Review of: "Assessment of Quality of drinking water based on the water quality index method in Hawassa Zuria Woreda, Sidama Regional State, Ethiopia"

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Potential competing interests: No potential competing interests to declare.

Assessment of Quality of drinking water based on the water quality index method in Hawassa Zuria Woreda, Sidama Regional State, Ethiopia

Reviewer: George, M.

General comments:

This is a good study with a lot of effort in its structuring. The inputs provided below should be addressed for the rest of the manuscript.

From Abstract:

Background:

Please change to: “lack of access to safe water, and inadequate water distribution systems”.

Results:

a. “majority of the criteria **should have been** within the WHO's safe drinking water guidelines and Ethiopia's….” Unclear, could it perhaps mean: “the majority of samples were NOT within the WHO and Ethiopia’s guidelines??”
b. Please mention HPI and HEI in full first: The mean HPI and HEI, respectively, were…
c. (p0.01), is it p>0.01 OR p<0.01?? Please correct for other entries in the text.

Conclusion: this sounds like a recommendation. Please conclude basing yourself on the study objectives.

INTRODUCTION

a. **So that, every effort**.. Change to “Efforts should be …
b. Under the study area, it is not clear which activities might pollute the underground water resources. This would serve as the study justification
c. Paragraph four goes straight to Heavy metals, which were not mentioned anywhere previously, it could be helpful if it was stated that, perhaps, water resources are threatened by heavy metal/ toxic elements.

d. Shift this sentence “Heavy metals like Co, Cr, Cu, Fe, Mn, Ni, and Zn are required by the human body in small amounts, but can also be toxic at large levels (Ododo, 2019).to paragraph four, and merge with “They are extremely toxic even at very low concentrations, and they can have negative impacts (Mohiuddin et al., 2011).
e. Paragraph 6: Approximately 75% of patients, according to a report from the Hawassa Zuria Health Office (2019G.C), have… Change to: “Approximately 75% of patients in >>>>>>>(state where these patients are located, i.e. region) have water-borne diseases (CITE PROPERLY here) NOT (2019G.C.)
f. According to the researcher, there has been no studies that used WQI as a tool for assessment of water quality in the region (Hawassa Zuria Woreda)….researchers have generalized.
g. Authors need to state the main aim, then the 5 objectives of the study, OR delete main aim since five of them were mentioned, but replace with: objectives of the study were: …..

Description of the study area:

a. Replace “4 state health facilities…” with (Four state health facilities…
b. Accordingly, five Kebeles selected for this purpose….delete “were” after Kebeles

Water Sample Collection & Storage:

a. Revise the citation: (WHO, 2006, Monica, 2000)
b. 4-10 °C not 4-10 0C

Align the equation appropriately:

$$Qi = Vi \quad Si \times 100 \text{ Eq. (2)}$$

a. A number of these citation errors should be corrected throughout the manuscript:

quality. (Adamou et al., 2020). The….

all samples were examined. (TC). The growth…

16 software were used for the study. (MS Excel). ANOVA was…

maximum (0.1 mg/l). (WHO, 2017). The

urination. (Jamshaid et al., 2018). Manganese

0.0025mg/L). (Rahmanian et al., 2015).but less

WQI:

For clarity, please show Wi, the relative (unit) weight is obtained for each parameter, as Wi = 1/Si

This would be explained by Si as the “standard” permissible value.

Physico-chemical parameters:

The end consumers' turbidity was the lowest, while the source's turbidity was the greatest…highest and lowest, at which levels?

Tap water and And-users..end-users

Change to “The average total hardness as measured by CaCO3 was 67.3 mg/l, 46.0 mg/l, 55.45 mg/l, and 53.66 mg/l, for the source, reservoir, tap water, and domestic container respectively”.

Omission of signs again, in order to make the results meaningful: at p 0.05 significant….???

Delete this, it sounds like discussion already: Drinking water with fluoride levels between 0.7 and 1.2 mg/L will prevent dental caries.

Correlation matrix of the physico-chemical parameters

For statements like this: “The correlation matrix revealed a poor link between pH and EC (r = -0.542/1.000, p 0.01)” authors should state whether there was positive, negative or moderate correlation between a pair of parameters, this will help them scientifically discuss implications of such correlations. Avoid terms like ”significant” OR “favourable correlations”

Authors should try to be consistent, if they decide to use concentrations OR levels, e.g. “Copper levels varied from 0.0051 mg/l to 0.04 mg/l. The Umbulo reservoir had the lowest content of copper (0.00833 mg/L), while Jara Dado Tap 1 had the highest concentration (0.04 mg/L)”.

One sample t-test

“When compared to the number recommended by the WHO” Change to …. the values recommended by the WHO ..

Discussions

“The research area's widespread agricultural practices, domestic sewage (plumbing), and water distribution system piping may be to blame for the highest concentration”. This is not clear, which research are authors referring to???

“When compared to Rawalakot's 0.56 to 2.69 mg/L (Javaid et al., 2008), 0.050.405 mg/L (Ali et al., 2019), and Asgede Tsimbila District, Tigray's 0.785 to 5.32 mg/L, the Zn concentration found in our research ranged from

0.01633 mg/l to 0.9499 mg/L. (Haftu and Sathishkumar, 2020” this needs to be paraphrased so that it’s clear that other studies obtained the stated concentrations, and hence they differed/were lower/higher than what this particular study has obtained.

“The Umbulo reservoir had the lowest (0.00833 mg/L concentration) while Jara Dado Tap 1 had the highest (0.04 mg/L)

copper values. The results were superior to those of other studies done in related fields. (Khan et al., 2015, Rahmanian et al., 2015, Gebresilasie et al., 2021" …results were HIGHER than ALSO, substantiate your discussion with what these cited authors obtained.

"When the quality of the water is excellent or decent, it is preserved. Water of excellent quality does not present a threat of deterioration, and when the quality is acceptable, **it is** minimal (CCME, 2001)." Please paraphrase, what is "minimal"?

Please revise this: "In comparison to reservoirs, tap water, and end consumers, water sources were found to have significantly lower average temperatures (p 0.05). However, at a p 0.05 significant level, there was no change in the mean temperature between…"