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Patient and Physician Preferences for Treatment in Advanced Renal Cell Carcinoma in Asia-Pacific (PEAR)- A Discrete Choice Experiment

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Abstract

Background

Several treatment options exist for first-line advanced renal cell carcinoma (1L aRCC), but data on treatment preferences amongst patients and physicians in the Asia-Pacific population are limited.

Methods

A discrete choice experiment was conducted among 81 aRCC patients and 75 physicians in Australia, Hong Kong, and South Korea. Seven efficacy and safety attributes were short-listed: progression-free survival (PFS), overall survival (OS) at 3 years, complete response (CR), duration of response (DoR), chance of hospitalization due to treatment side effects, grade 3/4 lung inflammation (pneumonitis), and grade 3/4 gastrointestinal (GI) perforation. Preference weights were estimated using a mixed logit model. Relative importance score (out of 100%) and maximum acceptable risk (MAR) were calculated.

Results

Median patient age was 63 years; all were receiving systemic therapy, and 73% reported treatment-related side effects. Among physicians, 55% had ≥ 16 years of experience managing aRCC. Patients placed the greatest importance on lung inflammation (23%), followed by DoR (19%), OS at 3 years (18%), and CR (17%), while PFS contributed minimally (2%). Physicians placed the greatest importance on OS at 3 years (29%), DoR (26%), CR (15%), and PFS (14%), with treatment-related risks being less influential. MAR analysis showed physicians were more willing than patients to accept additional risks of pneumonitis for efficacy gains but were cautious about GI perforation, whereas patients had greater concern for safety.

Conclusions

Patients and physicians valued longer OS, higher CR, and longer DoR but differed in benefit-risk trade-offs. Physicians prioritized efficacy and tolerated greater risk, whereas patients were more risk-averse, highlighting the need to integrate patient preferences into shared decision-making.

Introduction

The treatment landscape for first-line advanced RCC (1L aRCC) has shifted dramatically over the past decade. Therapies such as interleukin-2 (IL-2) and interferon-alpha (IFN-α), have been replaced by tyrosine kinase inhibitor (TKI) monotherapy and subsequently by immune checkpoint inhibitor (ICI)–based combinations (1–3). Pivotal trials such as CheckMate-214 (2), Keynote-426 (4), CheckMate-9ER (5), and CLEAR/Keynote-581 (3) demonstrated improved efficacy of ICI–based combinations compared

with TKI monotherapy and are recommended as the preferred first-line standard of care (SoC) for aRCC (6, 7).

With multiple ICI-based combinations as SoC options, treatment selection in the 1L-aRCC setting has become increasingly complex. Regimens differ in efficacy, mechanisms of action, adverse event profiles, and dosing schedules. Understanding how patients and physicians value different treatment attributes, particularly survival benefit and safety, is essential for shared decision-making, which can improve patient engagement and health outcomes (8, 9).

A discrete choice experiment (DCE) is a quantitative survey method used to assess how individuals value and prioritize different treatment attributes by presenting hypothetical scenarios that involve trade-offs between benefits and risks (10). DCEs provide structured insights into real-world decision-making by quantifying the relative importance of various treatment features. This is relevant in the 1L-aRCC setting, where multiple treatment choices with differing attributes may complicate treatment decisions.

Most existing DCEs for RCC were conducted in the United States (11–15) and, often before the adoption of ICI-based combinations (16). Studies from an international perspective, especially capturing an Asia-Pacific (APAC) population remain limited and are largely single-country based (16–19), offering little insight into regional variation or alignment between patient and physician perspectives (17). Given differences across APAC in healthcare systems, access to newer therapies, and potential cultural influences on decision-making, region-specific evidence is needed to inform patient-centered care and shared decision-making for aRCC.

Therefore, this study aimed to evaluate patients' and physicians' benefit-risk preferences for 1L aRCC treatment and to identify the trade-offs both groups are willing to make among the treatment attributes.

Methods

Study design

This was a cross-sectional, online survey to identify treatment preferences of patients and physicians in 1L aRCC and compare their benefit–risk preferences. A DCE was embedded within the survey and developed in accordance with the good research practices for conjoint analysis issued by the International Society for Pharmacoeconomics and Outcomes Research (20). Two separate survey versions were developed, one for patients using lay language and another for physicians using standard clinical terminology. Each survey consisted of two main sections. The first collected demographic and clinical or practice characteristics, while the second presented DCE choice tasks describing hypothetical 1L aRCC treatments.

Additional questions were included only in the physician survey to explore relevance of other factors in 1L treatment selection.

Study Population

Two groups of participants from Australia, Hong Kong, and South Korea were involved in this study: patients with aRCC and physicians involved in the management of aRCC. Patients were identified and invited through treating physicians or, through patient outreach channels.

Patients were eligible if they were aged ≥ 18 years (≥ 19 years in South Korea), had a current diagnosis of aRCC (including clear cell or non–clear cell subtypes) and had either received systemic therapy for aRCC within previous five years or were currently receiving systemic treatment. They were required to be able to read and understand the survey language. Physicians were eligible if they were medical oncologists, urologists, or physicians in a similar specialty involved in treating patients with aRCC, had at least five years of experience managing aRCC, spent ≥ 60% of their professional time in direct patient care, and treated ≥ 15 patients with aRCC each year.

The study protocol was approved by institutional or regional ethics committees in each participating geography and conducted in accordance with the Declaration of Helsinki and local regulatory requirements. All participants provided informed consent prior to survey participation. All personal information collected during the study was de-identified prior to analysis to ensure participant confidentiality.

Survey Development

Development of the DCE instrument followed a structured, multi-step process. An initial list of treatment attributes and levels was generated through a targeted literature review and refined with input from an external APAC steering committee, who evaluated the clinical relevance and clarity.

To further validate and refine attributes, qualitative interviews were conducted with 10 patients and 16 physicians in their native language. Participants discussed the relevance and clarity of each attribute and ranked them by importance when making treatment decisions. A summary of the qualitative findings has been previously presented (21).

Seven attributes were finalized for the DCE survey: progression-free survival (PFS), overall survival (OS) at 3 years, complete response (CR), duration of response (DoR), chance of hospital admission due to treatment side effects, grade 3/4 inflammation of the lungs (pneumonitis) and grade 3/4 gastrointestinal (GI) perforation (Supplementary Table 1).

The draft DCE survey was pre-tested through cognitive interviews with 11 patients and 12 physicians using think-aloud interviews to assess clarity and the ability to weigh trade-offs. Feedback was used to refine the survey instructions, wording and descriptions, and response options.

The final online DCE survey was administered in March-July 2025 in Hong Kong, Korea, and Australia. Although included in the qualitative phase, Taiwan was excluded from the final DCE phase due to

operational feasibility.

DCE Experimental Design and Survey Administration

The seven attributes and their levels yielded 972 possible treatment profiles. A D-efficient fractional factorial design was generated using the Kuhfeld algorithm to select a statistically efficient subset of profiles that minimized correlation across attribute levels and maximized statistical precision (22). Each respondent completed 15 choice questions, including one dominant choice set for internal validity (rationality) check. Each choice question presented two hypothetical treatments labelled Treatment A and Treatment B (Supplementary Table 2). The dominant choice set included one treatment profile characterized by logically preferable levels across all attributes. Respondents who selected the inferior profile in this set were considered to have failed the internal validity test and were excluded from the final analysis.

The DCE was administered as an online survey. To support comprehension and reduce cognitive burden, respondents were able to access a detailed description of the treatment attributes at any time within the questionnaire while evaluating the choice sets.

The two versions of the survey for patients and physicians respectively were available in English, Korean, and Traditional Chinese (Hong Kong) language and were professionally translated and culturally adapted for each geography.

Statistical Analysis

Patients' and physicians' treatment choices were analyzed using a mixed logit regression model. This model estimates the probability of selecting a treatment alternative based on its attribute levels, while allowing preferences to vary across individuals and accounting for the repeated choices provided by each respondent. Effects coding was applied so that each attribute level was compared with the average effect of all levels within that attribute, rather than to a single reference level. Model coefficients were interpreted as relative preference weights, with the sign indicating whether the attribute contributed positively (utility) or negatively (disutility) to treatment choice.

Exploratory subgroup analyses were conducted by region, age group (< 65 years vs. ≥65 years), prior experience with treatment-related side effects, and duration of current kidney cancer treatment (≤ 12 months vs. >12 months).

Relative importance (RI) for each attribute was calculated as the proportion of its utility range, defined as the difference in preference weight between its most and least preferred levels, relative to the total utility range across all attributes. Expressed as a percentage, RI reflects how much each attribute contributes to respondents' treatment decisions.

To assess risk tolerance, the maximum acceptable risk (MAR) was calculated as the highest level of treatment-related risk that respondents were willing to accept for a specified improvement in clinical outcomes. MAR was estimated for treatment-related adverse events such as grade 3/4 inflammation of the lungs (pneumonitis) and grade 3/4 GI perforation, based on trade-offs with improvements in PFS, OS at 3 years, CR, and DoR.

All analyses were two-sided with a significance level of $p < 0.05$ and were performed using Stata version 18 (StataCorp, College Station, TX, USA).

Results

Study Populations

A total of 103 patients were invited to participate in the study, of whom 96 (93%) provided consent and 88 (85%) were eligible. Seven patients failed the internal validity (rationality) test and were excluded, resulting in 81 patients included in the analysis.

Table 1 summarizes the demographic and clinical characteristics of the patient population. Patients had a median age of 63 years (interquartile range: 55–68 years), were mostly male (84%) and Asian (75%), and 53% had tertiary education. Fifty two percent of patient respondents were from South Korea, with 26% and 22% from Australia and Hong Kong respectively. Of the patients, 44% were diagnosed with kidney cancer less than 2 years ago. All were on systemic therapy and 69% on current treatment for > 6 months; 73% reported treatment-related side effects.

Table 1
Patient demographics and clinical characteristics

Characteristics	N = 81
Age, years	
Median (Q1-Q3)	63 (55.00–68.00)
Mean (SD)	61.6 (9.55)
Min-Max	38.00–79.00
Sex, n (%)	
Male	68 (84.0%)
Female	13 (16.0%)
Race, n (%)	
Asian	61 (75.3%)
White	18 (22.2%)
Others[a]	2 (2.5%)
Highest education level, n (%)	
Elementary/ primary school/ junior high school	38 (46.9%)
Certification program	7 (8.6%)
College or university degree (2 or 4 year)	28 (34.6%)
Advanced or graduate/ post-graduate degree	8 (9.9%)
Employment status, n (%)	
Employed full-time (40 hours per week or more)	19 (23.5%)
Employed part-time (less than 40 hours per week)	5 (6.2%)
Self-employed	12 (14.8%)
Homemaker	4 (4.9%)
Retired	30 (37.0%)
Unemployed	6 (7.4%)
Disabled	3 (3.7%)
Others[b]	2 (2.5%)
Region/ geography, n (%)	

Characteristics	N = 81
Age, years	
Australia	21 (25.9%)
Hong Kong	18 (22.2%)
South Korea	42 (51.9%)
Duration since kidney cancer diagnosis, n (%)	
Less than six months ago	9 (11.1%)
At least six months ago, but less than one year ago	13 (16.0%)
At least one year ago, but less than two years ago	14 (17.3%)
At least two years ago, but less than five years ago	17 (21.0%)
At least five years ago	28 (34.6%)
Lines of systemic treatment received for kidney cancer, n (%)[e]	
One line of systemic treatment	50 (61.7%)
Two lines of systemic treatments	8 (9.9%)
Three lines of systemic treatments	10 (12.3%)
Four lines of systemic treatments or more	10 (12.3%)
Don’t know	3 (3.7%)
Duration of current kidney cancer treatment, n (%)	
Currently not taking any medication	0 (0.0%)
Less than 1 month	4 (4.9%)
1–3 months	7 (8.6%)
4–6 months	13 (16.0%)
7–12 months	20 (24.7%)
More than 1 year	36 (44.4%)
Not sure / Don’t know	1 (1.2%)
Experience with any side effects of kidney cancer treatment, n (%)	
Yes	59 (72.8%)
No	17 (21.0%)
Not sure / Don’t know	5 (6.2%)

Characteristics	N = 81
Age, years	
Abbreviations: SD, standard deviation; Q, quarter	
[a]Others include African (n = 1), Persian (n = 1).	
[b]Others include farming (n = 1), religious worker (n = 1).	
[c]Sum of % may exceed 100% as patients can select more than one option.	
[d]Others include adrenal deficiency (n = 2), vitiligo (n = 1), left renal non-clear cell papillary tumour (n = 1), lung cancer (n = 1)	
[e]First line oral, second line intravenous, third line oral (n = 1).	

Among physicians, 87 were invited, all of whom provided consent, and 77 (89%) were eligible. Two physicians failed the internal validity test and were excluded, resulting in 75 physicians included in the analysis.

Table 2 summarizes the physicians' profiles treating patients with aRCC. Of the 75 physicians, the majority were primarily medical oncologists (49%), followed by urologists (36%). Of these, 55% had at least 16 years of experience managing aRCC. Physicians were mainly based in South Korea (44%), Australia (40%), and Hong Kong (16%).

Table 2
Physician practice and experiences treating patients with advanced RCC

Characteristics	N = 75
Medical specialty, n (%)	
Medical oncologist	37 (49.3%)
Clinical oncologist	11 (14.7%)
Urologist	27 (36.0%)
Number of years managing patients with advanced RCC, n (%)	
5–9 years	21 (28.0%)
10–15 years	13 (17.3%)
16–20 years	15 (20.0%)
21–25 years	21 (28.0%)
More than 25 years	5 (6.7%)
Type of practice, n (%)[a]	
National/ government hospital	32 (42.7%)
Private hospital	18 (24.0%)
University hospital/ academic institute	42 (56.0%)
Private clinic	9 (12.0%)
Region of practice, n (%)	
Australia	30 (40.0%)
Hong Kong	12 (16.0%)
South Korea	33 (44.0%)
Abbreviations: RCC, Renal cell carcinoma	

Characteristics	N = 75
Medical specialty, n (%)	

[a]Sum of % may exceed 100% as physicians can select more than one option.

Each point represents the mean preference weight for a given attribute level, and the vertical bars indicate the associated 95% confidence interval. Positive preference weights reflect greater utility (higher preference), while negative weights indicate disutility relative to the reference level. Within each attribute, non-overlapping confidence intervals between adjacent levels suggest statistically meaningful differences in preferences at the 5% significance level or better ($p < 0.05$).

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$ compared with the average preference weight of levels within the attribute i.e. significantly different from 0.

Each point represents the mean preference weight for a given attribute level, and the vertical bars indicate the associated 95% confidence interval. Positive preference weights reflect greater utility (higher preference), while negative weights indicate disutility relative to the reference level. Within each attribute, non-overlapping confidence intervals between adjacent levels suggest statistically meaningful differences in preferences at the 5% significance level or better ($p < 0.05$).

* $p < 0.05$, ** $p < 0.01$ compared with the average preference weight of levels within the attribute i.e. significantly different from 0.

Preference Weights

Figures 1 and 2 show the preference weights for each attribute level among patients and physicians, respectively.

Patients favoured greater efficacy outcomes, including a higher OS of 40% at 3 years, a higher CR of 15%, and a longer DoR of 24 months (Fig. 1). In contrast, patients expressed strong negative preferences for higher risks of grade 3/4 inflammation of the lungs (pneumonitis) and grade 3/4 GI perforation, as well as for an increased chance of hospitalization due to treatment side effects. Preference weights for all tested PFS levels did not reach statistical significance compared with the attribute mean.

Among physicians, preference patterns were broadly similar but with a stronger emphasis on efficacy outcomes (Fig. 2). Physicians favoured longer PFS of 24 months, higher OS of 40% at 3 years, higher CR of 10%, and a longer DoR of 24 months. By contrast, risk attributes, including chance of hospitalization due to treatment side effects, grade 3/4 inflammation of the lungs (pneumonitis) and grade 3/4 GI perforation, had smaller negative weights compared with patients, but these effects were not statistically significant.

Relative importance

The difference between the most- and least-preferred levels within each attribute was used to calculate RI in Table 3. For patients, grade 3/4 inflammation of the lungs (pneumonitis) (23%) was the most important attribute, followed by DoR (19%) and OS at 3 years (18%), with CR (17%) also contributing

substantially. Risks of grade 3/4 GI perforation (13%) and chance of hospitalization due to treatment side effects (8%) were less influential but still considered, while PFS was the least important attribute (2%).

Table 3
Relative importance of attributes among patients and physicians

Patients (n = 81)		**Physicians (n = 75)**	
Attribute	**Relative importance (%)**	**Attribute**	**Relative importance (%)**
Grade 3/4 Inflammation of lungs (pneumonitis)	23	Overall survival at 3 years	29
Duration of response	19	Duration of response	26
Overall survival at 3 years	18	Complete response	15
Complete response	17	Progression-free survival	14
Grade 3/4 Gastrointestinal perforation	13	Grade 3/4 Gastrointestinal perforation	7
Chance of hospital admission due to treatment side effects	8	Chance of hospital admission due to treatment side effects	7
Progression-free survival	2	Grade 3/4 Inflammation of lungs (pneumonitis)	2

In contrast, for physicians, OS at 3 years (29%) was the most important attribute, followed by DoR (26%) and CR (15%). PFS (14%) was notably more influential for physicians than for patients, whereas risk attributes such as grade 3/4 GI perforation (7%), chance of hospital admission due to treatment side effects (7%) and grade 3/4 inflammation of the lungs (pneumonitis) (2.0%) had low importance, suggesting that physicians prioritized efficacy outcomes over treatment-related adverse events.

Maximum acceptable risk

To quantify risk tolerance, MAR was calculated as the additional risk of grade 3/4 inflammation of the lungs (pneumonitis) or grade 3/4 GI perforation that respondents would accept for a given improvement in efficacy outcomes (Table 4). Overall, patients were considerably more risk-averse, while physicians were willing to accept substantially higher risks in exchange for efficacy gains. For example, to achieve a 20–30% improvement in 3-year OS, physicians would accept 52% additional risk of grade 3/4 inflammation of the lungs (pneumonitis) and 16% additional risk of grade 3/4 GI perforation, compared with only 2–4% for patients. Similarly, for a 5–10% increase in CR, physicians accepted 39% additional risk of grade 3/4 inflammation of the lungs (pneumonitis) and 12% additional risk of grade 3/4 GI perforation, whereas patients accepted only 3–5%. For extending DoR from 6–12 months, physicians

accepted 33% additional risk of grade 3/4 inflammation of the lungs (pneumonitis) and 10% additional risk of grade 3/4 GI perforation, while patients accepted 3–5%.

Table 4
The maximum acceptable risk for patients and physicians

Improvement	Patient (n = 81)				Physician (n = 75)				P value[a]
	mean	95% CI		P value	mean	95% CI		P value	
Risk of grade 3/4 inflammation of the lungs (pneumonitis)									
Progression free survival									
6 m – 12 m	-0.4%	-1.1%	0.3%	0.26	11.8%	0.2%	23.3%	0.045	0.039
12 m – 24 m	0.5%	-1.0%	2.0%	0.54	24.1%	-2.3%	50.4%	0.07	0.08
Overall survival at 3 years									
20% – 30%	2.0%	1.3%	2.6%	< 0.001	52.3%	40.3%	64.2%	< 0.001	< 0.001
30% – 40%	1.9%	-0.1%	3.9%	0.06	21.4%	-13.3%	56.2%	0.22	0.27
Complete response									
5% – 10%	2.7%	2.0%	3.4%	< 0.001	39.0%	25.9%	52.1%	< 0.001	< 0.001
10% – 15%	0.8%	-0.3%	2.0%	0.15	-13.2%	-28.9%	2.5%	0.10	0.08
Duration of response									
6 m – 12 m	2.6%	1.9%	3.3%	< 0.001	32.5%	21.8%	43.3%	< 0.001	< 0.001
12 m – 24 m	1.5%	0.4%	2.7%	0.009	32.3%	11.7%	52.9%	0.002	0.004
Risk of grade 3/4 gastrointestinal perforation									
Progression free survival									
6 m – 12 m	-0.8%	-2.1%	0.6%	0.26	3.5%	0.1%	6.9%	0.045	0.023
12 m – 24 m	0.8%	-1.9%	3.6%	0.54	7.2%	-0.7%	15.0%	0.07	0.14

[a]P value tests whether the maximum acceptable risk differs significantly between patients and physicians for each improvement.

Improvement	Patient (n = 81)				Physician (n = 75)				P value[a]
	mean	95% CI		P value	mean	95% CI		P value	
Overall survival at 3 years									
20% – 30%	3.6%	2.4%	4.7%	< 0.001	15.6%	12.0%	19.1%	< 0.001	< 0.001
30% – 40%	3.5%	-0.1%	7.1%	0.06	6.4%	-4.0%	16.7%	0.23	0.61
Complete response									
5% – 10%	4.9%	3.5%	6.2%	< 0.001	11.6%	7.7%	15.5%	< 0.001	0.001
10% – 15%	1.5%	-0.6%	3.6%	0.15	-3.9%	-8.6%	0.8%	0.10	0.037
Duration of response									
6 m – 12 m	4.7%	3.4%	6.1%	< 0.001	9.7%	6.5%	12.9%	< 0.001	0.005
12 m – 24 m	2.7%	0.7%	4.8%	0.009	9.6%	3.5%	15.8%	0.002	0.038
Abbreviations: CI, confidence interval; m, month									
[a]P value tests whether the maximum acceptable risk differs significantly between patients and physicians for each improvement.									

Additional Exploratory Findings

Exploratory subgroup analyses were conducted to assess variations of patients' preferences across regions, age groups (< 65 years vs. ≥65 years), prior experience with treatment-related side effects, and treatment duration (≤ 12 months vs. >12 months). Patients in South Korea demonstrated higher positive preferences for longer PFS (24 months; p = 0.026) and lower preferences for shorter PFS (6 months; p = 0.038) (Supplementary Table 3). Younger patients (< 65 years) showed negative preference for a higher risk of grade 3/4 GI perforation than older patients (≥ 65 years) (p = 0.042) (Supplementary Table 4), but there was no difference in preferences across the other attributes. Compared to patients on kidney cancer treatment for > 12 months, patients on treatment for ≤ 12 months preferred longer DoR of 12 months (p = 0.012) and 24 months (p = 0.006) and a lower risk of grade 3/4 inflammation of the lungs (pneumonitis) (p = 0.031), (Supplementary Table 5). Treatment preference did not differ among patients with and without prior treatment-related side effects.

Beyond the main DCE findings, physicians also considered quality-of-life, progression-free survival 2 (PFS2), and long-term toxicity when selecting 1L therapy for advanced RCC (Supplementary Table 6).

Discussion

This study provides insights into how patients and physicians prioritize and trade off treatment characteristics in 1L aRCC. Both valued treatment efficacy, although their relative emphasis on treatment-related adverse events differed. Physicians were more willing to trade off adverse events for improved efficacy. In contrast, while patients also valued efficacy outcomes, they were less inclined to compromise treatment-related risks for modest efficacy gains, reflecting stronger concern for safety. Collectively, these differences highlight that while both groups within the Asia Pacific region share the goal of improving survival, they diverge in how they perceive acceptable trade-offs between efficacy and treatment-related risks.

Our findings are consistent with previous DCE studies that have examined benefit–risk trade-offs for aRCC treatment. In United States (US) studies, both patients and physicians prioritized survival, González et al. highlighted the probability of living ≥ 3 years as the most influential attribute (11), while Ornstein et al. found that increasing survival probability from 10% to 55% was the most important treatment attribute for patients (15). Similarly, patients with RCC from China preferred treatment offering better efficacy (17).

In terms of benefit–risk trade-offs, patients from the US were willing to accept only 2–3% increase in treatment-related risks for an 11-month improvement in PFS (13). Korean physicians accepted substantially higher risk of treatment-related side-effects (up to 9.6% for bone marrow suppression and 11.8% for hand–foot skin reaction) for a one-month PFS gain, whereas patients accepted only 1–1.3% (16). These patterns align with our findings, where physicians were more risk-tolerant and patients placed greater emphasis on treatment safety.

Differences in risk tolerance may reflect clinical role and experience. Physicians are guided by clinical evidence and accustomed to managing adverse events. In our study, approximately 50% of physicians had ≥ 16 years of experience managing aRCC, which may have contributed to their confidence in handling treatment-related risks and their perception that pneumonitis risk is low (< 5%) (23). A similar trend was reported by Fernández et al., who found that more experienced oncologists assigned lower importance to severe adverse events (19). Conversely, patients were more risk-averse. Notably, 73% of patients in our cohort had prior experience with treatment-related side effects and this may have heightened their concern about treatment related risks, although post-hoc subgroup analysis comparing patients with and without such treatment-related side effect experience did not reveal differences in treatment preferences (24).

Our results also showed that PFS was highly valued by physicians but was the least important attribute for patients. Park et al. reported a similar trends, with physicians valuing PFS more than patients(16). Conversely, Mohamed et al. and Ding et al. identified PFS as the most important treatment attribute (13,

17). Several factors may explain these disparate findings. First, in both studies, OS was not included as a treatment attribute, and PFS was the only efficacy outcome in Mohamed et al.'s study (13, 17). Consequently, patients may have interpreted PFS as a surrogate for overall treatment benefit. In contrast, when both OS and PFS are presented, as in our study, patients tend to prioritize OS, which is more intuitive and directly linked to survival benefit. In addition, the way efficacy is communicated can influence preferences. Landmark efficacy measures such as 3-year overall survival may be easier for patients to understand than the relatively complex median PFS (25, 26).

While exploratory subgroup analyses among patients were conducted across region, age, treatment duration, and prior treatment-related side effects, no robust or consistent patterns were identified. These results should be interpreted cautiously due to limited sample size.

Overall, this study reinforces the importance of integrating patient-reported values into treatment discussions and shared decision-making, ensuring that treatment selection reflects not only clinical outcomes but also patient preferences. Strengths of this study include its distinction as one of the first DCEs in the APAC region comparing both patient and physician preferences for 1L aRCC treatment. The robust design, including the MAR approach to quantify risk tolerance, and the use of qualitative and cognitive interviews to select and validate attributes, ensured both clinical and contextual relevance.

There are several limitations in this study. First, local-level conclusions are limited by small sample sizes, and findings should be interpreted as group-level preferences. In addition, the recruitment approach, which involved treating physicians and patient outreach channels, may have introduced selection bias toward more engaged or treatment-experienced patients, potentially limiting generalizability to the broader aRCC population.

Second, seven treatment attributes were included to balance comprehensiveness with respondent burden, this inevitably excluded other factors that could influence treatment decisions in real-world settings. Quality of life was not assessed as a standalone attribute, though aspects related to quality of life were partially reflected through treatment-related adverse events. Attributes related to treatment logistics were initially included in the qualitative interview but were not prioritized in the final DCE design. Cost was excluded as an attribute because it varies widely across APAC healthcare systems, making it challenging to define consistent, meaningful cost levels. Therefore, the findings should be interpreted within the context of clinical attribute trade-offs rather than as a comprehensive representation of real-world treatment decision-making.

Finally, as the survey was conducted online, participation was restricted to patients with internet and device access, potentially reducing generalizability. Furthermore, the study was initiated a few years ago. Treatment attributes are based on knowledge at that time and perspectives may since have evolved.

Future research should examine how differences in patient and physician preferences influence treatment adherence, satisfaction, and long-term outcomes, and how these insights can be integrated into personalized cancer care.

In conclusion, while both patients and physicians in the APAC region value treatment efficacy, physicians showed higher risk tolerance, whereas patients prioritize safety and are less willing to tolerate treatment-related adverse events. Bridging these perspectives through effective communication and patient-centred frameworks will be essential to achieving value-based care in 1L RCC.

Abbreviations

1L
First-line
APAC
Asia-Pacific
aRCC
Advanced Renal Cell Carcinoma
CR
Complete Response
DCE
Discrete Choice Experiment
DoR
Duration of Response
GI
Gastrointestinal
ICI
Immune Checkpoint Inhibitor
IFN-α
Interferon-Alpha
IL-2
Interleukin-2
MAR
Maximum Acceptable Risk
OS
Overall Survival
PFS
Progression-Free Survival
PFS2
Progression-Free Survival 2
RCC
Renal Cell Carcinoma
RI
Relative Importance
SoC

Standard of Care
TKI
Tyrosine Kinase Inhibitor
US
United States

Declarations

Ethics approval and consent to participate

The study protocol was approved by the relevant ethics committees in each participating country. Details of the approving ethics committees/institutional review boards are provided in the table below.

Consent for publication

Not applicable

Competing interests

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Author Contribution

A.Z., N.O., B.L., I.P., M.K., S.Y.L.C., A.D., S.G., and K.C.W.W. contributed to the study conception and design, and to the interpretation of the study findings. S.Y.L.C. drafted the manuscript. All authors critically reviewed, revised, and refined the manuscript for important intellectual content and approved the final version for submission.

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Data Availability

The datasets generated and/or analysed during the current study are not publicly available due to sponsor policies and data governance requirements but may be made available upon reasonable request and subject to sponsor approval.

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Figures

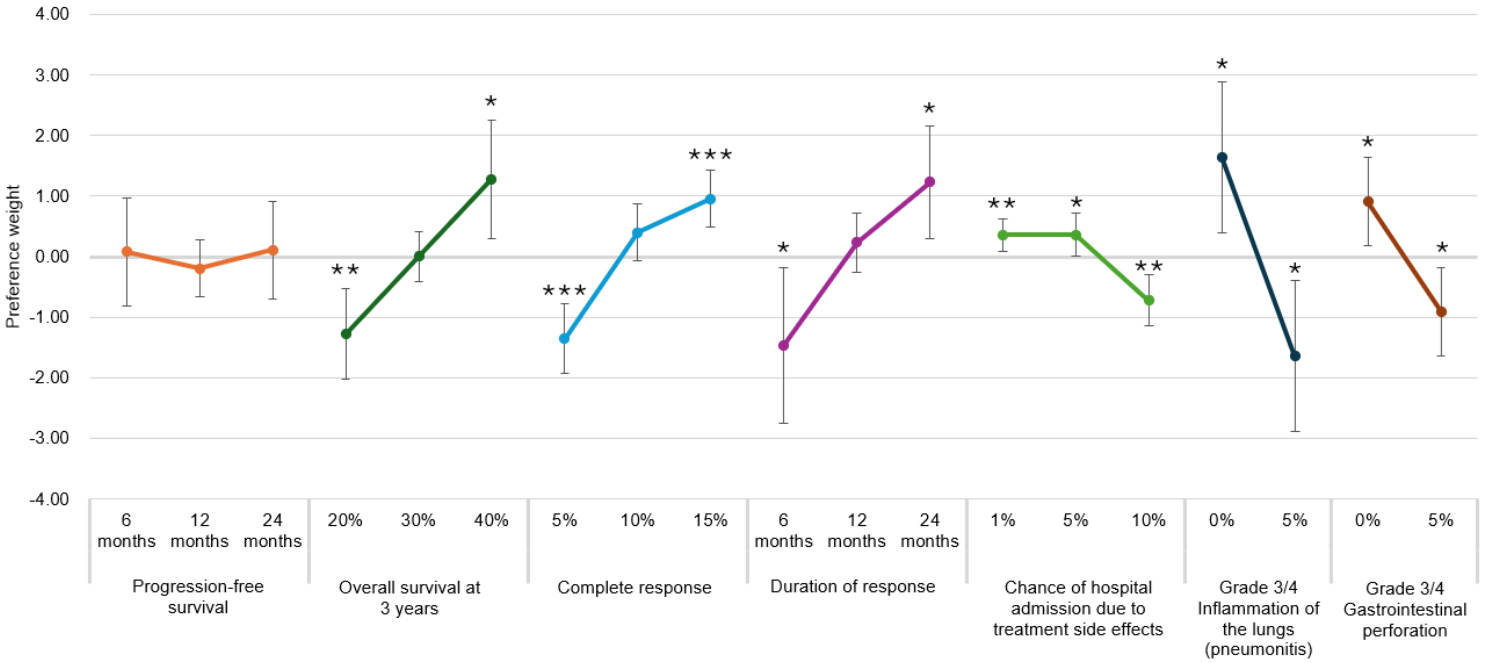


Figure 1

Preference weights for patients (N=81)

Each point represents the mean preference weight for a given attribute level, and the vertical bars indicate the associated 95% confidence interval. Positive preference weights reflect greater utility (higher preference), while negative weights indicate disutility relative to the reference level. Within each attribute, non-overlapping confidence intervals between adjacent levels suggest statistically meaningful differences in preferences at the 5% significance level or better ($p < 0.05$).

* p<0.05, ** p<0.01, *** p<0.001 compared with the average preference weight of levels within the attribute i.e. significantly different from 0.

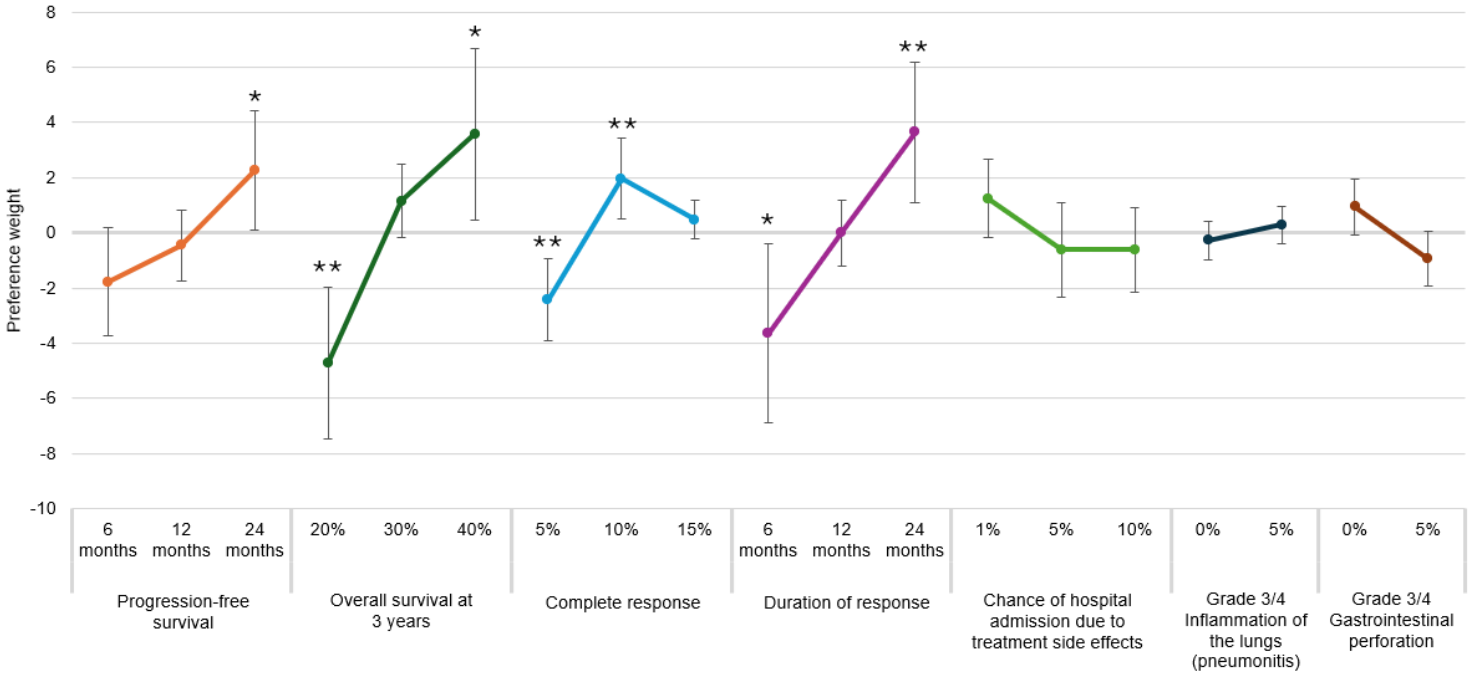


Figure 2

Preference weights for physicians (N=75)

Each point represents the mean preference weight for a given attribute level, and the vertical bars indicate the associated 95% confidence interval. Positive preference weights reflect greater utility (higher preference), while negative weights indicate disutility relative to the reference level. Within each attribute, non-overlapping confidence intervals between adjacent levels suggest statistically meaningful differences in preferences at the 5% significance level or better ($p < 0.05$).

* $p<0.05$, ** $p<0.01$ compared with the average preference weight of levels within the attribute i.e. significantly different from 0.

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