

Additional File 1

Supplementary Appendix S1

Structured Questionnaire Used for Data Collection

Manuscript Title

Prevalence, Socioeconomic Determinants, and Health-System Factors Associated with Laboratory-Confirmed Renal Impairment Among Adults Attending Tertiary Referral Hospitals in Mogadishu, Somalia: A Cross-Sectional Study

Overview

This supplementary appendix contains the complete English-language questionnaire used for data collection in the present study. The questionnaire was specifically developed by the research team for this investigation and was informed by internationally recognized public health surveillance frameworks, including the World Health Organization (WHO) STEPwise Approach to Noncommunicable Disease Risk Factor Surveillance (WHO STEPS). The instrument was adapted to the Somali healthcare context and designed to address the specific objectives of the study.

The questionnaire was developed to collect standardized information on participants' sociodemographic characteristics, history of kidney disease, clinical comorbidities, behavioural and lifestyle risk factors, health-seeking behaviours, anthropometric measurements, blood pressure, and laboratory indicators of renal impairment. Data collection was undertaken by trained clinical research nurses using standardized interviewing procedures. Laboratory investigations were completed by qualified laboratory personnel, while anthropometric and blood pressure measurements were performed by trained research nurses using standardized protocols.

Participation was entirely voluntary. Written informed consent was obtained from every participant before enrolment. Confidentiality was maintained throughout the study through the use of unique study identification numbers and secure handling of research data in accordance with the approved study protocol.

Study Information

Study Design

Hospital-based analytical cross-sectional study

Study Setting

Tertiary referral hospitals in Mogadishu, Banadir Region, Somalia

Study Population

Adults aged 18 years and above attending participating tertiary referral hospitals during the study period.

Study Period

April–July 2026

Table S1. Organization of the Study Questionnaire

Section	Description
Section A	Sociodemographic characteristics
Section B	History of kidney disease
Section C	Medical history and comorbid conditions
Section D	Behavioural and lifestyle risk factors
Section E	Health-seeking behaviour and treatment adherence
Section F	Laboratory assessment
Section G	Anthropometric assessment
Section H	Blood pressure assessment

Ethical Considerations

Participation in the study was voluntary. All eligible participants provided written informed consent before participation. Participants were informed about the objectives of the study, confidentiality procedures, and their right to decline participation or withdraw at any stage without affecting their routine medical care. No personal identifiers were included in the analytical database. All information collected was used exclusively for research purposes in accordance with the ethical approval obtained for this study.

Instructions for Data Collectors

Before administering the questionnaire:

- Confirm participant eligibility according to the study protocol.
- Explain the objectives of the study.
- Obtain written informed consent before commencing the interview.
- Read every question exactly as written.
- Record responses accurately and objectively.
- Do not prompt or influence participant responses.
- Complete anthropometric measurements according to standardized procedures.
- Record laboratory findings immediately after laboratory analysis.
- Review the questionnaire for completeness before concluding the interview.

Survey Questionnaire

Section A. Sociodemographic Characteristics

1. Age (years)

- ☐ 18–37
- ☐ 38–47
- ☐ 48–57
- ☐ ≥ 58

2. Sex

- ☐ Male
- ☐ Female

3. Marital Status

- ☐ Single
- ☐ Married
- ☐ Divorced/Widowed

4. Highest Educational Level

- ☐ No formal education
- ☐ Primary education
- ☐ Secondary education
- ☐ College/University education

5. Employment Status

- ☐ Employed/Self-employed
- ☐ Unemployed

6. Residence

- ☐ Urban
- ☐ Rural

7. Monthly Household Income (USD)

- ☐ <100
- ☐ 100–400
- ☐ >400

Section B. History of Kidney Disease**8. Previous diagnosis of kidney disease**

- ☐ Yes
- ☐ No

9. Previous diagnosis of proteinuria/albuminuria

- ☐ Yes
- ☐ No

Section C. Medical History and Comorbid Conditions**10. Hypertension**

- ☐ Yes
- ☐ No

11. Diabetes mellitus

- ☐ Yes
- ☐ No

12. Family history of kidney disease

- ☐ Yes
- ☐ No
- ☐ Don't know

13. History of kidney stones

- ☐ Yes
- ☐ No

14. Recurrent urinary tract infections during the previous 12 months

- ☐ Yes
- ☐ No

15. History of cardiovascular disease

- ☐ Yes
- ☐ No

16. Long-term prescribed medication use

- ☐ Yes
- ☐ No

Section D. Behavioural and Lifestyle Risk Factors

17. Current tobacco use

- ☐ Yes
- ☐ No

18. Regular use of non-prescribed NSAIDs

- ☐ Yes
- ☐ No

19. Regular use of herbal or traditional medicines

- ☐ Yes
- ☐ No

20. Frequency of adding salt to meals

- ☐ Never
- ☐ Sometimes
- ☐ Often
- ☐ Always

21. Regular physical activity (≥ 30 minutes at least three days per week)

☐ Yes

☐ No

22. Average daily water intake ≥ 2 litres

☐ Yes

☐ No

Section E. Health-Seeking Behaviour and Treatment Adherence

23. Routine medical check-ups

☐ Yes

☐ No

24. Difficulty adhering to prescribed treatment

☐ Yes

☐ No

25. Seeking medical care promptly when ill

☐ Yes

☐ No

Section F. Laboratory Assessment

26. Estimated Glomerular Filtration Rate (eGFR)

☐ ≥ 60 mL/min/1.73 m²

☐ < 60 mL/min/1.73 m²

27. Serum Creatinine

☐ Within reference range

☐ Elevated

28. Urine Protein (Dipstick)

☐ Negative/Trace

☐ Positive ($\geq 1+$)

29. Blood Urea Nitrogen (BUN)

☐ Normal

☐ Elevated

Section G. Anthropometric Assessment

30. Body Mass Index (BMI)

- ☐ Underweight (<18.5 kg/m²)
- ☐ Normal (18.5–24.9 kg/m²)
- ☐ Overweight (25.0–29.9 kg/m²)
- ☐ Obesity (≥ 30.0 kg/m²)

Section H. Blood Pressure Assessment

31. Blood Pressure Classification

- ☐ Normal
- ☐ Elevated
- ☐ Hypertension

Notes

This questionnaire was specifically developed by the research team for the present study and has not been previously published. The instrument should be interpreted in conjunction with the accompanying manuscript and is provided as **Additional File 1 (Supplementary Appendix S1)** to improve methodological transparency, facilitate reproducibility, and support future epidemiological research on renal impairment in comparable low-resource settings. The questionnaire was informed by internationally recognized public health surveillance frameworks but was adapted specifically for the objectives, variables, and analytical framework of the present study.