

Can body composition and haemoglobin level influence the Kt/V?

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Background

Although dialysis technology has reached a high degree of complexity and efficiency, there are still isolated cases in which our expectations in terms of treatment efficiency are not met. One possible solution is to consider additional parameters when prescribing haemodialysis treatment.

Objectives

To identify parameters that can influence treatment efficiency and should therefore be considered for treatment prescription.

Method

Data of 151 patients (90 males) treated with online HDF were analysed for Kt/V and haemoglobin (Hb) levels, treatment duration, blood pump speed, serum albumin, total proteins, total cholesterol, nPCR, and weight. Data were collected from the clinical database for one month. For an additional analysis based on the existing parameters, a new data extraction was performed, i.e. for FTI/LTI ratio (LTI = Lean Tissue Index; FTI = Fat Tissue Index). A ratio above 100% indicates the patient has more fat than muscular tissue. Out of these factors of influence, Hb and FTI/LTI ratio appeared to be the most relevant.

Data analysis and Results

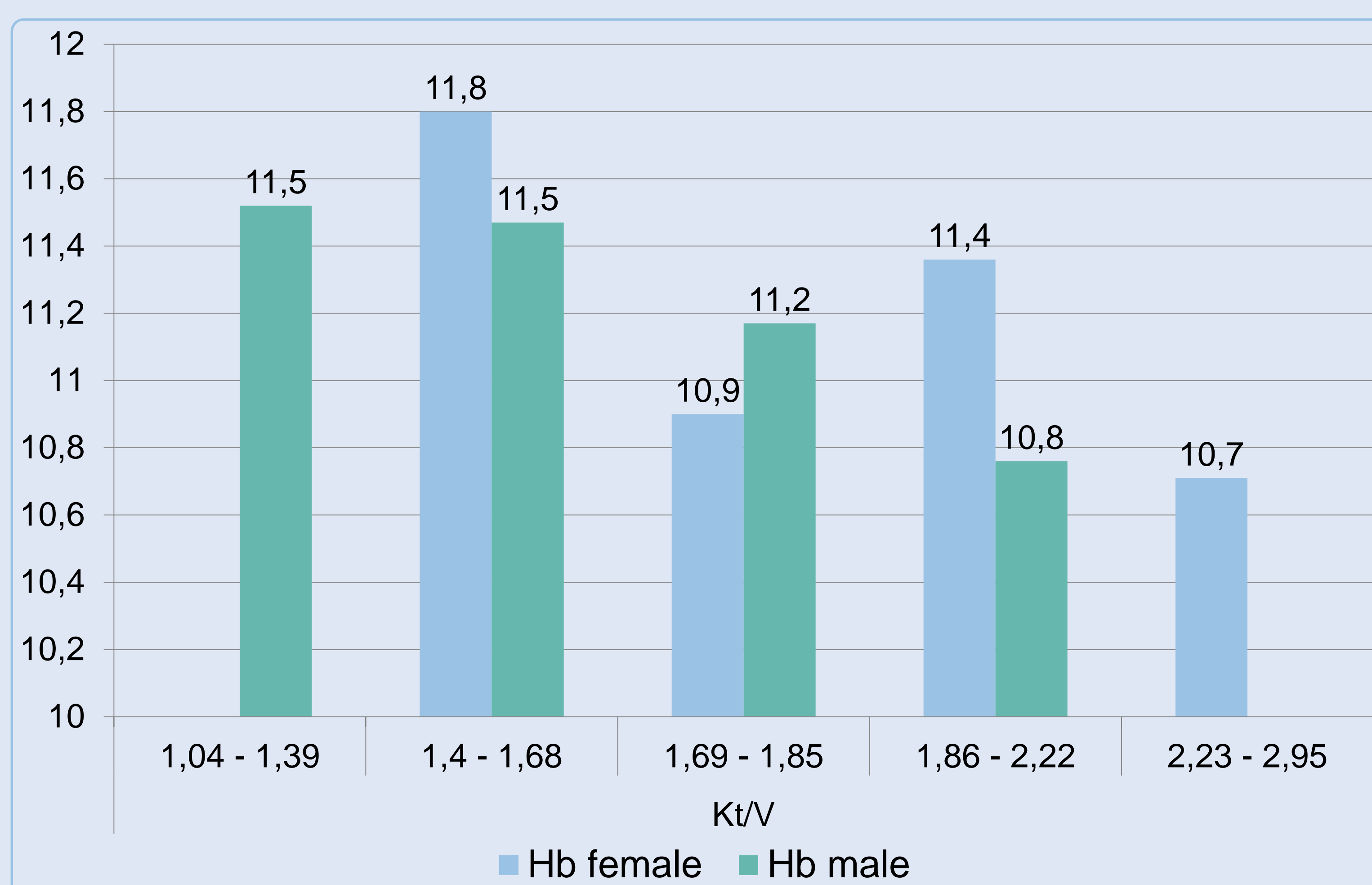


Figure 1. Female and male average Hb level (g/dl) related to Kt/V

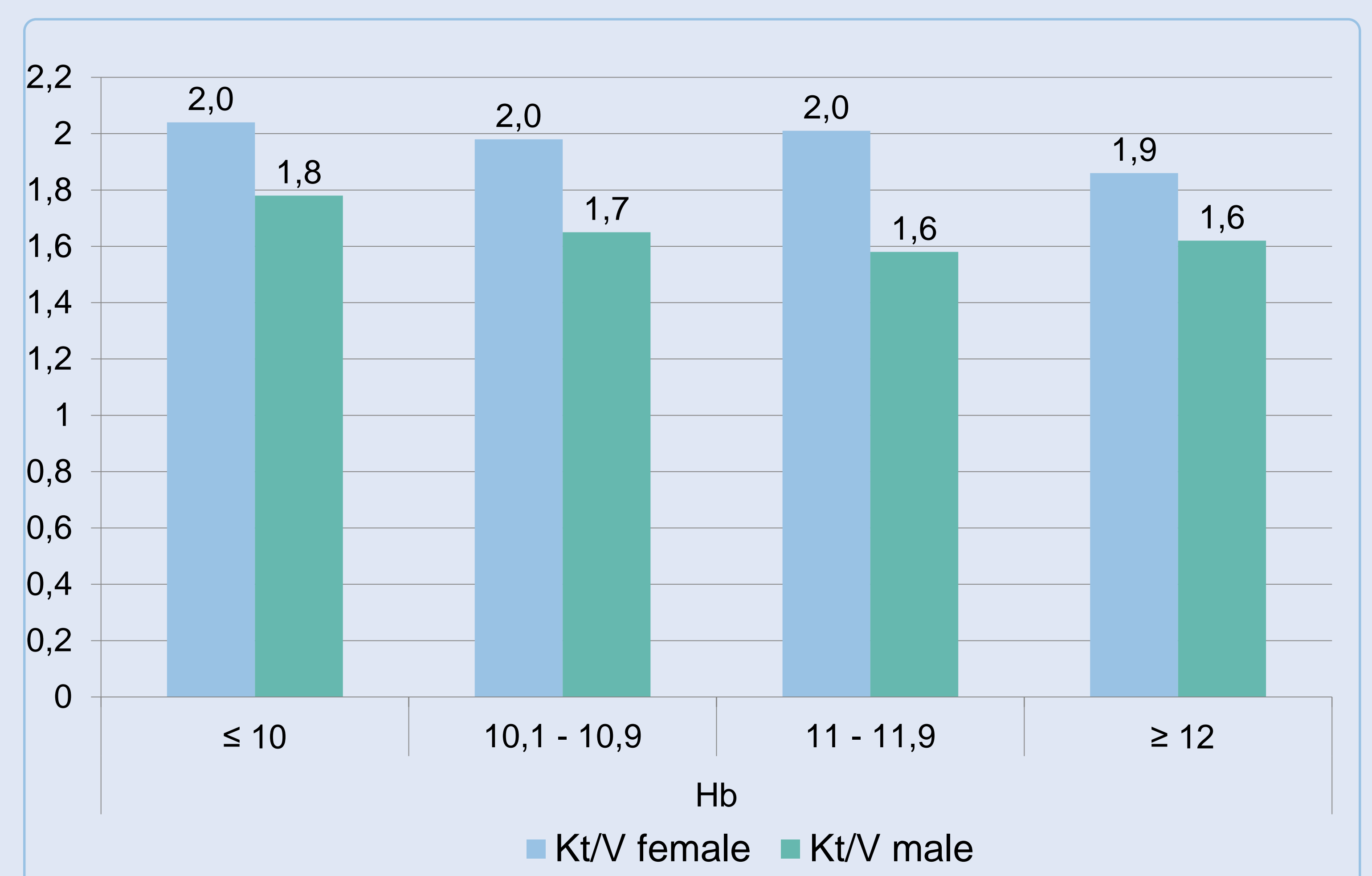


Figure 2. Female and male average Kt/V related to Hb level (g/dl)

After classification of the results for the Kt/V ranges (from 1.04-1.39; 1.4-1.68; 1.69-1.85; 1.86-2.22; 2.23-2.95) we observed that, in both genders, the highest average Hb level is associated with the lowest Kt/V range (Figure 1) and, at the same time, only in males, we observed that the average Hb level decreases as the Kt/V range increases. When Kt/V is analysed for different Hb intervals, in both subgroups the highest average Kt/V corresponds to the lowest Hb interval (Figure 2).

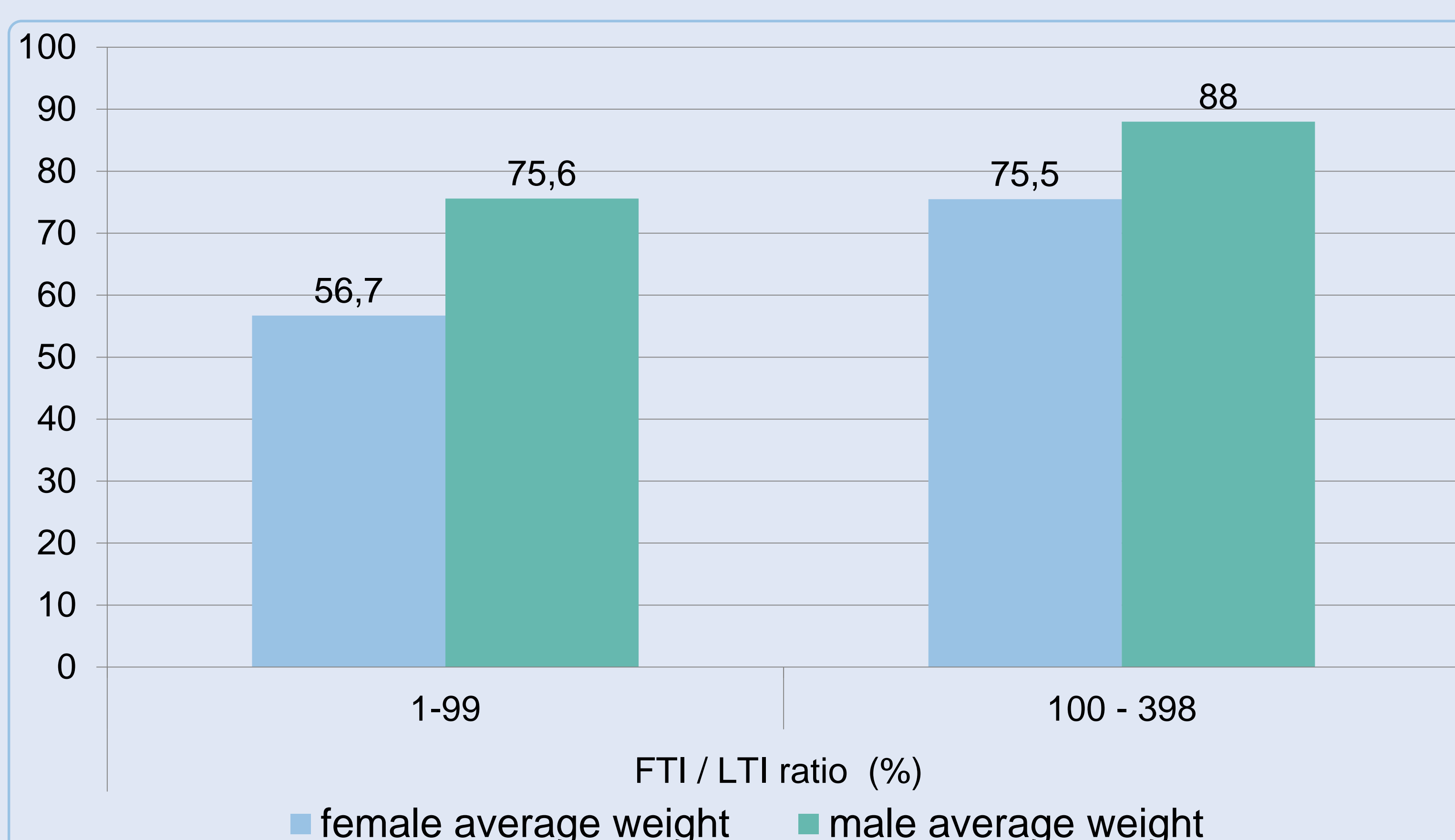


Figure 3. Female and male average weight (kg) related to FTI/LTI ratio

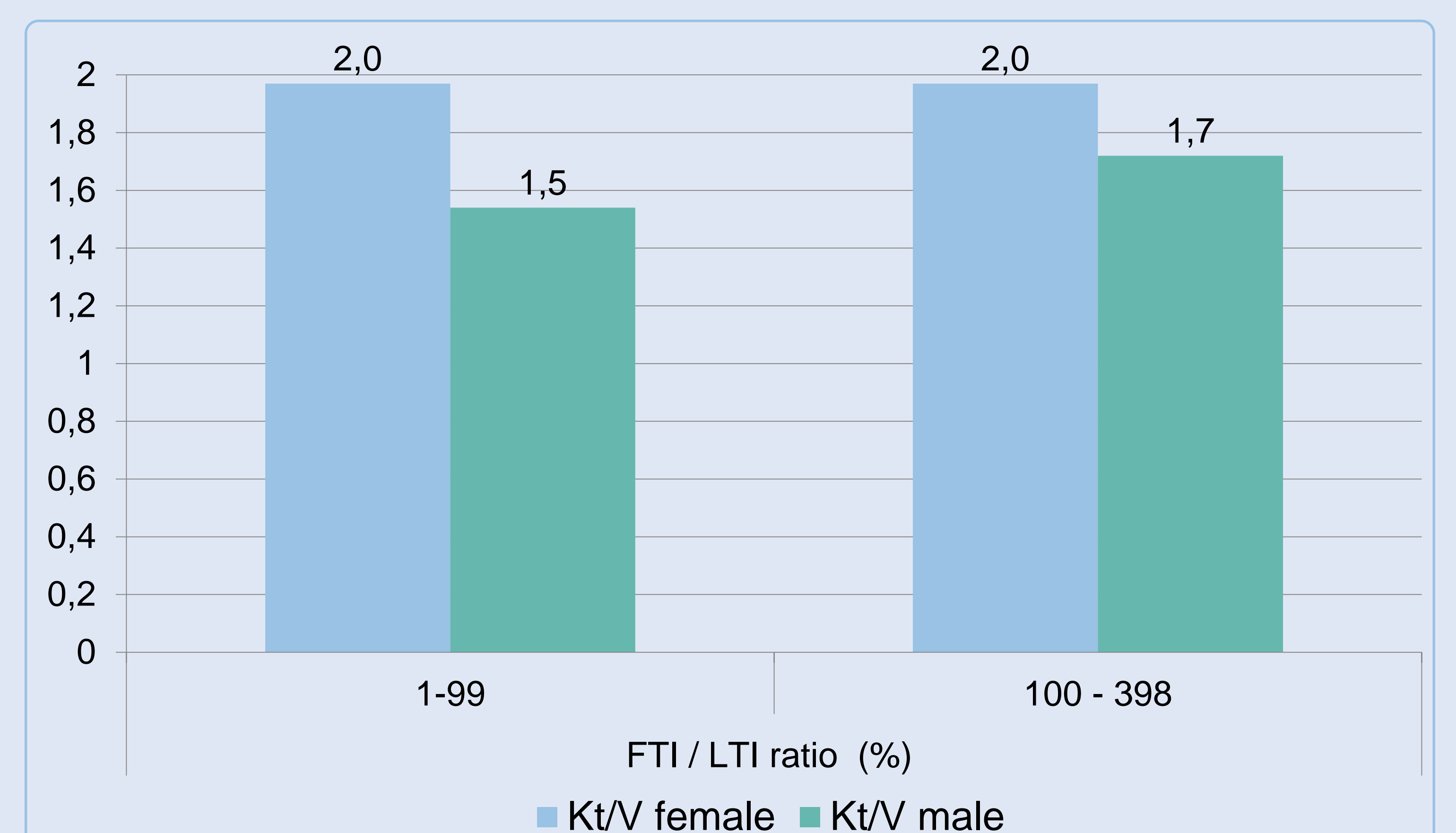


Figure 4. Female and male average Kt/V related to FTI/LTI ratio

After classification of the results for the FTI/LTI ratio, in males' subgroup a higher FTI/LTI ratio range was associated with a higher Kt/V (Figure 4), even though the average weight also increased (Figure 3).

Conclusions

Under some circumstances, Hb levels can have an effect on Kt/V. FTI/LTI ratio may be also a factor that influences Kt/V and should thus also be considered in the medical prescription. The findings are more often in males. Randomized controlled studies are required to confirm our hypothesis.