

Health State Utility Values for Immunoglobulin A Nephropathy (IgAN)

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RESULTS

Participants

- A total of 200 respondents completed the interview (**Table 1**). The average age was 48.9 years. Slightly more than half (59.0%) of the respondents were female, and the majority (79.0%) were white British.
- More than three quarters (80.5%) of the respondents lived in England. Over half (60.0%) of the respondents had at least a college degree, and 41.5% had a full-time job.
- Many (36.5%) respondents did not report any chronic conditions. On a scale from 0 (worst imaginable health) to 1 (best imaginable health), respondents' mean overall health status at the time of interview was 0.72.

Table 1. Participant characteristics

	Participants (N=200)
Age at survey date (years)	
Mean±SD	48.9±15.4
Median [Range]	50.0 [18.0, 78.0]
Female, n (%)	118 (59.0)
Race, n (%)	
White British	158 (79.0)
Asian/Asian British	14 (7.0)
Black/African/Caribbean/Black British	11 (5.5)
Mixed/Multiple ethnic groups	8 (4.0)
Other	9 (4.5)
Region of residence, n (%)	
England	161 (80.5)
Wales	17 (8.5)
Northern Ireland	15 (7.5)
Scotland	7 (3.5)
Employment status¹, n (%)	
Full-time	83 (41.5)
Retired	40 (20.0)
Part-time	26 (13.0)
Self-employed	17 (8.5)
Homemaker	11 (5.5)
Unemployed	10 (5.0)
Other	6 (3.0)
Student	5 (2.5)
Disabled	3 (1.5)

Table 1. Participant characteristics (cont.)

	Participants (N=200)
Highest education level, n (%)	
Primary school	0 (0.0)
Secondary school up to 16 years	34 (17.0)
Higher or secondary or further education (A-levels, BTEC, etc.)	46 (23.0)
College or university	83 (41.5)
Post-graduate degree	37 (18.5)
Comorbidities¹, n (%)	
None	73 (36.5)
Depression	46 (23.0)
Hypertension (high blood pressure)	29 (14.5)
Diabetes (Type 1 or 2)	24 (12.0)
Respiratory or lung disease (eg, asthma, COPD)	22 (11.0)
Obesity	13 (6.5)
Autoimmune diseases	13 (6.5)
Cancer	11 (5.5)
Kidney disease	8 (4.0)
Participant's current health (VAS)	
Mean±SD	0.72±0.19
Median [Range]	0.80 [0.0, 1.0]

BTEC, The Business and Technology Education Council; COPD, chronic obstructive pulmonary disease; SD, standard deviation; VAS, visual analogue scale.
¹Respondents could choose multiple choices.

Primary analysis

- Based on responses to the TTO questions, the mean (SD) utility for CKD stage 1/2 with controlled proteinuria was 0.84 (0.17) (**Figure 1**)
- TTO-derived utilities decreased as IgAN-associated CKD stage progressed and were higher for controlled proteinuria compared to uncontrolled proteinuria
- For CKD stage 1-4, the mean TTO-derived utility decrement from controlled proteinuria compared to uncontrolled proteinuria (for the same CKD stage) ranged from 0.06 to 0.13 ($P<0.001$), with the average decrement associated with increased proteinuria level being 0.09
- The mean (SD) utility for the health state depicting CKD stage 5 with and without dialysis was 0.38 (0.30) and 0.42 (0.28), respectively, with the disutility associated with dialysis being 0.04 ($P<0.001$)
- The mean (SD) TTO-derived utility for the health state depicting nephrotic syndrome was 0.43 (0.33)
- The utility values and decrements (for controlled vs. uncontrolled proteinuria and dialysis) derived from the VAS questions were consistent with the TTO utilities. Mean VAS utilities decreased as the CKD stage progressed.

Sensitivity analysis

- When including all responses from all respondents, most utility values were slightly lower than those from the primary analysis, but the changes were no more than 0.06 (**Figure 2**)

Figure 1. Utility values for primary analysis based on (A) TTO and (B) VAS responses (N=200)

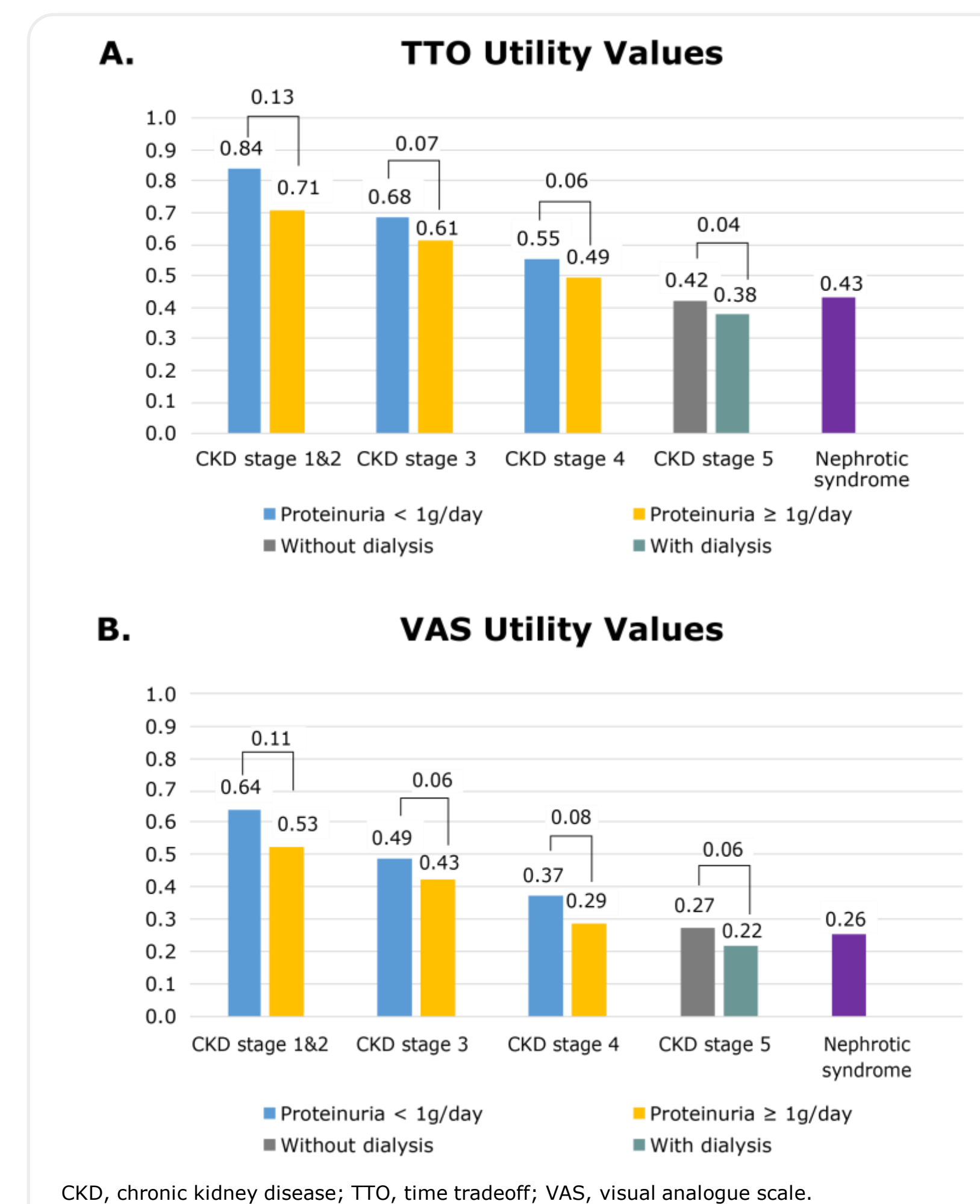
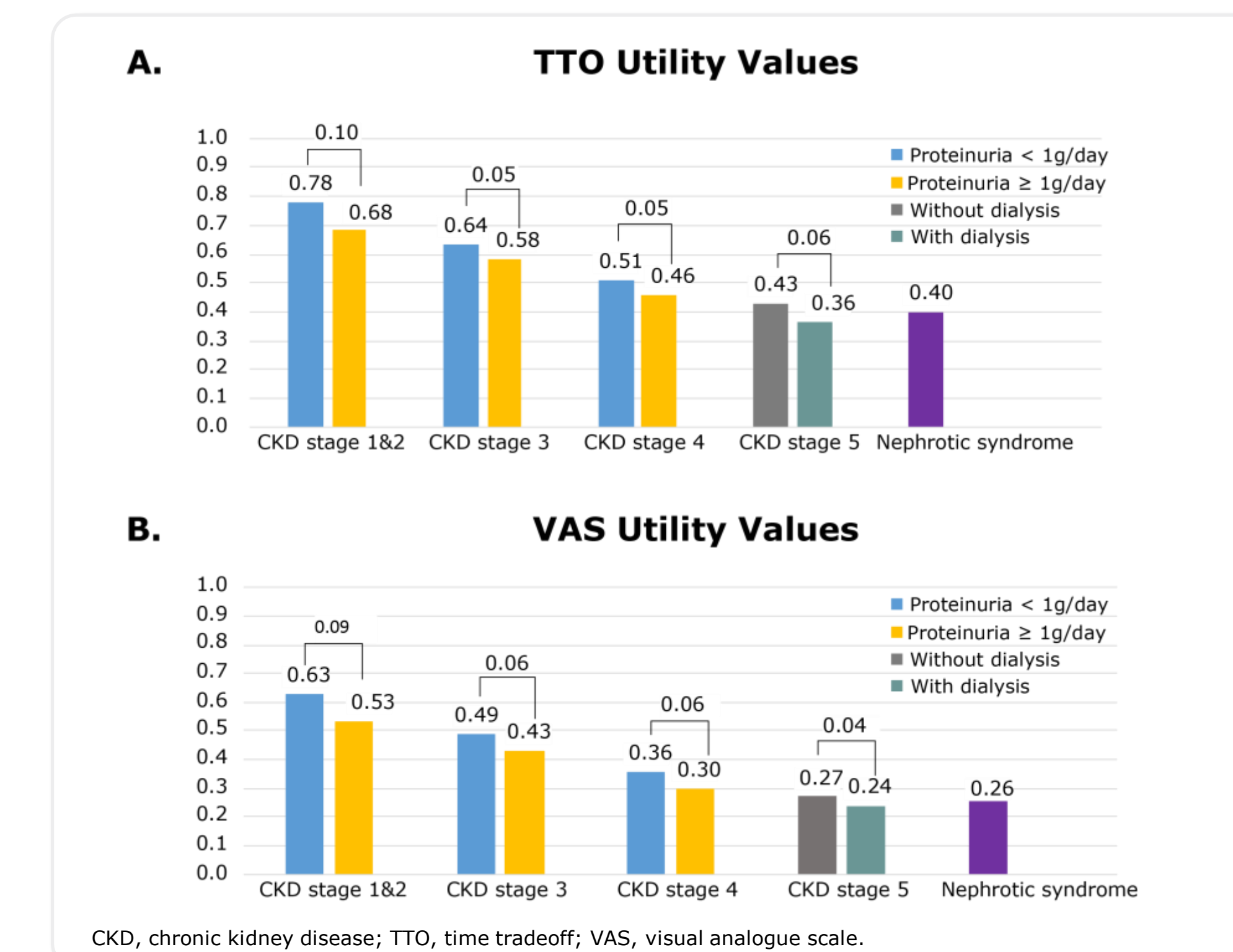


Figure 2. Utility values for sensitivity analysis based on (A) TTO and (B) VAS responses (N=200)



DISCUSSION

- To the best of our knowledge, this is the first utility study for IgAN. While existing studies have examined the utility values for health states related to CKD more generally, no publication we have been able to identify has considered utility values specifically for IgAN.
 - The study accounted for a comprehensive list of symptoms and quality of life impairments associated with each IgAN health state in the utility assessment by including them in the vignette, allowing more accurate estimates of the utility values of IgAN compared to using generic instruments such as EQ-5D
 - As the public perspective is commonly used in health technology assessments, the study elicited preferences of the health states related to IgAN from the UK general population to support the value assessment of IgAN treatments
- Limitations**
- Disease symptoms and quality of life described in the vignettes have an impact on respondents' utility assessment. Comparison of results from different studies with different vignettes should be interpreted with caution.
 - The study included only a limited number of health states due to respondent burden and was not able to assess utility values for all potential disease manifestations and severity
 - Discrepancies may have existed between participants' understanding of the health states based on vignettes and patients' real-life experiences

Analysis

- The TTO utilities were calculated based on the length of life in full health at the point of indifference and ranged from -1 (worse than death) to +1 (perfect health)
- VAS ratings were divided by 100 to obtain utility values for the health states
- In the primary analyses, illogical responses, defined as a more severe health state rated as better than a less severe health state, were removed while respondents' logical answers were retained
- Sensitivity analyses were conducted by retaining illogical responses to assess the impact of removing illogical responses on utility values
- The utility values of health states with controlled vs. uncontrolled proteinuria for each CKD stage and the utility values of CKD stage 5 with vs. without dialysis were compared using paired t-tests

Study Population

- Adults (i.e., ≥18 years old) from the general UK public who were able to speak and read English and able and willing to provide informed consent were recruited through an online panel
- Study Outcomes**
 - The primary outcome was utility values estimated using TTO
 - In TTO, respondents were repeatedly asked to compare living 10 years in each IgAN health state and living in a fewer number of years in full health. The number of years in full health changed based on respondents' choices in the previous question until they stated preferential indifference between the two options, to estimate the number of years of life in an imperfect health state they would be willing to give up in order to live in full health. Visual aids were presented to illustrate the TTO questions.
 - TTO utilities were validated using utility values obtained from VAS, which asked participants to rate the health state on a scale of 0 (the worst health you can imagine) to 100 (the best health you can imagine)
 - Health states were randomly presented in either an increasing severity order or decreasing severity order to reduce ordering effect

Study Design

- The study elicited utility values of health states related to IgAN from the UK general population using computer-assisted telephone interviews
- Respondents were shown written vignettes describing symptoms and quality of life associated with 9 different health states related to IgAN, in plain English
 - Health states described varying chronic kidney disease (CKD) stages, proteinuria control status (defined by proteinuria <1 g/day [controlled] or ≥1 g/day [uncontrolled]), dialysis status, and nephrotic syndrome
 - One health state was used to depict both CKD stage 1 and CKD stage 2 due to similarity in symptoms
 - The vignettes were developed based on information on symptoms and quality of life in the literature and validated by five nephrologists experienced in treating IgAN in the UK
- After reading the vignette for a health state, respondents rated the value of the health state on a visual analog scale (VAS) and responded to a series of time tradeoff (TTO) questions to assess their perceived utility of the health state

METHODS

- Immunoglobulin A nephropathy (IgAN), is a rare kidney disorder that has an annual incidence of approximately 2.5 per 100,000 persons globally¹
- A common feature of IgAN is persistent microscopic hematuria with or without recurrent visible hematuria. Patients may also have proteinuria, hypertension, and/or loin pain. Less frequently, they may experience edema and nephrotic syndrome (~5%) or acute kidney injury.²
- IgAN may severely impact patients and lead to reduced kidney function and quality of life as the disease progresses.³ In those who progress to kidney failure requiring renal replacement therapy, the rates of mortality are significantly increased.^{4, 5}
- Utility values are often used to reflect the impact of disease on quality of life by measuring people's preferences for different health states. While IgAN has been shown to be associated with significant clinical burden to patients with reduced health-related quality of life (HRQL), less is known about the utility values of the condition.^{6,7}

OBJECTIVES

- To derive utility values for the spectrum of health states related to IgAN from the public perspective in the United Kingdom (UK)

BACKGROUND

SUMMARY

IgAN is associated with reduced utility values compared to full health. CKD stage progression, proteinuria level, nephrotic syndrome, and dialysis are associated with further utility decrements.

Treatments that reduce proteinuria and slow the rate of decline in kidney function have the potential to improve the HRQL of patients with IgAN

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Disclosures

MZ: Employee of Analysis Group, Inc.
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NCH: Employee of Analysis Group, Inc.
CX: Employee of Analysis Group, Inc.
BH: Employee of Travere Therapeutics, Inc.
CCS: Consultant, Travere Therapeutics, Inc.
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