

# Knowledge, Attitude And Practice Towards Water Supply, Sanitation And Hygiene (Wash) Among Residents In Arsi Nagele Town, South Eastern Ethiopia

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## Research article

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# Abstract

**Background** The national water coverage has been in increasing trend. However, unsafe water supply and poor sanitation practice was the major health concern which is causing diseases with considerable morbidity and mortality in Ethiopia.

**Objective** To assess knowledge, attitude and practice of Arsi Nagele town inhabitants on water supply, sanitation and hygiene at household level.

**Method** Community-based cross sectional study design was used at household level in Arsi Nagele town in April, 2019. Data was collected with structured questionnaires through face to face interview. Data was analyzed using SPSS version 20 statistical software.

**Result** Four out of ten (43.8%) respondents know private taps are safe for drinking and domestic use while 116(40.4%) shared taps are safe. Moreover, 31(10.5%) know hand pump are safe and 16(5.3%) know unprotected well are safe for any domestic purpose. The majority of the respondents 260(90.5%) had positive attitude whereas 21 (7.1%) of the respondents negative and 8(2.5%) neutral attitude to the issue that in proper disposal of solid and liquid waste may contribute to the transmission of disease. While 241 (83.9%) of the respondent had positive attitude while 32(10.8%) and 16(5.2%) of the respondents had negative and neutral attitude to the view that human waste disposal is not a problem in that area.

**Conclusion** The majority of respondent 250(87.1%) had good practice in case of cover the water storage container during the time of visit while 39(12.9%) of the respondent had bad practice. This calls urgent action to creat awareness on health education and hygiene household be promoted to influence the resident's attitude that target personal, household and community hygiene and sanitation.

## Background

Water and sanitation entitles the human right , without discrimination, to physical and affordable access, in all spheres of life, to sanitation which is safe, hygienic, secure, socially and culturally acceptable, and ensures dignity (Telmo, 2002). In Sub-Saharan Africa access to water supply and sanitation has improved, but the region lags behind all other developing regions: access to safe drinking water has increased from 49% in 1990 to 57% in 2011, while in the same time span the access to improved sanitation has only risen from 28% to 31% though the government of Ethiopia eagerly working on improving the standard of of WASH service for tracking progress towards the 2030 suatainable development goal target (6.1 and 6.2 and 6.3)(WHO/UNICEF-JMP, 2017).

Lack of water supply, sanitation and hygiene is the major cause of morbidity and mortality(Dreibelbis *et al.*, 2013). It is estimated that 10,000 die every day from a range of water and sanitation related illness. The impact of inadequate water and sanitation service falls primarily on the poor and marginalized community (Beyene *et al.*, 2015). Badly served by the formal sector, the poor make their own often

inadequate arrangements to meet basic survival needs any fetch water from a long distance or end up paying high prices to water renders for very small quantity of water (UN HABITAT, 2011).

Water supply, sanitation and hygiene situation in Ethiopia is very poor, as most of the population does not have access to safe and adequate water supply, sanitation and hygiene facilities as like most of developing country (GLAAS, 2010). As a result three-fourth of the health problems in Ethiopia is due to communicable diseases attributable to unsafe or inadequate watersupply and improper waste management particularly excreta (Abera *et al.*, 2016). Diarrhoeal diseases caused by improper management of water and sanitation are among the major causes of infant and child morbidity and mortality (WHO/UNICEF, 2015).The combination of safe water supply, sanitation facilities and hygienic practices demonstrated a high potential in contributing to a remarkable decrease in the prevalence of a child and maternal morbidity and mortality (MoWR/EARO/IWMI/ILRI, 2002).

The estimated water service level of Ethiopia in terms of coverage, quantity, quality, and reliability is among the lowest in the world. Sanitation facilities are also in worst condition (FMOH, 2017). Due to unreliability of safe and unaccessibility of safe and sufficient water supply and adequate sanitation facilities the estimated service level could be in much less situation. These combine effect of the poor water supply and sanitation facilities in the country have high impact on the economic development of the country and the living condition of the towns' communities (Health, 2006).

As a result the existing health problem in the country is infectious disease is directly or indirectly caused by poor access to safe water supply and sanitation(Central Statistical Agency (CSA) [Ethiopia] and ICF. 2016, 2016). The per capita of drinking water can not satisfy 50% of the minimum requirements. So, this condition exposed the people to prevent water borne diseases that accounts more than 40% of the communicable disease prevent in the country (MOWR, 2016). The aim of this study is to assess the knowledge,attitude and practice of water supply, sanitation and hygiene(WASH) in household on safe excreta disposal and the water storage container time.

## Methods

### 2.1 Study Area And Period

The study was conducted at Arsi Nagele town. Arsi Nagele is a town in Southeastern Ethiopia located in the Western Arsi zone in the Oromiaregion on the paved highway north of Shashamane, this town has latitude and longitude of 7<sup>0</sup>17'54" N to 7023'28" N Latitude and 38042" E Longitude with on elevation of 2043 meters above sea level (CSA, 2017). It is 225 km far from Addis Ababa in north of Hawassa and far from Shashemene about 25km. The total population of town is 136,086 from these male 66,562(48.9%) and female 69,522(51.1).Number of households in the town is 28,351. The study was conducted from April 2011 E.C.

**Study Design:** A community based cross sectional study was conducted.

Sample size determination and sampling techniques: The sample size for households were determined using Epi info version 7.1, by considering 99% confidence level and marginal error (5%). The sample size of households were calculated using  $P = 78\%$  of the study conducted in Northwest Gojam (Beyene *et al.*, 2015). The total sample size was 263 and taking 10% non-response rate the total sample size was 289. Sample households were selected by systematic random sampling method. To ensure homogeneity, a random number was determined to select households by dividing the total number of household by the sample size.

**Data collection instruments:** The structured questionnaire was used to collect data through face to face interview by translating English questionnaire to Amharic language and backtranslated to English to ensure consistency and the knowledge, attitude and practices of each respondent in relation to water supply, sanitation, hygiene and its management was asked and supported by observational checklist .

**Data quality control:** To know the characteristic of questionnaire acceptance and willingness of respondents a pretest was carried one week before the actual data collection outside of the study area.

**Data processing and analysis:** Data was analyzed by using SPSS version 20 statistical software package and at the end the result was interpreted and discussed in line with study objectives so conclusion and recommendation was made based on study findings.

**Ethical consideration:** A formal letter was taken from Hawassa University, College of Medicine and Health Sciences, Institutional Research Review Board. Moreover, prior to contact with the households the purpose of study was discussed with Arsi Nagele town kebeles leaders and the permission for data collection was taken. Each respondent was clearly explained that participation is voluntary and they can decline at any time without any explanation if they wish to do so.

## Results

### 3.1. Socio- Demographic Data

The minimum and maximum age of the respondent was 18 and 60 years respectively. The majority,(79%) were in the age group of 18-35 (Table 1).

Table 1: Socio- demographic data of study subject, Arsi Nagele town, South eastern Ethiopia, April 2019.

<b>Variables</b>		<b>Frequency</b>	<b>Percentage (%)</b>
Age	18 -35	229	79.2
	>35	60	20.8
	<b>Total</b>	<b>289</b>	<b>100</b>
Sex	Female	129	43.6
	Male	160	56.4
	<b>Total</b>	<b>289</b>	<b>100</b>
Religion	Orthodox	82	28.37
	Muslim	165	57.04
	Protestant	35	12.1
	Other	7	2.42
	<b>Total</b>	<b>289</b>	<b>100</b>
Marital status	Married	180	62.28
	Single	91	31.42
	Divorced	13	4.6
	Widowed	5	1.7
<b>Total</b>	<b>289</b>	<b>100</b>	
Educational status	Unable to read	20	6.92
	Literate	269	93.08
	<b>Total</b>	<b>289</b>	<b>100</b>
Occupational status	Government employee	65	22.5
	Merchant	84	29.06
	Daily labor	20	7
	Farmer	6	2.0
	House wife	74	25.6
	Other	40	13.84
	<b>Total</b>	<b>289</b>	<b>100</b>

### 3.2. Residents knowledge, attitude and practice towards water supply, sanitation and hygiene

#### 3.2.1 Residents knowledge on water supply, sanitation and hygiene

Table 2: People's level of knowledge on WASH at Arsi Nagele town, South eastern Ethiopia, April 2019.

<b>Knowledge score</b>	<b>Frequency</b>	<b>Percent</b>
1-8	39	13.3
9-16	88	30.5
17-24	162	56.2
<b>Total</b>	<b>289</b>	<b>100%</b>

Majority of the respondent 162 (56.2%) were highly knowledgeable about water supply, sanitation and hygiene, others 88 (30.5%) were moderately knowledgeable and 39(13.3%) were non knowledgeable about things that matter for health (Table 2).

The greater part of the residents 126 (43.8%) know private taps are safe for drinking and domestic use while 116 (40.4%) of the respondents provided shared taps are safe. Additionally 31(10.5%) know hand pump are safe and 16(5.3%) know unprotected well are safe for any purpose. The majority of residents 162(56.2%) indicated they experienced draw water from container by pouring, other 127(43.8%) know dropping from container. In the case of possibility contamination of water at home, about 113(39.1%) of the respondents had knowledge with regard to the poor personal hygiene where as 96(33.2%) of the respondents knowledge with regard to inappropriate cover other respondents 80(27.7%) knowledge with regard to poor clean lines of container (Table 3).

Table 3: Knowledge responses on water suppl in Arsi Nagele town, Southeastern Ethiopia, April 2019.

<b>Knowledge test</b>	<b>Response</b>	<b>Frequency</b>	<b>%</b>
Pipe water safe for drinking	Yes	283	97.93
	No	6	2.07
	<b>Total</b>	<b>289</b>	<b>100</b>
Distance of source water from home in meter	<10m	95	33
	11-100m	37	12.6
	101-200	89	31
	201-300	68	23.4
	<b>Total</b>	<b>289</b>	<b>100</b>
Safe water is essential for health	Yes	273	94.7
	No	16	5.3
	<b>Total</b>	<b>289</b>	<b>100</b>

High number of respondents 229 (79.6%) were knowledgeable on the matter that “sanitation is a group of method to collect human excreta, urine and community waste in a hygienic way” where as 60 (20.4%) of the respondents had wrong response on the issue. In the case of “environmental sanitation is the control of environmental factors that form links in disease transmission”, 249(87.4%) of the respondents gave correct response where as 36 (12.6%) of the respondents gave wrong response to the issue (Fig.1).

The highest number of respondents 253(88.1%) provide positive response while 36 (11.9%) of the respondents had negative response on the environmental sanitation is keeping our environment clean. The majority of the residents 264 (91.9%) were knowledgeable on the matter that dirty place or home attracting flies”where as 25(8.1%) of the respondents had wrong response on the issue (Table 4).

Table 4: Knowledge test on sanitation in Arsi Nagele town, South eastern Ethiopia, April 2019.

Knowledge test	Response	Frequency	Percentage (%)
safe excreta disposal system	use of latrine	274	95.4
	Open defecation	4	1.1
	Defecation under bush	11	3.5
	<b>Total</b>	<b>289</b>	<b>100%</b>
Reason of using latrine	Privacy	108	37.4
	To control disease	86	30
	To avoid odour	95	32.6
	<b>Total</b>	<b>289</b>	<b>100%</b>
Reason of not having solid waste disposal	No ample space	219	76.5
	Fear of children and animal fall	52	18
	Not relevant to use	18	5.5
	<b>Total</b>	<b>289</b>	<b>100%</b>

The result showed that the majority of the residents 123 (42.5%) knew about hand hygiene, 76 (26.4%) was knowledgeable about food hygiene and 90 (31.1%) was understand about safe disposal of faeces. The majority of the respondents know about the need of hygiene clean 132(35.9%), 127(34.5%) healthy and 109(29.6%) good for the need of hygiene (Fig.2).

The ways of maintaining the hygiene of respondent were hand washing with soap 107(37.02%), bathing 92(31.3%) and clean the environment 90 (31.1%). The importance of hand wash with soap were 101(34.9%) for prevention of disease, 132(45.5%) for deterrence of diarrheal and 56(19.3%) was for removal of germs. Among the respondents the ways acquiring diarrheal disease were lack of hand washing 140(48.4%), lack of cooking food 53(18.3%) and was lack of treated water 96(33.2%). Lack of hygiene in their surrounding was differentiated were bad smell 136(47.05%), open defecation 83(28.7%) and faeces 70(24.2%). Most of the respondents ways of diarrheal disease prevention 125(43.2%) were drinking clean water, 63(21.8%) dispose of children faeces in toilet facilities and 101(35%) were hand washing with soap.

### 3.2.2 Residents attitude on water supply, sanitation and hygiene

There were only 133 (46.6%) of the respondents who had unfavourable attitude to the issue that“the underlying cause of urban environmental sanitation problem is poverty” where as 2.5% and 50.9% of the respondents respectively had neutral and favourable attitude towards the view.About 43.8% of the

respondents had favourable attitude while 29.3% and 26.9% of the respondents respectively had neutral (Table 5).

Table 5: Attitude responses on water supply in Arsi Nagele town, South eastern Ethiopia, April 2019.

<b>Attitude test</b>	<b>Response</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Water from any source safe for drinking and domestic use	Agree	82	28.4
	Disagree	202	70.2
	No idea	5	1.4
	<b>Total</b>	<b>289</b>	<b>100%</b>
Water free from visible particle safe for drinking	Agree	211	73.3
	Disagree	24	8.1
	No idea	54	18.6
	<b>Total</b>	<b>289</b>	<b>100%</b>
Dirty water can transmit disease	Agree	233	81.1
	Disagree	6	1.7
	No idea	50	17.2
	<b>Total</b>	<b>289</b>	<b>100%</b>
hand washing before dipping is safe	Agree	202	70.2
	Disagree	40	13.7
	No idea	47	16.1
	<b>Total</b>	<b>289</b>	<b>100%</b>
pipe borne water always safe	Agree	183	63.5
	Disagree	98	34.1
	No idea	8	2.4
	<b>Total</b>	<b>289</b>	<b>100%</b>
treated water are prevent from disease	Agree	130	44.9
	Disagree	112	38.9
	No idea	47	16.2
	<b>Total</b>	<b>289</b>	<b>100%</b>

There were only 133 (46.6%) of the respondents who had unfavourable attitude to the issue that “the underlying cause of urban environmental sanitation problem is poverty” where as 2.5% and 50.9% of the respondents respectively had neutral and favourable attitude towards the view. About 43.8% of the respondents had favourable attitude while 29.3% and 26.9% of the respondents respectively had neutral and unfavourable attitude to the view that “the impact of inappropriate dumping wastes in open fields

and around road sides causes the area loses its natural beauty, bad odour to the community, health problems on the society and pollution of surface and groundwater”.

About fifty nine percent (58.7%) of the respondents had unfavourable attitude, they were against the idea that “open burning of wastes has no impact on the health of human being.” Whereas 39.6% of the respondents had favourable attitude and 1.7% of the respondents had neutral attitude on the case.

Majority of the respondent had positive attitude 258 (90.5%) while 20 (7.1%) of the respondents negative and 7(2.5%) neutral attitude to the issue that in proper disposal of solid and liquid waste may contribute to the transmission of disease. Moreover, 239 (83.9%) of the respondent had positive attitude while 31(10.8%) and 15(5.2%) of the respondents had negative and neutral attitude to the view that human waste disposal is not a problem in that area. As the result showed that 56(19.6%) positive attitude while 217(76.2%) and 12(4.2%) of the respondents had negative and neutral attitude regarding to children faeces were not dangerous as adult.

Table 6: Attitude responses on sanitation in Arsi Nagele town, South Eastern Ethiopia, April 2019.

<b>Attitude test</b>	<b>Response</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Waste disposal method is a problem in your neighbourhood	Agree	229	79.6
	Disagree	60	20.4
	<b>Total</b>	<b>289</b>	<b>100%</b>
Hand washing facility connected to the latrine is safe for health	Agree	273	95.1
	Disagree	16	4.9
	<b>Total</b>	<b>289</b>	<b>100%</b>
Diarrhoea illness related to hygiene practices?	Agree	246	85.6
	Disagree	43	14.4
	<b>Total</b>	<b>289</b>	<b>100%</b>
Income is facilitating poor sanitation	Agree	231	80.4
	Disagree	58	19.6
	<b>Total</b>	<b>289</b>	<b>100%</b>
Using the same latrine with other family members are comfortable	Agree	87	30.2
	Disagree	192	66.6
	No idea	10	3.2
	<b>Total</b>	<b>289</b>	<b>100%</b>

The majority of respondents 267 (93.7% ) believed that hand washing with soap was good and 18(6.3%) were negative attitude to the idea. However, 273 (95.8%) of the respondent had positive attitude and 12(4.2%) negative attitude regarding to poor personal hygienic was cause of diarrheal in the same manner 269(94.4%) and 16(5.6%) of the respondents had positive and negative attitude in the case of good hygiene was preventing from disease (Table 6).

The result showed that the highest percentage of respondents had positive attitude 280(98.2%) and 9(1.8%) of respondents had negative attitude to the view that not hand washing before meal has health effect. The type of water used while washing your body 199(69.1%), 28(9.5%) and 61(21.4%) of the respondent had using pipe water, spring and well water respectively. The majority of respondents 261 (90.9%) believed that trimming finger nail was good for health and 28(9.1%) were negative attitude to the idea.

### 3.2.3 Residents practice on water supply, sanitation and hygiene

The majority of respondent 250(87.1%) had good practice in case of cover the water storage container during the time of visit while 39 (12.9%) of the respondent had bad practice. results indicated that most (46.6%) of the respondents treat their drinking water by boiling, while about 33.7% use water filters, 7.8% use sedimentation and the rest 11.9% was no measurement taken. Most residents 196(68.1%) had good practice in case of a separate drinking can while 93(31.9%) was not in practice (Table 7).

Table 7: Family size and household water consumption in liter/day in Arsi Nagele town, South Eastern Ethiopia, April 2019.

Family size	Per household water consumption in liter					Total	%
	<50	51-90	91-130	131-170	>170		
1-3	15	22	24	8	0	69	23.5
4-6	22	42	15	14	0	93	32
>7	12	66	43	4	2	127	44.5
<b>Total</b>	<b>49</b>	<b>130</b>	<b>82</b>	<b>26</b>	<b>2</b>	<b>289</b>	<b>100</b>
<b>%</b>	<b>16.8%</b>	<b>45.3%</b>	<b>28.4%</b>	<b>8.8%</b>	<b>0.7%</b>	<b>100%</b>	<b>100%</b>

About 285(94.4%) of respondent clean and kept in clean place while 14(5.6%) bad practice in this case, additionally 239(83.2%) of the respondents were cleaned collection material regularly where as 50(16.8%) was not practice. Most of the respondent 129(44.9%) wash the storage containers used for drinking water monthly, 104(36.1%) weekly, 52(18%) daily and 4(1%) had bad practice.

Around 43.5% of the respondents dumped their household waste in an open space, 31.2% of the respondents in the field and 25.3% at garbage collection and also 249(87.4%) of respondent dispose their liquid waste splash on the ground where as 36 (12.6%) were sock into ground (Fig.3).

Table 8: Practice responses on sanitation in Arsi Nagele town, South Eastern Ethiopia, April 2019.

<b>Practice test</b>	<b>Response</b>	<b>Frequency</b>	<b>%</b>
Frequency of hand washing	once in a day	13	4.6
	always afterdoing something	110	38.2
	always beforedoing some thing	163	56.5
	Never	3	0.7
	<b>Total</b>	<b>289</b>	<b>100%</b>
Utilization of latrine	Properly	245	85.3
	Improperly	37	12.6
	Do not use at all	7	2.1
	<b>Total</b>	<b>289</b>	<b>100%</b>
Kinds of solid waste disposal	Disposal in pit	54	18.6
	Burning	217	75.4
	Animal feeding	18	6
	<b>Total</b>	<b>289</b>	<b>100%</b>

Majority (98.9%) of survey respondents affirmed that they have the habit of hand-washing, often with water and soap (64.9%), 33.4% water only and 1.7% water with ash. Most(70.5%) of the respondents wash their bodyonce a week, 3.2% three times in a week while others do it twice (25.3%) or day to day(1.1%) (Table 8). About 93.3% of the respondents claimed that their children have the habit of washing their hands too,often with soap and water. The do this two (35.1%) to three (47.7%) times a day usually before eating. Only 28.4% of the respondents had fixed hand-washing place/station in their homes and the rest 71.6% had not practice (bad practice) (Fig.4).

## Discussion

The majority of the respondents 126 (43.8%) know private taps are safe for drinking and domestic use while 116(40.4%) shared taps are safe and also 31(10.5%) know hand pump are safe and 16(5.3%) know unprotected well are safe for any purpose. This result is less than the study done in Sidama zone (Belachew, 2012) and study reports by (Belachew, 2012).

The majority of respondents in the study collect water in small covered containers such as jerrycans 46.3%, buckets 34.5%, barrels 16.4% and 2.8% of residents indicated that they collected water in clay pot. This finding is in line with the study reported by Telmo, (2002) majority of residents collect water in small covered containers such as jerrycans 45.5% and buckets (35.8%). Moreover, 7.6% of residents indicated that they collected water in barrels but they did not specify whether these containers were covered after collection. It should also be noted observation that wide neck containers such as buckets have been

associated with increased water contamination in comparison to small neck containers such as jerry cans. This is probably because with wide neck containers there is a greater tendency to insert water drawing devices (such as cups) and a larger surface area is exposed to contaminating agents when uncovered (Unicef, 2012).

High number of respondents 229 (79.3%) were knowledgeable on the matter that "sanitation is a group of method to collect human excreta, urine and community waste in a hygienic way." Whereas 60 (20.7%) of the respondents had wrong response on the issue which is less compared to the study reported by USAID (2010) which is about 289 (83.2%). Almost all of the community understand about "sanitation is a group of method to collect human excreta, urine and community waste in a hygienic way" awareness of the community is changed by different means. Most of the community on the study area were aware of it this might be due to awareness creation by different means such as expansion of extension programmes mass media and which is contrary to the study report by FDRE (2017) which is about 17.4%. This difference probably due the study participants are urban residents in this study which is comparable with WHO report (WHO, 2018). When you compare from the study area there were only 133 (46.6%) of the respondents who had unfavourable attitude to the issue that "the underlying cause of urban environmental sanitation problem is poverty" whereas 2.5% and 50.9% of the respondents respectively had neutral and favourable attitude towards the view community of the study area thinks environmental sanitation was done with co-operation of surrounding rather than economic different.

The main improved water source for most of the residents either use pipe borne water in their homes (58%), public stand pipes (27.8%), yard connections (5.6%), or collect rain water (0.6%). These are all regarded as improved water sources and collectively make up a total 92% of the water which residents use which is high compared with the study reported by Oxfam/Unicef, (2013).

Regarding to waste dumping 51.4% of the respondents had favourable attitude while 24.6% and 24% of the respondents respectively had neutral and unfavourable attitude to the view that "the impact of inappropriate dumping wastes in open fields and around road sides causes the area loses its natural beauty, bad odour to the community, health problems on the society and pollution of surface and groundwater" which is inline with the study report by Organization, (2010). When compared with the study area majority of the respondent had positive attitude 260 (90.5%) while 21 (7.1%) of the respondents negative and 8 (2.5%) neutral attitude to the issue that in proper disposal of solid and liquid waste may contribute to the transmission of disease. Moreover, 241 (83.9%) of the respondent had positive attitude while 32 (10.8%) and 16 (5.2%) of the respondents had negative and neutral attitude to the view that human waste disposal is not a problem in that area which less compared the study reported by (Corps, 2008). Arsi Nagele is known for its large church, dedicated to St. Gabriel which is the site of massive twice yearly pilgrimages (on 26 July and 28 December) attended by tens of thousands of orthodox pilgrims. So, a lot of people attended on this festivity which is probably the cause for high amount of solid and liquid waste which lead to loses its natural beauty, bad odour to the community, health problems on the society and pollution of surface and groundwater (Bandaragoda, 1997).

In the study area 43.5% of the respondents dumped their household waste in an open space, 31.2% of the respondents in the field and 25.3% at garbage collection and also 249 (87.4%) of respondents dispose their liquid waste splash on the ground whereas 36 (12.6%) were soaked into the ground. Biran *et al.* (2014) described that improved environmental sanitation management reduces environmental burdens, increases sustainability of environmental resources and allows for a healthier, more secure future for the population. All sanitation technologies are deemed adequate as long as they are private or shared of public and provided that the hygienic separation of human excreta from human contact exists. Public latrines fail to provide an adequate solution to the community excreta disposal needs because of problems with inadequacies in their maintenance and in accessibility at night by the elderly, disabled and young children. It should be noted that these inadequacies sometimes lead to open defecation or inappropriate excreta disposal which sometimes reach sensitive aqueous environments or pose risks of human contact.

Generally, most of the residents have knowledge and attitude about water supply, sanitation and hygiene but they are not practicing what they know. Sanitation improvement is gradual and it may take a long time to notice the impact this may be achieved through creating awareness on the bad impact of poor sanitation to the public health, cooperation among various stakeholders and taking responsibility in introducing and implementing rules and laws that are related to environmental protection and sanitation by the government.

## **Conclusion And Recommendation**

### **5.1 Conclusion**

Based on this finding it has been evident that the majority of respondents were knowledgeable about water supply, sanitation and hygiene; however it was not adequate as water supply, sanitation and hygiene is one of the basic elements and human right of the health living of human being, and most of the residents were expected to acquire high level of knowledge. Whereas a majority of respondents were not practicing what they have known.

Greater part of the respondents had favourable attitude to water supply, sanitation and hygiene but there was some inconsistency in residents' attitude. These variations might be due to lack of knowledge and information, or existence of weak social norms in the value system of the community concerning WASH.

Majority of the residents of Arsi Nagele town did not take actions to improve environmental sanitation in their living area. This indicated that they were not as such sacrificing their personal interest for the sake of WASH. This lack of action might be the weakness of the communities and other stakeholders to do different practical activities in group in order to maintain urban environmental sanitation.

### **5.2 Recommendations**

Based on the finding of the study the following recommendations were provided:

- District health office take responsibility for health education and hygiene awareness should be promoted to influence the resident's attitude that target personal, household and community WASH.
- Special consideration should be given by city administration to integrate practical engagement of the residents in the community through developing sewerage system, urban beautification and toilet facility.
- This will help to create awareness as well as alter the negative attitude and practice related to WASH.
- Extension workers should undertake continuous home visit to improve the sanitation of the compound and home.
- Government should be motivated community to take part in different community activities; this will help them to have the exposure to value how their role is important and become committed for the improvement of WASH.
- The municipality must assign enough budgets to enlarge water services
- Good governance should be exercised to encourage water supply, sanitation and hygiene through the participation of different stakeholders (government, NGOs and communities) in decision making.

## Declarations

### Acknowledgements

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### Availability of data and materials

The raw data of this research can be made available upon request from the corresponding author.

### Ethics approval and consent to participate

No human data was used and, therefore, ethical approval is not required.

### Consent for publication

Not applicable.

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