## **OBJECTIVES**

To evaluate the health-related quality of life (HRQoL) of Chinese high school students with myopia and investigate potential factors that may influence HRQoL.

## METHODS

- $\succ$  This cross-sectional study was conducted in three representative regions of North China, East China, and Northwest China in 2023.
- $\succ$  The questionnaire comprised three parts: questions on socio-demographic characteristics, vision-related parameters and the measurement of HRQoL.
- > The HRQoL was assessed with the Child Health Utility instrument (CHU-9D) and National Eye Institute Visual Functioning Questionnaire-25 (VFQ-25).
- > Descriptive statistics were performed on respondents' characteristics and the distribution of HRQoL. One-way analysis of variance (ANOVA) was used to compare HRQoL between subgroups. A multivariable linear regression analysis was performed to identify contributing factors to HRQoL.

## RESULTS

- Socio-demographic characteristics of respondents
- A total of **2,198** respondents were included in the study. As shown in Table 1, 53.1% (N = 1167) of total respondents were male, the mean (SD) age was 16.7 (**0.8**) years.
- Respondents with low myopia and high myopia accounted for **75.8%** and **18.8%**, respectively.
- HRQoL of respondents
- As shown in Table 2, the mean value (SD) of CHU-9D was **0.851** (**0.160**), the average score (SD) of VFQ-25 was **91.112 (9.619)**.
- Respondents who maintained a normal sitting position, spent more time outdoors, and wear no glasses scored higher in both CHU-9D and VFQ-25 scores.

# 沃洋大学 Health-Related Quality of Life Among High School Students with Myopia in China Jing Wang<sup>1</sup>, Xiaoyan Yang<sup>1</sup>, Mengdi Li<sup>1</sup>, Chang Luo<sup>2</sup>, Shitong Xie<sup>2\*</sup>

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Table 1	Table 1 Characteristics of respondents				
Characte	ristics		N = 2198, N (%	<b>(0 )</b>	
Age (mean [SD])			16.7 (0.8)		
Gender (%)					
Male			1167 (53.1%)		
Female			1031 (46.9%)		
<b>Province (%)</b>					
Tianjin			1428 (65.0%)		
Shandong			548 (24.9%)		
Xiniiang			222 (10.1%)		
Sitting posture			()		
Normal sitting po	sition		1334 (60.7%)		
On the table			85 (3.9%)		
To the left			265 (12.1%)		
To the right			88 (4 0%)		
Uncertain			426 (19.4%)		
Time spent outdoor	rc		720 (17.770)		
ner week (mean [S]	D])		4.50 (3.60)		
Degree of Myonia					
Pre-myonia			117 (5 3%)		
I ow-myonia			1667 (75.8%)		
High myonia			1007(73.870) 111(18.806)		
Closece type			414 (10.0%)		
No closes			175 (21 60/)		
INO glasses			$\frac{4/3(21.0\%)}{1525(60.40\%)}$		
Frame glasses			1525 (09.4%)		
Orthokeratology lenses			163(7.4%)		
Contact lens			35 (1.6%)		
Tab	ole 2 HRQoL	of respo	ondents		
Characteristics	CHU-9D		<b>VFQ-25</b>		
	Mean(SD)	P value	Mean(SD)	P value	
Overall	0.851(0.160)		91.112(9.619)		
Gender		<0.001		0.127	
Male	0.870(0.159)		91.406(10.049)		
Female	0.830(0.159)		90.779(9.100)		
Grades		0.245		0.010	
Senior One	0.845(0.154)		90.354(9.827)		
Senior Two	0.857(0.164)		91.708(9.428)		
Senior Three	0.847(0.160)		91.189(9.562)		
Sitting posture		<0.001		<0.001	
Normal sitting	0.888(0.1/0)		02 705(8 156)		
position	0.000(0.140)		92.795(0.450)		
On the table	0.813(0.181)		88.038(10.762)		
To the left	0.795(0.160)		87.992(11.388)		
To the right	0.766(0.172)		88.110(9.268)		
Uncertain	0.795(0.176)		89.016(10.480)		
Time spent outdoor	'S	<0.001		< 0.001	
[0, 5)	0.836(0.163)		90.595(9.833)		
[5, 10)	0.872(0.155)		92.026(9.150)		
[10, 21]	0.912(0.123)		92.735(8.774)		
Degree of myopia		0.809		0.001	
Pre-myopia	0.843(0.181)		94.145(8.977)		
Low-myopia	0.851(0.156)		91.043(9.693)		
High-myopia	0.854(0.170)		90.531(9.357)		

0.012 <0.001 Glasses type No glasses 0.872(0.154) 94.924(7.107) Frame glasses 0.847(0.162) 89.650(10.237) Orthokeratology 0.834(0.149) 93.616(6.466) lenses 0.838(0.162) 91.400(6.990) Contact lens

Table 2 Marth 1 - 1		25
Table 3 Multiple linear regi	Coofficion	-25 score
	0 507	
lender	0.307	0.020
Male	Reference	
Female	0.850	0.022
thnic	0.000	
Han Chinese	Reference	
Other	-1.139	0.101
itting posture		
Normal sitting position	Reference	
On the table	-2.097	0.027
To the left	-2.352	<0.001
To the right	-1.677	0.075
Uncertain	-1.321	0.006
'ime spent outdoors per week		
[0, 7]	Reference	
[7. 21]	0.775	0.107
Degree of myopia		
Pre-myopia	Reference	
Low-myopia	-0.905	0.286
High-myopia	-0.249	0.796
Hasses type		
No glasses	Reference	
Frame glasses	-4.675	<0.001
Orthokeratology lenses	-0.191	0.807
Contact lens	-3.458	0.021
CHU-9D utility	23.597	<0.001
Constant term	66.847	<0.001
Table 4 Multiple linear regre	ession of CHU-	9D utility
Characteristics	Coefficient	P value
ge	-0.016	0.007
Gender		
Male	Reference	
Female	-0.032	<0.001
Frade		
Senior One	Reference	
Senior Two	-0.003	0.728
Senior Three	0.022	0.130
Zthnic		
Han Chinese	Reference	
Other	-0.005	0.657
itting posture		
Normal sitting position	Reference	
On the table	-0.041	0.009
To the left	-0.058	<0.001
To the right	-0.083	<0.001
Uncertain	-0.063	<0.001
'ime spent outdoors per week		
[0, 5]	Reference	
[5, 10)	0.018	0.016
[10, 21]	0.051	<0.001
egree of myopia		
Pre-myopia	Reference	
Low-myopia	0.022	0.112
High-myopia	0.027	0.090
Hasses type		
No glasses	Reference	
Frame glasses	0.020	0.016
Orthokeratology lenses	-0.008	0.524
Contact lens	0.007	0.783
FQ-25 score	0.006	<0.001
Yoractorat torra	0 510	<0.001

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### **Distribution of HRQoL of respondents**

Almost **70%** of respondents scored **above 90** on VFQ-25, less than 50% of respondents had a utility score **bove 0.9** on CHU-9D.

From the distribution of CHU-9D dimensions across evels, the dimensions with the highest reported problems among respondents are tired, worried, and chool work/homework, respectively.

Factors associated with HRQoL of respondents

as shown in Table 3 and Table 4, VFQ-25 scores **ncreased with age** (P = 0.020), whereas the CHU-9D stility **decreased with age** (P = 0.007).

Regarding gender, males had significantly lower VFQ-**25** scores than females (P = 0.022), while **CHU-9D tility** values were significantly **higher** (P < 0.001).

Both VFQ-25 scores and CHU-9D utility values were gnificantly related with sitting posture.

Females, those with a normal sitting posture, wearing no glasses, and those with higher CHU-9D utility had nigher VFQ-25 scores.

ndividuals who are younger, male, spend more time outdoors per week, sit normally, wear frame glasses, and ave higher VFQ-25 scale scores are likely to have nigher CHU-9D utility values.

## **DNCLUSION**

A non-negligible impairment of HRQoL is observed in nyopic high school students in China.

Highly myopic high school students have significantly ower vision-specific HRQoL, and that HRQoL mpairment due to the degree of myopia is more often nfluenced through the type of glasses worn.

Factors influencing health utility and vision-specific HRQoL in myopic patients were identified, which can nform policy makers in implementing appropriate nterventions.