, postal mail and telephone settings. The focus of the questionnaire should consist of; asking and gathering the right type of information, making sure each question is specific, objective and understandable. Data collected would be analyzed using descriptive statistical methods, such as frequency distribution, numbers, percentage, etc. Hence open-ended and close-ended questionnaires were prepared for obtaining the requisite information from the sample households.

Field Observations

By observing the real time circumstances prevailing in the study area, the researcher could get real figures about the study problem. This is very much convenient to obtain the current practices of respondents regarding their habit on drinking water treatment, water storage and handling condition, hygiene and sanitation, housing besides their response on the prepared questions.

Result and Discussion

As summarized in table 1, a total of 418 households were participated making a response rate 100%. Among the total respondents, 252 (60.3 %), of them were male headed household. The average age of the respondent was 38.89 ($\pm$10.00 SD) years. 73.4% of the respondents participated on the study were females. One hundred ninety four (46.4%) of respondents were Muslim religion followers. More than half of the respondent 273 (65.3 %) were literate (college and above) and 304(72.7%) of respondents were married. Regarding occupational status of the respondents majority of them 319 (76.3%) were Government employee followed by 41(9.8%), 38(9.1%) merchants and Unemployed /not working/pensioned respectively. Two hundred six (57%) of the respondents monthly average income was below 5000 ETB.

Table 1: Socio-economic and demographic characteristics *of households (n=418) in Harar city, Eastern Ethiopia, 2021*

Variables	**Category**	**Frequency**	**Percentage**
Household head	Male	252	60.3
	Female	166	39.7
Age of respondents	18-29	74	18
	30-39	148	35
	40-49	135	32
	$\geq$ 50	62	15

Variables	Category	Frequency	Percentage
Sex of respondents	Male	111	26.6
	Female	307	73.4
Religion of respondent	Muslim	194	46.4
	Orthodox	151	36.1
	Protestant	73	17.5
Educational level of respondent	Unable to read and write	4	1.0
	Able to read and write	22	5.3
	Primary level	74	17.7
	Secondary level	45	10.8
	College and above	273	65.3
Marital status of respondent	single	67	16.0
	Married	305	73.0
	Divorced	15	3.6
	Widowed	31	7.4
Occupation of respondent	Merchant	41	9.8
	Government employee	319	76.3
	Daily laborer	12	2.9
	Unemployed (not working)	38	9.1
	Others*	8	1.9
Monthly income	≤5000 ETB	236	57
	5001–9999 ETB	106	25
	≥1000 ETB	76	18

*Others = (NGO employee=8)

In this study, similarly piped water is used for drinking purpose nevertheless as observed on the field number of respondents were used it for washing closes and utensils; they used other alternate sources, which mainly included buying bottled/jar water for drinking. Piped water in yard was the main source of drinking water among the majority of households 305 (73%) and. Piped water in to dwelling, protected well and public tab were 65(16%), 36(9%) and 9(2%) respectively. The information is presented in Figure 2.

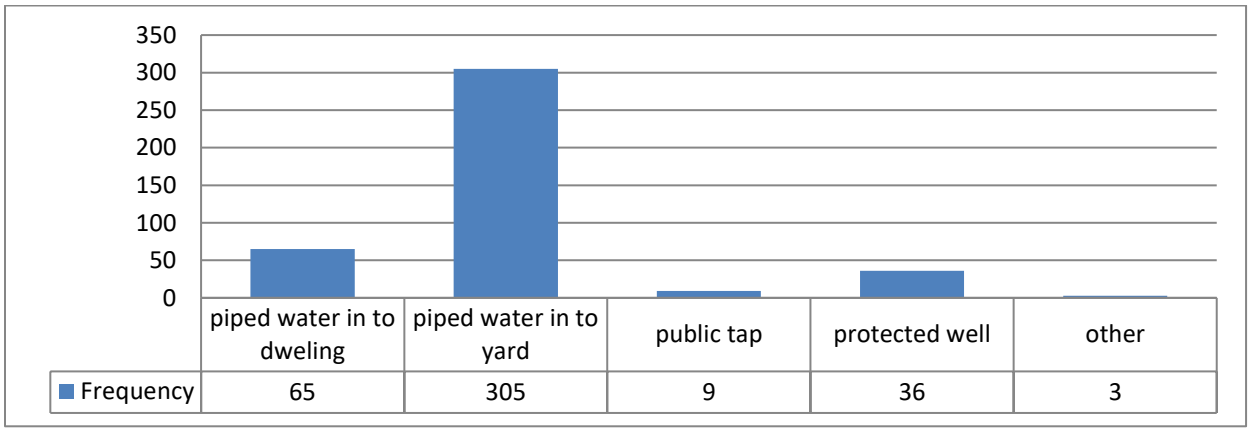

Figure 2: Main sources of water for the households (n=418) in Harar city, Eastern Ethiopia, 2021

As presented in table 2, the proportion of households that meet the criteria for basic water accessibility in terms of time (less than 30 minutes round trip) and quantity (>20 liters /capita per day) were 392 (94%) and 171 (41%) respectively. It is clear that, majority of respondents above 85% had source from piped water either from plot or within dwelling, it took less than 30 minutes to round a trip. Eventhogh, majority of householders had a piped water facility near by them, the frequency of that water came or available is at least once in a week; this leads householders to look other alternatives which incur them additional cost and time. As a result of the shortage of water supply in Harari region more than half respondents utilize <20 liters /capita per day which is below WHO standard that is; an individual should get at least 20liters/capita/day (WHO, 2013).

As summarized in Table 2, majority 262(62.7%) and 92 (22%) of the households adult women and adult men were responsible to collect drinking water respectively. Fifty seven (13.6%) and 9(1.7%) was responsibility for female child under 15 years and male child under fifteen years to collect drinking water respectively. This shows that, female child had more responsible than male child to be there for their parents in this regard.

Table 2: Water accessibility and associated responsibility of the respondants in Harar city, Eastern Ethiopia, 2021

Variables	Category	Frequency	Percentage
Accessibility in terms of time	Basic accessibility (within 30 minutes round-trip)	392	94
	Not accessible (morethan 30 minutes round trip)	26	6
Accessibility in terms of quantity	Basic accessibility (≥20 litres/capita/day)	171	41
	Not accessible (<20 litres/capita/day)	247	59
Household members who usually collect water	Adult woman	262	62.7
	Adult man	92	22.0
	Female child	57	13.6
	Male child	7	1.7

Table 3 illustrated that; Majority, 345 (83%) of households collect and 386 (92%) of them store their drinking water for more than a day. On the other hand, 356 (85.2%) of the households was used Jerrican to store their drinking water. During the time of data collection 50 (12%) of water storage containers did not have cover and 58 (14.1%) of respondents replied that they didn't wash their water storage vessels before storing water in the home.

Only 29 (7.1%) of them were washed their storage daily. One hundred eighty nine (44.2%) were used a dipping method to withdraw water from their container and 20 (10.6%) didn't had utensil to handle. Out of the total 418 households, nearly half 195 (47.6%) of the households' storage container were accessible to children and 92 (22.5%) of them place their drinking cups on the floor.

In this study, almost half respondents withdraw water from the container by dipping method and one-tenth of householders' utensils didn't have handle but also container were accessible to children these are more than enough evidences for a water to be contaminate. Storage vessels which have cover can protect stored household water from microbial contaminants that could come through contact with hands, dippers and other contaminated objects. Narrow necked vessels and dispensing devices, such as taps or spigots are preferable for storage compared to open containers that are wide enough for cups

and hands to be dipped into (Mintz et al. 1995; WHO 2011).

Table 3: Household water storage and handling practice of the respondents in Harar city, Eastern Ethiopia, 2021

Variables	Category	Frequency	Percentage
Frequency of water collection	Daily	73	17
	More than a day	345	83
Length of storage	A day and less	32	8
	More than a day	386	92
Type of storage container	Jerrican	356	85.2
	Bucket	4	1.0
	jar	58	13.9
Cover for the storage container	Yes	368	88
	No	50	12
wash storage vessels before storing water	Yes	353	85.9
	No	58	14.1
Frequency of wash storage	Daily	29	7.1
	More than a day	377	92.9
Method to withdraw water from storage container	Pouring	229	54.8
	Dipping	189	44.2
If dipping does the utensil has a handle?	Yes	169	89.4
	No	20	10.6
Accessibility of storage container by children	Yes	195	47.6
	No	215	52.4
Regular placement of drinking cups	On the floor	93	22.5
	Place prepared for it	237	57.2
	On the water storage container	84	20.3

Regarding sanitation facility in this study, 409(98%) of the households had latrine and the majority 226 (54.1%) of the households had used Ventilated improved pit latrine (VIP) as illustrated Figure 3. From those households that had latrine 268(64.1%) of them were sharing their latrine with other households. Concerning the child feaces disposal 368(80%) of the respondents practice sanitary disposal. About 412 (98.5%) of the participants also disposed their solid waste by communal collection, burning, dumping in waste pit or by composting. In addition, about 65 (15.6%) of households disposed their liquid waste by simply flash away near open spaces.

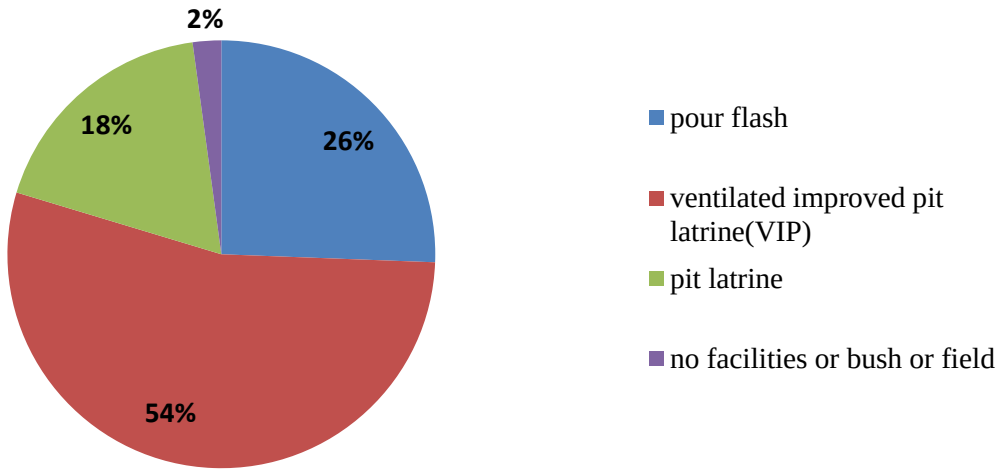

Figure 3: Type of sanitation facility used by the households in Harar city, Eastern Ethiopia, 2021

As presented in Table 4, Majority, 353 (85.9%) of the respondents wash their water storage container regularly and 244 (58.4%) of them also wash their hand before water collection. In addition to this, 390 (93.3%), 317 (75.8%) and 319 (76.3%) of the respondents washed their hands with soap after visiting toilet, after cleaning child and before feeding a child respectively. Beside this 225(53.8%) of the households had a place for hand washing and 195 (46.7%) of them had water and cleaning agent like soap during observation. The result found regarding to hygienic practice indicate that the community had good awareness and it would be more than this if there were not shortage of water in the study area.

Table 4: Hygienic practice of the respondents in Harar city, Eastern Ethiopia, 2021

Variables	**Categories**	**Frequency**	**Percentage**
Wash hands before water collection	Yes	320	75.3
	No	105	24.7
Wash hands after visiting a toilet	Wash with soap	291	68.5
	Wash without soap	78	18.4
	Did not wash	56	13.2
Wash hands after cleaning a child	Wash with soap	304	71.5
	Wash without soap	80	18.8
	Did not wash	41	9.6
Wash hands before feeding a child	Wash with soap	297	69.9
	Wash without soap	79	18.6
	Did not wash	49	11.5
Place for washing hands with water and cleaning agent	Yes	30	7.1
	No	395	92.9

In the present study Figure 4 showed that, majority, 386 (92.3%) of respondents known treating water at home can prevent contamination and the same number of

respondents were replied that they know at least one type of treatment method from the given options. Accordingly, 204 (48.8%), 131 (31.3%) and 12(2.9%), 21(5.0%), 18(4.3%) knows; add bleach/chlorine, boiling and strain through close, use water filter and let it stand and settle respectively household water treatment methods and 32 (7.7%) of respondents had poor knowledge toward household water treatment practice. Nearly half of the participants used chlorination for purification. They had also good knowledge about after chlorination how much time water used for drinking.

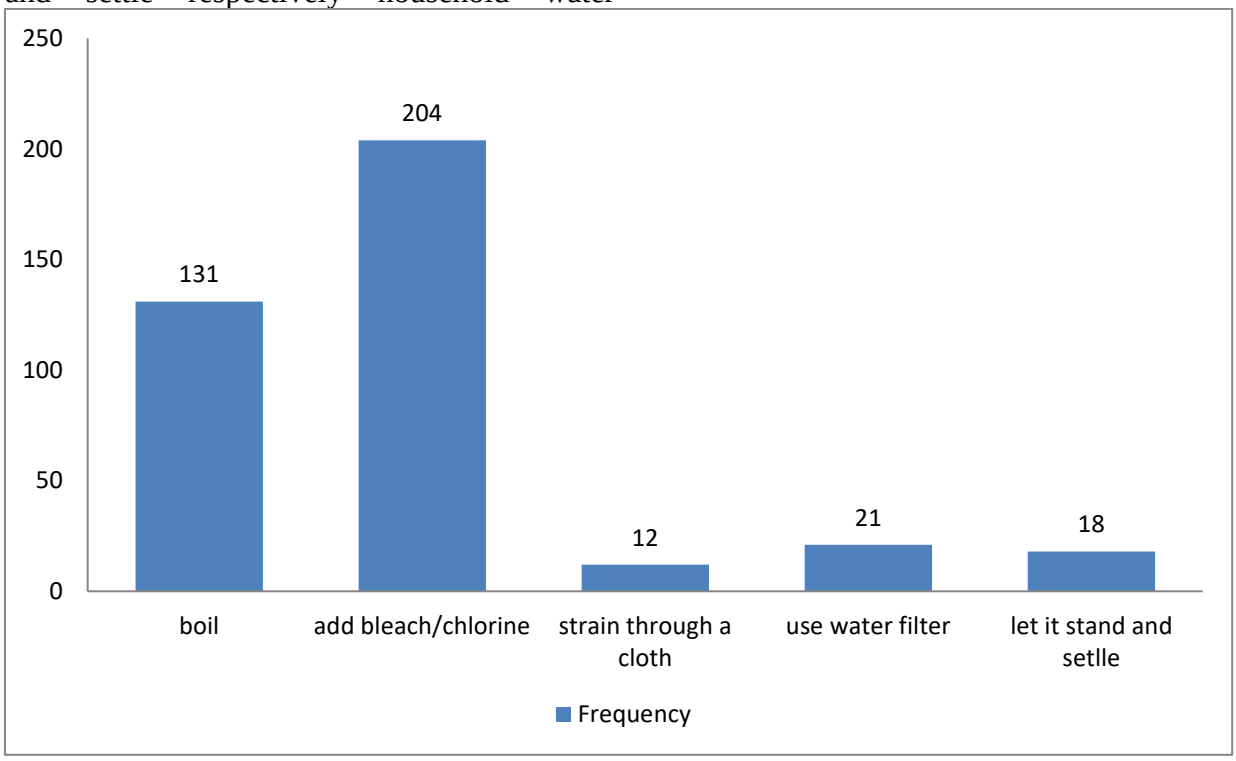

Figure 4: knowledge of household on different treatment methods

Figure 5 illustrated that, overall, 186 (44.6%) participants were treat water at their home. Among those treat water in their home, different modality of treatment approaches were used, 48 (25.8%) boil water, 2 (1.1%) strain through a cloth and 133 (71.5%) have used chlorine chemical which was available in the local market for water treatment purpose and 3(1.6%) respondents were practiced use water filter at home. It was believed at the beginning that respondents who had good knowledge about HWT are more likely to have a favorable attitude toward practice; nevertheless, the study found that, even if participants were resident in urban area (55.4%) respondents had lower practice on house hold water treatment.

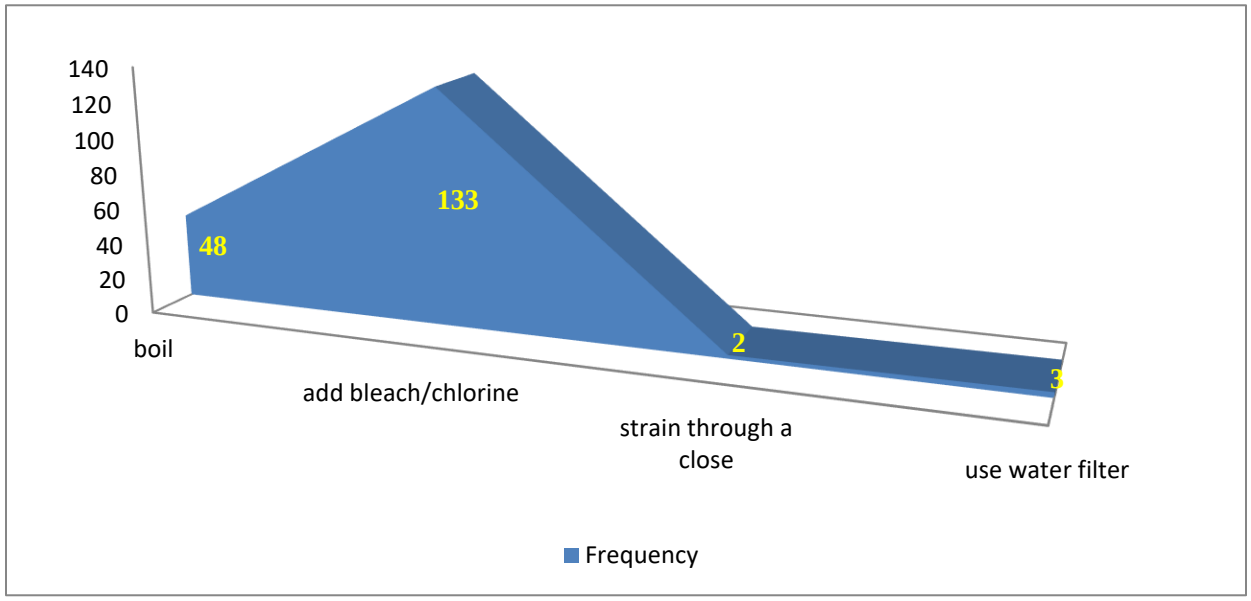

Figure 4: Household drinking water treatment practiced in Harar city, Eastern Ethiopia, 2021.

In bivariable analysis water treatment practice at household level varied under the influence of various factors. In this test each independent variables were tested against the dependent variable. Accordingly age, educational status, method of water withdrawal ,type of toilet, liquid waste disposal , washing hand before collecting water, place for hand wash within the yard, knowledge that treating water at household level prevent contamination and knowledge about methods of household water treatment were found to have P-value <0.25 in which this variables were candidates to multivariable logistic regression analysis. (Table 5)

Table 5: Bivariate analysis of household's water treatment practice in Harar city, Eastern Ethiopia, 2021

Variable	Category	Water treatment practice		P-value	COR (95 % CI)
		poor	good		
Sex of respondents	Male	70	41		1
	Female	162	145	0.062	0.654(0.42,1.03)
Age	18-30	58	52	0.22	1
	31-45	125	107	0.84	0.96(0.606,1.504)
	≥ 46	49	27	0.11	0.62(0.34,1.12)
Educational status	Illiterate	9	17	0.032	2.49(1.08,5.73) *
	Literate	223	169		1
Occupation	Merchant	19	22	0.523	1
	Gov't employer	177	142	0.27	0.693(0.37,1.34)
	Daily laberor	8	4	0.22	0.44(0.12,1.67)
	Unemployed	22	16	0.31	0.63(0.52,1.59)
	NGO employer			0.29	
		6	2		0.29(0.52,1.59)
Household monthly income	1000-9999	191	151	0.76	1.08(0.66,1.78)
	≥10000	41	35		1
Cleaning storage vessels	daily	16	13	0.28	1
	weekly	101	73	0.38	1.63(0.55,4.81)
	every 15 day	88	88	0.398	1.45(0.62,3.74)
	monthly	18	9	0.111	

Variable	Category	Water treatment practice		P-value	COR (95 % CI)
		poor	good		
The way of fetching water	Pouring	115	114		1 1.611(1.09,2.4)*
	Dipping	117	72	0.017	
Type of toilet	Pour flash	70	37	0.002	1
	VIP	108	118	0.003	2.067(1.29,3.4)*
	Pit latrine	51	25	0.812	0.93(0.49,1.73)
	No facility	3	6	0.07	3.79(0.895,16.0)
Liquid waste disposal	Soak pit	157	130	0.006	1
	latrine	47	19	0.016	0.27(0.27,0.87)*
	flash away	28	37	0.092	0.93(0.93,2.74)
Wash hands befor collecting water	Yes	118	126	0.001	0.493(0.33,0.7)*
	No	114	60		1
Use soap while washing hands	yes	212	178	0.069	0.44(0.18,1.07)
	no	19	7		1
Place for hand wash	yes	113	112	0.044	0.66(0.44,0.99)*
	no	101	66		1
Home treatment prevent contamination	yes	205	181	0.002	0.21(0.08,0.56)*
	no	27	5		1
Knowledge	Poor	27	5		1
	Good	205	181	0.02	4.77(1.79,12.6)*

CI=Confidence Interval, COR=Crude Odd Ratio, *= Candidate for multivariable analysis

Finally in multivariate logistic regression analysis, educational status of being literate, pouring fetching, wash hands before collecting water, and liquid waste disposal were significantly associated with household water treatment practice were statistically significantly at 5% level of significance and were found to be the predictors of household water treatment practice.

Educational status of being literate were 1.87 times more likely practice household water treatment than those illiterate head of households (AOR = 1.87, 95 % CI = 0.71–5.015), pouring fetching water was 3.01 times more likely practice household water treatment than dipping (AOR = 3.01, 95 % CI = 1.845–4.92) ,respondents who wash hands before water collection were 1.83 times more likely practice household water treatment than those who didn't wash their hands before collect water (AOR = 1.83, 95 % CI = 1.1–3.052),householders had place for hand in their yard was 1.79 times more likely practice household water treatment than those who didn't have (AOR = 1.79, 95 % CI = 1.05–3.054),respondents who knows that treating water at household level could prevent water contamination were 5.79 times more likely had practice from those who didn't, (AOR = 5.79, 95 % CI = 2.014–16.66) and respondents who had good knowledge about the methods of treating water were 0.17 times less likely practice household water treatment than who had poor knowledge (,AOR = 0.17, 95 % CI = 0.66–0.497) frequency were found to be significantly associated with household water treatment practice at household level with P-value <0.05] (Table 6).

Table 6: Factors associated with household drinking water treatment practice in Harar city, Eastern Ethiopia, on Multivariable analysis 2021

Variable	Category	Water treatment practice		COR (95 % CI)	AOR (95 % CI)
		Yes	No		
Educational status	Illiterate	9	17	2.49(1.08,5.73)	1.877(0.71,5.015)
	Literate	223	169	1	1

Variable	Category	Water treatment practice		COR (95 % CI)	AOR (95 % CI)
		Yes	No		
The way of fetching water	Pouring	115	114	1.611(1.09,2.4)	3.013(1.845,4.92)
	Dipping	117	72	1	1
Liquid waste disposal	Soak pit	157	130	1	0.418(0.22,0.793) *
	latrine	47	19	0.49(0.27,0.87)	0.152(0.063,0.364)
	flash away	28	37	1.59(0.93,2.74)	1
Wash hands befor collecting water	Yes	118	126	0.493(0.33,0.73)	1.833(1.1,3.052) *
	No	114	60	1	1
Type of toilet	Pour flash	70	37	1	0.35(0.07,1.73)
	VIP	108	118	2.067(1.29,3.39)	0.67(0.19,2.99)
	Pit latrine	51	25	0.93(0.49,1.73)	0.39(0.08,1.93)
	No facility	3	6	3.79(0.895,16.0)	**1**
Place for hand wash	yes	113	112	0.66(0.44,0.99)	1.79(1.05,3.054) *
	no	101	66	1	1
HWTP prevent contamination	yes	205	181	0.21(0.08,0.56)	5.79(2.014,16.66) *
	no	27	5	1	1
Knowledge	Poor	27	5	1	0.17(0.06,0.497) *
	Good	205	181	4.77(1.79,12.6)	1

AOR=Adjusted Odd Ratio; CI=Confidence Interval, COR=Crude Odd Ratio; *=p value <0.05

Discussion

Level of household water treatment practice was found to be 186(44.6%), (95% CI 30.7-38.1). Moreover way of fetching water, Place for hand wash within yard, knowledge on household water treatment practice prevent contamination and Knowledge about mechanisms of water treatment was factors that significantly associated with household water treatment practice. Among the total study participants, 186(44.6%) of them practiced household water treatment.

This finding is consistent with study done in biye community, Kaduna State of Nigeria, where 32.4% of the households practiced household water treatment practice (Ibrahim JM et al., 2016), Malawi 32 % (MOH 2014) lower than study done in Zambia 72.6% urban and 50% rural (Rosa & Clasen, 2010) and also study done in North West Ethiopia 44.8% (Hailegebriel et al., 2015) but higher than the findings from Ethiopian demographic health survey 2016 which is 7% (CSA, 2016). The possible explanations for this difference might be related with sample size, study design, and study period.

Literate respondents were 2.81 times more likely to practice household water treatment compared to those who were illiterate (AOR= 2.81' 95%CI=1.93-4.09). This finding was similar with study done northwest Ethiopia (Hailegebriel et al., 2015) and Bona district Sidama zone southern Ethiopia (Abebe Berhanu and Hailu, 2015). The possible explanation for this finding might be due to the fact that literates might know different types of water treatment methods from media and also those literate persons better understand health risks of drinking contaminated water by reading posters and leaflets.

Respondents who draw their water by dipping their container were 1.5 times more likely to practice household water treatment than those who draw their water by pouring their container (AOR = 1.55, 95 % CI = 1.07–2.26) This finding was in line with study done northwest Ethiopia (Hailegebriel et al., 2015). The possible explanation may be due to the fact that they might think that dipping the container for

fetching may be likely to contaminants and to avoid those contaminants, respondents who may use at least one of water treatment method for household water treatment practice. And also they may be get information from health professionals on draw water by dipping increase water contamination.

Those respondents who fetched their water three time and above a day was 1.8 times more likely practice household water treatment than those who fetching water once a day (AOR = 1.83, 95 % CI = 1.07–3.09). This finding is in line with study done in North West Ethiopia (Hailegebriel et al., 2015). The possible reasons for this may be those who fetched the water most frequently may have a fortuitous to store their water which in turn empowers them to treat their water by storing.

Conclusion

The knowledge of respondents on HWT was positive but their practice of water purification was quite poor. There is wide gap between knowledge and practice Statistically significant predictor factors for practice towards HWT was way of fetching water, Place for hand wash, household water treatment prevent contamination and Knowledge. Well-designed health awareness programs should be effectively implemented with active participation of health workers.

Author Contribution

Authors have contributed to proposal development, pre-testing the questionnaires, supervising the data collectors and data entry; data cleaning, data analysis, and manuscript preparation and approvals.

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