

BACKGROUND

- Patients with chronic kidney disease (CKD), especially end-stage kidney disease (ESKD), are at risk of developing tuberculosis (TB).
- Due to their relatively immunosuppressed condition, reactivation from latent TB infection (LTBI) is the core pathogenesis in these populations.
- However, the prevalence of LTBI among Thai CKD patients, assessed by a high sensitivity and specificity test such as interferon-gamma release assay (IGRA), has never been thoroughly explored.

OBJECTIVES

To investigate the prevalence and predictors for LTBI among Thai CKD patients, including ESKD individuals receiving renal replacement therapy (RRT) either by hemodialysis (HD) or peritoneal dialysis (PD).

MATERIAL AND METHODS

- All CKD patients who underwent an investigation for LTBI status at Ramathibodi hospital were prospectively recruited from September 2020 to November 2021 and retrospectively reviewed from December 2020 to November 2021.
- Those with positive or borderline IGRA results using T SPOT[®].TB without clinical or radiological findings compatible with active TB was diagnosed with LTBI.
- LTBI prevalence was determined by CKD staging and type of dialysis.
- Predictors for LTBI were assessed by logistic regression analysis.

RESULTS

- 199 CKD patients were enrolled; 102 prospectively and 97 retrospectively.
- 173 evaluable patients included with a mean (SD) age of 53 (16) years, and 44% were male. Of those, 95 (55%) had ESKD and maintained on RRT.
- Overall, 39 (22.5%) CKD patients had LTBI with the prevalence of 25%, 12.5%, 25%, 25% and 24.2% in those with CKD stage 1, 2, 3a, 3b and ESKD, respectively ($p=0.89$).
- Among ESKD patients, those who were maintained on HD had a higher proportion of LTBI than those on PD (28.9% vs. 5.3%, $p=0.03$).
- In multivariate analysis, drinking alcohol was significantly associated with LTBI (OR 8.51; [95%CI 1.24-58.38]; $p=0.029$), and HD therapy was marginally associated with LTBI (OR 8.14; [95%CI 0.95-69.91]; $p=0.056$) among ESKD patients.

Figure 1 Study flow

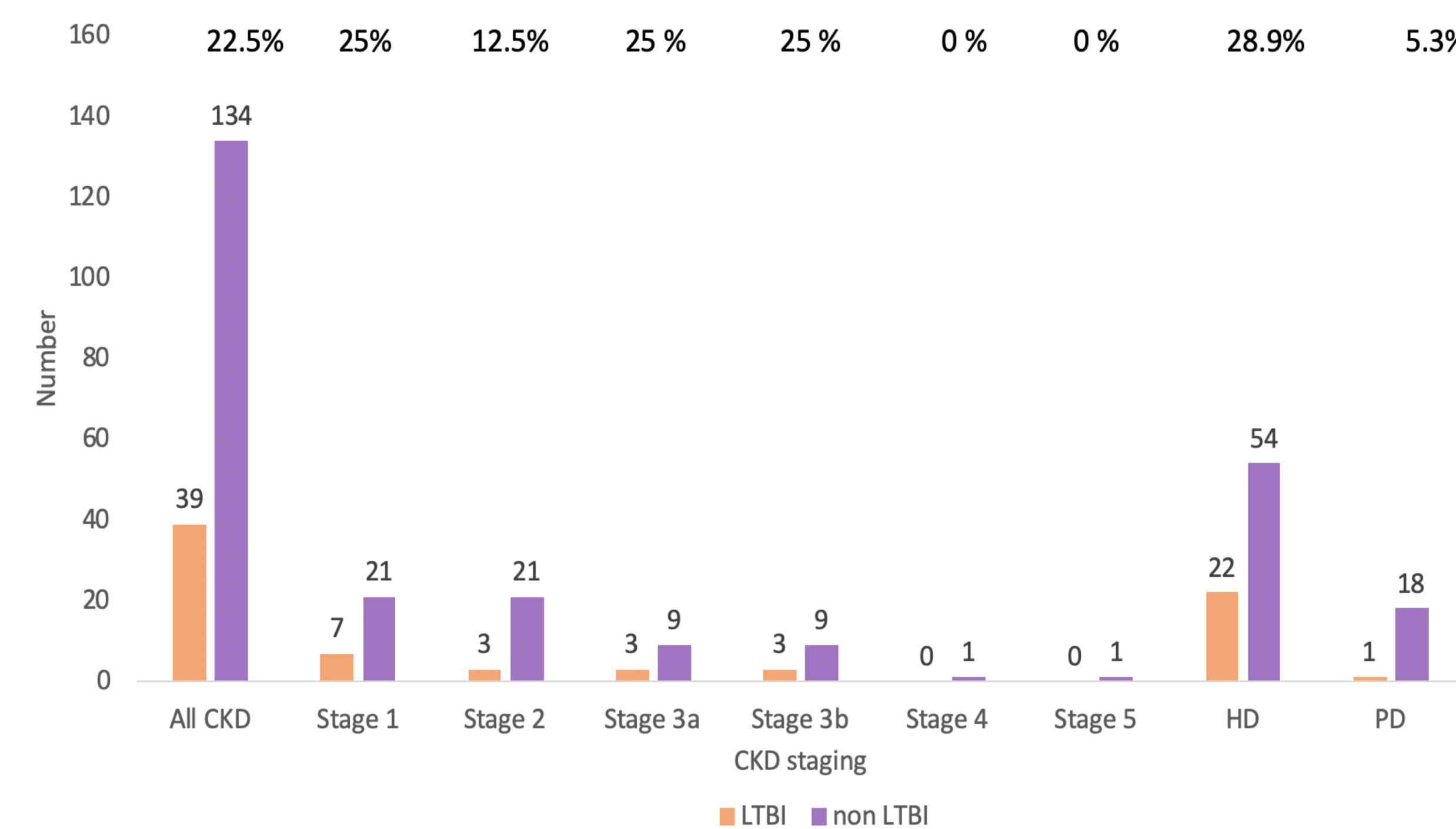


Table 1. Patient characteristics

Characteristics	Total (n=173)	LTBI (n=39)	non-LTBI (n=134)	P-value
Age, year, mean (SD)	52.43 (15.81)	54.08 (15.77)	51.96 (15.84)	0.462
Male, n(%)	75 (43.35)	17 (43.58)	58 (43.28)	0.973
BMI, kg/m ² , mean (SD)	23.56 (4.31)	23.25 (3.96)	23.65 (4.41)	0.619
Cause of CKD, n(%)				0.735
DM	8 (4.62)	2 (5.12)	6 (4.47)	
HT	2 (1.15)	0 (0)	2 (1.49)	
Chronic glomerulonephritis	15 (8.67)	2 (5.13)	13 (9.7)	
Others	5 (2.89)	1 (2.56)	4 (2.98)	
Unknown	143 (82.65)	39 (10.40)	137 (77.45)	
Comorbidities, n(%)				
Diabetes mellitus	32 (18.49)	6 (15.38)	26 (19.40)	0.569
Hypertension	115 (66.47)	26 (66.67)	89 (66.41)	0.977
ASCVD	13 (7.51)	2 (5.12)	11 (8.20)	0.514
HIV infection	1 (0.5)	0 (0)	1 (0.5)	0.594
Receiving immunosuppressant, n(%)	51 (29.48)	9 (23.07)	42 (31.34)	0.319
BCG vaccination, n(%)	143 (82.66)	31 (79.48)	112 (83.58)	0.552
Prior TB infection, n(%)	7 (4.04)	1 (2.56)	6 (4.47)	0.558
Smoking, n(%)	11 (6.35)	4 (10.25)	7 (5.22)	0.257
Alcohol drinking, n(%)	8 (4.62)	4 (10.25)	4 (2.98)	0.051

ASCVD, atherosclerosis cardiovascular disease; BMI, body mass index; CKD, chronic kidney disease; ESKD, end stage kidney disease; HIV, human immunodeficiency virus; HD, hemodialysis; LTBI, latent tuberculosis infection; n, Number; TB, tuberculosis; CI, confidence interval

Figure 2 Prevalence of LTBI in CKD patients by CKD staging

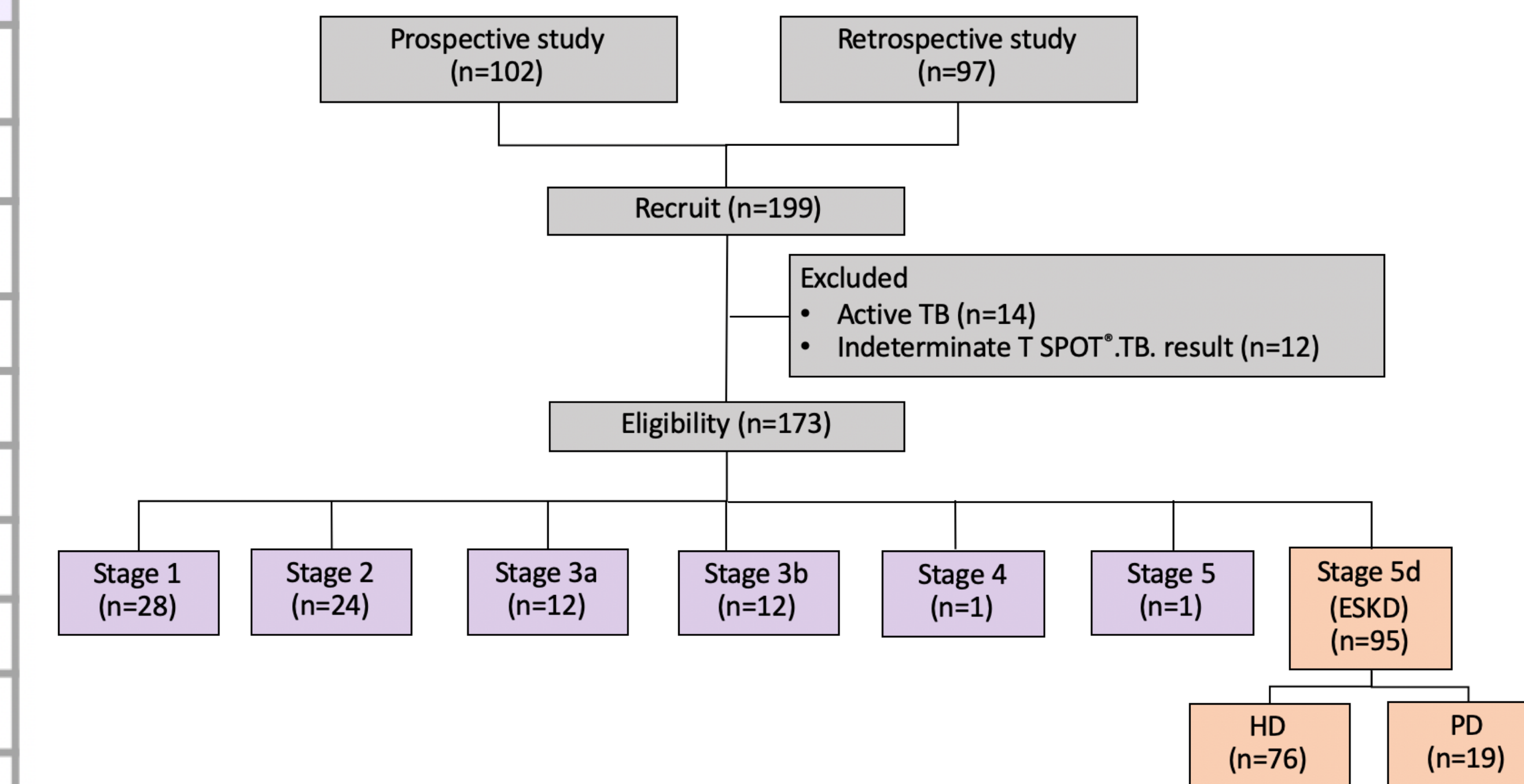


Table 2. Risk factors for LTBI among ESKD patients

Risk factors	Univariate analysis		Multivariate analysis	
	OR (95%CI)	P value	OR (95%CI)	P value
Age	1.02 (0.98-1.06)	0.320		
Male	0.87 (0.34-2.27)	0.786		
BMI	0.91 (0.79-1.03)	0.154		
Diabetes mellitus	0.47 (0.09-2.30)	0.357		
Hypertension	0.72 (0.17-3.03)	0.653		
ASCVD	0.41 (0.05-3.57)	0.424		
Alcohol drinking	7.36 (1.25-43.32)	0.027	8.51 (1.24-58.38)	0.029
Receiving immunosuppressant	1.59 (0.14-18.39)	0.71		
Current smoking	3.45 (0.65-18.43)	0.148		
HD	7.33 (0.92-58.33)	0.060	8.14 (0.95-69.91)	0.056

CONCLUSIONS

- ❖ In TB endemic settings, one-fifth of patients with CKD and a quarter of ESKD patients could carry LTBI status.
- ❖ Alcohol consumption and HD therapy could better identify high-risk ESKD patients and potentially screen for LTBI.

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