

Reply to Editor: Serum zinc levels in hemodialysis and peritoneal dialysis patients: A retrospective observational study

Dear Editor,

An interesting article entitled "Serum zinc levels in hemodialysis and peritoneal dialysis patients: A retrospective observational study" was published in the *Journal of Research in Medical Sciences* in 2024 by Mahmoudi *et al.*,^[1] and they conclude that serum levels in hemodialysis and peritoneal dialysis patients are lower than in the general population. Three points should be mentioned related to this article as the following:

1. The unit of serum level of zinc is mcg/dl (or µg/dl). However, in many parts of the article, as in the abstract, the unit of "mg/dL" is mentioned. This may be a fault by the respected author or a typographical error by the Journal during the editing process
2. The author mentioned that the normal range of zinc serum level in healthy individuals is 80–120 µg/dl. However, no references were included, and they do not measure the zinc level in general healthy population (mentioned in the article as limitation of the study). In the human body and due to the accumulation of zinc in skeletal muscle and bone, the amount of zinc is different between males and females.^[2] However, the reference range of zinc level in the young population reported by Mashhadi *et al.* was 101.46 ± 16.8 µg/dL in males and was 99.13 ± 15.77 µg/dL in females, with no significant difference.^[3] To determine the role of age and sex in serum zinc levels, Rea IM measured the serum zinc levels in four groups of elderly and young male and female, and significant differences for serum zinc levels were found between the groups.^[4] The serum level of zinc in elderly male group (15 ± 3.05 µmole/L or 98.5 ± 20 µg/dL) was significantly lower than young male group (17.24 ± 2.52 µmole/L or 113 ± 16.5 µg/dL), but such observation was not obtained in females. In addition, the zinc level was gender related, and males had higher serum zinc levels than females^[4] Hennigar *et al.* in a large sample size ($n = 4347$) reported that serum zinc concentration in males and females

was 84.9 ± 0.8 and 80.6 ± 0.6 µg/dL, respectively, and it was statistically different ($P < 0.0001$).^[5] The serum zinc level in patients also depends on geographical region.^[6] Mahmoudi *et al.*^[1] found that serum zinc level in hemodialysis patients is 75.04 ± 13.54 µg/dL. However, in other study, the serum zinc level was 54.5 ± 16.3 µg/dL in hemodialysis patients compared to healthy volunteers (78.4 ± 9.4 µg/dL) ($P = 0.0001$).^[7] Other studies also indicated that the serum zinc levels are 69 ± 3 µg/dL^[8] or 57.4 ± 2.4 µg/dL^[9] in hemodialysis patients. The serum level of zinc is lower in hemodialysis patients is a topic that other studies also have mentioned;^[7-9] however, ignoring the effect of age and gender is not acceptable and should be considered in studies. Therefore, to compare the serum zinc levels between normal population and patients, two important issues must be considered. One is the issue of gender/age, and the other is the issue of geographical location, because these variables affect the serum level of zinc in health and disease conditions

3. The method of zinc measurement is not clear in the article. The authors only mentioned the type of equipment (Olympus AU640 Chemistry Analyzer) used, but the sample preparation, kits used, and kits' specifications were not included. The sample preparation process and the used kits' information are necessary for other investigators who want to repeat the same method.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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