Appendix

Appendix 1 correlation matrix of Spearman test between the potential factors of EQ-5D-5L utility values of RA patients

Variable	a	b	c	d	e	f	g	h	i	j	k	l	m	n	0	p	q	r	s	t	u
b	-0.148																				
c	-0.152	0.906																			
d	-0.031	0.384	0.174																		
e	-0.220	0.285	0.423	0.509																	
f	-0.226	0.623	0.661	0.085	0.210																
g	-0.143	0.628	0.662	0.212	0.279	0.629															
h	-0.445	0.334	0.142	0.327	0.253	0.173	0.144														
i	-0.450	0.370	0.215	0.392	0.382	0.242	0.188	0.851													
j	-0.255	0.334	0.274	0.335	0.307	0.295	0.318	0.551	0.573												
k	-0.314	-0.087	0.051	-0.183	0.227	0.031	-0.003	-0.045	-0.027	0.024											
l	-0.167	0.057	0.118	-0.036	0.166	0.098	-0.006	0.012	0.113	0.056	0.005										
m	-0.146	0.108	0.157	-0.149	0.040	0.161	0.117	0.149	0.090	0.038	-0.094	0.164									
n	0.278	-0.054	-0.165	0.110	-0.248	-0.153	-0.043	-0.080	-0.169	-0.158	-0.148	-0.713	-0.299								
0	-0.134	0.135	0.205	0.237	0.461	0.290	0.314	0.276	0.254	0.274	-0.086	0.076	0.094	-0.120							
p	0.206	0.013	0.000	-0.115	-0.120	-0.144	-0.079	-0.026	0.042	-0.069	-0.043	-0.123	-0.069	0.105	-0.261						
q	-0.163	-0.001	0.046	-0.051	0.131	0.040	-0.041	0.030	0.157	0.042	0.039	0.793	0.090	-0.564	-0.002	-0.075					
r	-0.311	0.015	-0.071	0.240	0.034	0.132	0.034	0.123	0.187	0.176	-0.061	0.006	-0.116	-0.002	0.032	-0.182	-0.024				
s	0.043	-0.227	-0.233	-0.048	0.025	-0.036	-0.265	0.062	0.037	-0.036	0.197	0.020	-0.006	-0.040	-0.032	0.077	-0.034	-0.029			
t	0.131	-0.161	-0.192	-0.001	-0.102	-0.168	-0.041	-0.099	-0.133	-0.129	0.063	-0.864	-0.180	0.717	-0.079	0.114	-0.603	0.014	-0.040		
u	-0.183	0.069	0.149	-0.142	0.175	0.130	0.099	0.075	0.124	0.100	-0.054	0.417	0.367	-0.561	0.124	-0.099	0.332	-0.067	-0.023	-0.365	
v	-0.148	-0.002	-0.025	-0.059	-0.150	0.061	-0.019	0.033	0.045	0.005	-0.132	-0.059	0.126	0.107	0.038	0.046	0.036	-0.007	-0.043	0.040	-0.002

Note: a: EQ-5D-5L score; b: DAS28-CRP; c: DAS28-ESR; d: CRP; e: ESR; f: TJC; g: SJC; h: PtAAP-VAS; i: PtGADA-VAS; j: PhGADA-VAS; k: Gender; l: Habitation; m: Marriage; n: Education; o: Disease state; p: TM; q: MIT; r: GH; s: Ethnicity; t: Occupation; u: Age

DAS28: disease activity scores including 28 joint counts; ESR: erythrocyte sedimentation rate; CRP: high-sensitivity C-reactive protein; TJC: tender joints count; SJC: swollen joints count; PtAAP-VAS: patient's assessment of arthritis pain; PtGADA-VAS: patient's global assessment of disease activity; PhGADA-VAS: physician's global assessment of disease activity; MIT: Medical insurance type; TM: Treatment methods; GH: General health.

Appendix 2 Characteristics, patient-/clinician-reported outcomes and associated EQ-5D-5L utility values of RA patients

To	(0/)/N/ (CD)	M HIN/(OD)/CHIN/	Range		X7.1	050/ 61		
Items	n (%)/Mean (SD)	Mean HUV (SD)/CHUV	Min Max		p Value	95% CI		
Characteristics		Mean HUV (SD)						
Total	171(100.0%)	0.586(0.279)	-0.193	1.000		0.544	0.629	
Total (adjusted)		0.561						
Gender					0.0001**			
Male	60(35.1%)	0.697(0.233)	0.050	1.000		0.637	0.758	
Female	111(64.9%)	0.527(0.285)	-0.193	1.000		0.473	0.580	
Age (years)		` ,			0.0008^{**}			
18-39	32(18.7%)	0.738(0.227)	-0.056	1.000		0.656	0.819	
40-49	35(20.5%)	0.596(0.234)	0.052	0.942		0.516	0.677	
50-59	58(33.9%)	0.513(0.284)	-0.193	0.942		0.438	0.587	
60-70	46(26.9%)	0.567(0.304)	-0.121	1.000		0.476	0.657	
Ethnicity					0.3685			
Han	162(94.7%)	0.582(0.282)	-0.193	1.000		0.538	0.625	
Other	9(5.3%)	0.673(0.212)	0.251	0.942		0.510	0.836	
BMI					0.0606			
BMI<18.5	19(11.1%)	0.700(0.185)	0.147	1.000		0.611	0.789	
18.5≤BMI<24	95(55.6%)	0.601(0.274)	-0.100	0.955		0.545	0.657	
24≤BMI	57(33.3%)	0.525(0.302)	-0.193	1.000		0.445	0.605	
Habitation					0.0158^{*}			
Urban	75(43.9%)	0.639(0.274)	-0.193	1.000		0.576	0.703	
Rural	96(56.1%)	0.545(0.278)	-0.121	1.000		0.489	0.601	
Marriage					0.0255^{*}			
Unmarried	12(7.0%)	0.740(0.198)	0.288	0.952		0.614	0.865	
Married	94(55.0%)	0.606(0.293)	-0.193	1.000		0.546	0.666	
Divorce/Widowed	13(7.6%)	0.571(0.282)	0.095	1.000		0.401	0.742	
Not reported	52(30.4%)	0.520(0.256)	-0.121	0.942		0.449	0.592	
Occupation					0.1703			
Farmer	96(56.1%)	0.547(0.280)	-0.121	1.000		0.491	0.604	
Worker	40(23.4%)	0.648(0.280)	-0.193	0.952		0.558	0.737	
Government-affiliated institutions	7(4.1%)	0.727(0.198)	0.451	1.000		0.543	0.910	

Retiree	7(4.1%)	0.525(0.396)	-0.100	0.942		0.159	0.891
Other	21(12.3%)	0.623(0.235)	0.102	0.952		0.516	0.730
Education					0.0005^{**}		
Primary school or below	74(43.3%)	0.508(0.290)	-0.121	1.000		0.441	0.575
Middle school	67(39.2%)	0.608(0.263)	-0.193	0.952		0.544	0.672
Undergraduate or above	30(17.5%)	0.732(0.224)	-0.056	1.000		0.648	0.815
Person's annual income					0.2277		
(0,30000)	31(18.1%)	0.556(0.280)	-0.121	0.942		0.453	0.659
[30000,60000)	17(9.9%)	0.675(0.284)	-0.100	0.942		0.529	0.821
≥60000	16(9.4%)	0.647(0.300)	-0.193	0.942		0.487	0.807
Not reported	107(62.6%)	0.572(0.275)	-0.067	1.000		0.519	0.625
Medical insurance type					0.0099^{**}		
BMIUE	46(26.9%)	0.661(0.298)	-0.193	1.000		0.572	0.749
BMIURR	73(42.7%)	0.587(0.275)	-0.067	1.000		0.523	0.651
Not reported	52(30.4%)	0.520(0.256)	-0.121	0.942		0.449	0.592
General health					0.0001^{**}		
Good	3(1.8%)	0.781(0.099)	0.703	0.893		0.534	1.028
General	131(76.6%)	0.634(0.261)	-0.121	1.000		0.589	0.679
Bad	26(15.2%)	0.449(0.287)	-0.193	0.903		0.333	0.565
Very bad	11(6.4%)	0.294(0.219)	0.034	0.766		0.147	0.441
Disease stage					0.0331^{*}		
Mid-term	146(85.4%)	0.612(0.259)	-0.193	1.000		0.568	0.654
Serious	25(14.6%)	0.440(0.350)	-0.100	0.955		0.295	0.584
Treatment methods					0.0230^{*}		
Hospitalization	16(9.4%)	0.449(0.246)	0.101	0.766		0.318	0.580
Outpatient	155(90.6%)	0.601(0.279)	-0.193	1.000		0.556	0.645
Das28-CRP					0.6581		
Remission	3(1.75%)	0.744(0.026)	0.724	0.773		0.679	0.808
Low	3(1.75%)	0.556(0.417)	0.095	0.907		-0.480	1.591
Moderate	54(31.58%)	0.606(0.281)	-0.100	0.952		0.529	0.683
High	111(64.91%)	0.574(0.280)	-0.193	1.000		0.521	0.626
Das28-ESR					0.1508		
Remission	4(2.34%)	0.766(0.127)	0.665	0.942		0.564	0.967
Low	6(3.51%)	0.589(0.333)	0.095	0.942		0.239	0.938
Moderate	41(23.98%)	0.658(0.245)	0.033	0.952		0.581	0.736

High	120(70.18%)	0.556(0.287)	-0.193	1.000		0.504	0.608
Patient-reported Outcomes		CHUV					
PtAAP-VAS	63.92(18.20)	-0.0062	7.00	100.00	0.000^{**}	-0.0084	-0.0041
PtGADA-VAS	64.49(19.23)	-0.0061	8.00	100.00	0.000^{**}	-0.0082	-0.0041
Clinician-reported Outcomes	MIS (SD)	CHUV					
ESR	48.89 (29.26)	-0.0028	2.00	121.00	0.000^{**}	-0.0042	-0.0014
CRP	30.60 (36.40)	-0.0009	0.50	177.10	0.138	-0.0021	0.0003
SJC	14.40 (9.12)	-0.0043	2.00	54.00	0.067	-0.0090	0.0003
TJC	23.51 (14.53)	-0.0024	5.00	68.00	0.113	-0.0053	0.0006
DAS28-ESR	5.58 (1.36)	-0.0482	1.77	9.09	0.002^{**}	-0.0788	-0.0176
DAS29-CRP	5.46 (1.20)	-0.0453	2.01	8.32	0.011^{*}	-0.0803	-0.0104
PhGADA-VAS	63.04 (14.22)	-0.0052	21.50	97.00	0.000^{**}	-0.0081	-0.0023

Note: *p<0.05, **p<0.01; SD: standard deviation; CHUV: coefficient of health utility value; MDEUS: median EQ-5D-5L utility score; CI: Confidence Interval; BMIUE: Basic medical insurance for urban employees; BMIURR: Basic medical insurance for urban and rural residents; PtAAP-VAS: patient's assessment of arthritis pain; PtGADA-VAS: patient's global assessment of disease activity; PhGADA-VAS: physician's global assessment of disease activity; ESR: erythrocyte sedimentation rate; CRP: high-sensitivity C-reactive protein; SJC: swollen joints count; TJC: tender joints count; DAS28: disease activity scores including 28 joint counts; MIS: mean index score.

Appendix 3 The proportion of reporting problems on EQ-5D-5L dimensions of RA patients with various characteristics

Characteristics	Mob	oility	Self-	-care	Usual a	ctivities	Pain/Dis	comfort	Anxiety/D	epression
	% With Problems	p Value	% With Problems	p Value	% With Problems	p Value	% With Problems	p Value	% With Problems	p Value
Total	76.02%		72.51%		74.85%		84.21%		64.33%	
Total (Adjust)	80.91%		76.59%		81.02%		83.64%		65.33%	
Gender		0.0005**		0.0036**		0.0001**		0.6834		0.4724
Male	55.00%		55.00%		48.33%		86.67%		60.00%	
Female	87.39%		81.98%		89.19%		82.88%		66.67%	
Age		0.8703		0.9758		0.5351		0.0232^{*}		0.1201
18-39	68.75%		75.00%		62.50%		56.25%		46.88%	
40-49	80.00%		74.29%		77.14%		94.29%		68.57%	
50-59	77.59%		72.41%		81.03%		91.38%		75.86%	
60-70	76.09%		69.57%		73.91%		86.96%		58.70%	
Ethnicity		0.9256		0.7556		0.8763		0.4006		0.2899
Han	75.93%		72.84%		74.69%		83.33%		65.43%	
Other	77.78%		66.67%		77.78%		100.00%		44.44%	
BMI		0.5527		0.1676		0.4530		0.2216		0.1332
BMI<18.5	68.42%		94.74%		89.47%		63.16%		47.37%	
18.5≤BMI<24	73.68%		67.37%		74.74%		85.26%		61.05%	
24≤BMI	82.46%		73.68%		70.18%		89.47%		75.44%	
Habitation		0.1817		0.0892		0.1713		0.4006		0.9478
Urban	69.33%		64.00%		68.00%		80.00%		64.00%	
Rural	81.25%		79.17%		80.21%		87.50%		64.58%	
Marriage		0.2717		0.6089		0.2202		0.0110^{*}		0.3020
Unmarried	66.67%		91.67%		66.67%		41.67%		58.33%	
Married	72.34%		71.28%		68.09%		79.79%		59.57%	
Divorce/ Widowed	61.54%		61.54%		76.92%		92.31%		53.85%	
Not reported	88.46%		73.08%		88.46%		100.00%		76.92%	
Occupation		0.8855		0.4108		0.6206		0.3779		0.9916
Farmer	80.21%		78.13%		79.17%		88.54%		63.54%	
Worker	70.00%		57.50%		62.50%		82.50%		65.00%	
Government-affiliated institutions	71.43%		85.71%		71.43%		42.86%		57.14%	

Retiree	71.43%		71.43%		71.43%		85.71%		71.43%	
Other	71.43%		71.43%		80.95%		80.95%		66.67%	
Education		0.3952		0.3328		0.0166^{*}		0.1792		0.8839
Primary school or below	82.43%		79.73%		89.19%		86.49%		66.22%	
Middle school	73.13%		68.66%		65.67%		89.55%		64.18%	
Undergraduate or above	66.67%		63.33%		60.00%		66.67%		60.00%	
Person's annual income		0.3404		0.9521		0.3767		0.2002		0.5122
(0,30000)	83.87%		77.42%		77.42%		100.00%		64.52%	
[30000,60000)	52.94%		70.59%		52.94%		64.71%		64.71%	
[60000,+∞)	75.00%		75.00%		68.75%		75.00%		50.00%	
Not reported	77.57%		71.03%		78.50%		84.11%		67.29%	
Medical insurance type		0.1591		0.2330		0.0396^{*}		0.0546		0.1629
BMIUE	67.39%		60.87%		58.70%		73.91%		60.87%	
BMIURR	72.60%		79.45%		75.34%		79.45%		57.53%	
Not reported	88.46%		73.08%		88.46%		100.00%		76.92%	
Health status		0.1765		0.3881		0.2407		0.9358		0.0205^{*}
Good	66.67%		66.67%		33.33%		100.00%		33.33%	
General	70.99%		69.47%		71.76%		83.21%		58.02%	
Bad	96.15%		76.92%		88.46%		88.46%		84.62%	
Very bad	90.91%		100.00%		90.91%		81.82%		100.00%	
Disease stage		0.4560		0.4842		0.2192		0.6940		0.0660
Middle	74.66%		71.23%		72.60%		84.93%		60.96%	
Advanced	84.00%		80.00%		88.00%		80.00%		84.00%	
Das28-CRP										
Remission		0.6509		0.3498		0.0662		0.0733		0.9744
Low	100.00%		100.00%		100.00%		33.33%		66.67%	
Moderate	66.67%		100.00%		100.00%		66.67%		66.67%	
High	72.22%		66.67%		62.96%		83.33%		66.67%	
Das28-ESR	77.48%		73.87%		79.28%		86.49%		63.06%	
Remission										
Low		0.0592		0.5956		0.0049^{**}		0.0733		0.1925
Moderate	75.00%		50.00%		75.00%		75.00%		25.00%	
High	66.67%		83.33%		83.33%		83.33%		66.67%	
Treatment methods		0.4050		0.5262		0.9919		0.8114		0.4387
Hospitalization	87.50%		81.25%		75.00%		87.50%		75.00%	

Outpatient 74.84% 71.61% 74.84% 83.87% 63.23%

Note: *p<0.05, **p<0.01; BMIUE: Basic medical insurance for urban employees; BMIURR: Basic medical insurance for urban and rural residents.

Appendix 4 EQ-VAS score of RA patients

EQ-VAS	Moon (SD)	Median	Ra	nge	95% Cl		
EQ-VAS	Mean (SD)	Median	Min	Max	95%	o CI	
female	47.22(19.75)	49.00	10.00	90.00	43.50	50.93	
male	47.41(19.59)	45.00	10.00	90.00	42.34	52.47	
Total	47.28(19.64)	48.00	10.00	90.00	44.32	50.25	
Total(adjusted)	47.25						

Note: SD: Standard deviation; CI: Confidence interval.

Appendix 5 VIF of variables included in the regression model

Variables		VIF	1/VIF
Age	18-39		
	40-49	1.76	0.568
	50-59	2.28	0.439
	60-70	2.18	0.460
Gender	Male		
	Female	1.14	0.881
BMI	BMI<18.5		
	18.5≤BMI<24	2.95	0.339
	24≤BMI	2.95	0.339
Habitation	Urban		
	Rural	1.21	0.824
Disease stage	Mid-term		
	Serious	1.17	0.851
Treatment	Hospitalization		
methods			
	Outpatient	1.13	0.888
PtGADA-VAS		1.16	0.863
DAS28-ESR		1.13	0.882
Mean VIF		1.73	

Note: VIF: variance inflation factor.

Appendix 6 Questionnaires on the Quality of Life of Chinese RA Patients (Chinese to English version)

Survey ID: 00 00 00 0								
Interviewer: Interviewer II	D: 00							
Survey Date:								
No.1 Questionnaires for Patient								
EQ-5D-5L								
Under each heading, please tick the ONE bo TODAY.	x that best describes your health							
MOBILITY								
I have no problems in walking about								
I have slight problems in walking about								
I have moderate problems in walking about								
I have severe problems in walking about								
I am unable to walk about								
SELF-CARE								
I have no problems washing or dressing myself								
I have slight problems washing or dressing myself								
I have moderate problems washing or dressing my	rself							
I have severe problems washing or dressing mysel	f \Box							
I am unable to wash or dress myself								
USUAL ACTIVITIES (e.g. work, study, housewe	ork, family or leisure activities)							
I have no problems doing my usual activities								
I have slight problems doing my usual activities								
I have moderate problems doing my usual activities	es 📮							
I have severe problems doing my usual activities								
I am unable to do my usual activities								

PAIN / DISCOMFORT	
I have no pain or discomfort	
I have slight pain or discomfort	
I have moderate pain or discomfort	
I have severe pain or discomfort	
I have extreme pain or discomfort	
ANXIETY / DEPRESSION	
I am not anxious or depressed	
I am slightly anxious or depressed	
I am moderately anxious or depressed	
I am severely anxious or depressed	
I am extremely anxious or depressed	

We would like to know how good or bad your health is TODAY.

This scale is numbered from 0 to 100.

100 means the best health you can imagine.

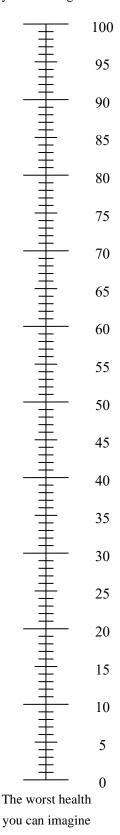
0 means the worst health you can imagine.

Mark an X on the scale to indicate how your health is TODAY.

Now, please write the number you marked on the scale in the box below.

YOUR HEALTH TODAY =

The best health you can imagine



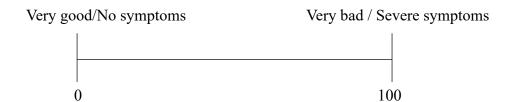
The patient's assessment of arthritis pain visual analogue scale (PtAAP-VAS)

Please mark a vertical line on the scale below to indicate the level of pain you are experiencing due to arthritis TODAY.



The patient's global assessment of disease activity visual analogue scale (PtGADA-VAS)

Please consider the impact of arthritis on all aspects of your life, then mark a vertical line on the scale below to indicate how you feel TODAY.



Patients' demographic characteristics

Here are some questions about your basic information. Please put a check mark " $\sqrt{}$ " next to the options that apply to your personal situation, and fill in the blank with the information you need to provide. Note: This is an anonymous survey, your personal information will not be disclosed, and there are no right or wrong answers to your responses.

1. What is your gender?	□Male	□Female
2. What is your age?	Year	
3. What is your ethnicity?		
4. What are your weight and height respectively?	kg	cm
5. Where do you currently live?	□ Rural □] Urban
6. What is your marital status?	☐ Unmarried☐ Divorce☐	
7. What is your level of education?	•	ool or below Middle lergraduate or above
8. What is your Occupation?	☐ Farmer ☐ Government—☐ Retiree ☐	affiliated institutions
9. What is your treatment methods?	☐ Hospitalization	on
10. How much is your personal annual income? (ten thousand yuan)	ten t	thousand yuan
11. What is your medical insurance type?	☐ Basic medic	cal insurance for urban

	employees			
	☐ Basic medical insurance for urban			
	rural resider	nts		
12. How do you feel about your current	☐ Good	☐ Genaral		
health status?	☐ Bad	☐ Very bad		

No.2 Questionnaires for Physician

The following questions should be completed by the patient's attending physician.

1.Patient's disease stage	☐ Stage I (Early stage) ☐ Stage II (Middle stage) ☐ Stage III (Advanced stage)
2.Patient's erythrocyte sedimentation rate (ESR, unit: mm/h)	
3.Patient's high-sensitivity C-reactive protein (CRP unit: mg/L)	
The physician's global assessment of	disease activity visual analogue scale
(PhGAD	OA-VAS)
Please mark a vertical line on the scale bel	ow to assess the overall condition of signs
and symptoms of rheumatoid arthritis in the	subjects as well as the functional ability of
the subjects.	
Very good/No symptoms	ery bad/Severe and intolerable symptoms
No limit for Normal activities	Unable to perform any normal activities
0	100

Assessment of swollen joints count and tender joints count

Right						Joint	Left					
	Tende	er	;	Swoll	en		Swollen		Tender			
Yes	No	Not	Yes	No	Not		Yes	No	Not	Yes	No	Not
		done			done				done			done
						Temporomandibular Joint						
						Sternoclavicular Joint						
						Acromioclavicular Joint						
						Shoulder Joint						
						Elbow joint						
						Wrist joint						
						First metacarpophalangeal joint						
						Second metacarpophalangeal joint						
						Third metacarpophalangeal joint						
						Fourth metacarpophalangeal joint						
						Fifth metacarpophalangeal joint						
						Thumb interphalangeal joint						
						Proximal interphalangeal joint of						
						the upper limb second digit						
						Proximal interphalangeal joint of						
						the upper limb third digit						
						Proximal interphalangeal joint of						
						the upper limb fourth digit						
						Proximal interphalangeal joint of						
						the upper limb fifth digit						
						Distal interphalangeal joint of the						
						second digit						
						Distal interphalangeal joint of the						
						third digit						
						Distal interphalangeal joint of the						
						fourth digit						
						Distal interphalangeal joint of the						
						fifth digit						

			Hip joint			
			Knee joint			
			Ankle joint			
			Tarsal bone			
			First metatarsophalangeal joint			
			Second metatarsophalangeal joint			
			Third metatarsophalangeal joint			
			Fourth metatarsophalangeal joint			
			Fifth metatarsophalangeal joint			
			Hallux interphalangeal joint			
			Proximal interphalangeal joint of			
			the second toe			
			Proximal interphalangeal joint of			
			the third toe			
			Proximal interphalangeal joint of			
			the fourth toe			
			Proximal interphalangeal joint of			
			the fifth toe			

Tender joints count:	/ Swolle	en joints count: /
		