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Inequality and Determinants of Access to Essential Anticancer Medicines for Children in China

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INTRODUCTION

- **Objectives:** We aimed to evaluate the availability of essential anticancer medicines for children in China, and quantify its inequality and social determinants.
- **Data**: In total of 28 essential anticancer medicines for children were included. Drug procurement data from 30 provinces of China during the period of 2018-2023 were analyzed.

METHODS

- **Human development index (HDI)** was applied to categorize different socioeconomic regions of China. HDI-related inequalities of availability were examined by concentration curve and concentration index.
- **Linear mixed-effects model** was developed to examine social determinants of availability from four dimensions recommended by the World Health Organization.

RESULTS

Table 1 Associated factors of availability of essential anticancer medicines for children

Subgroups	Hospital level	Classifications	2018	2019	2020	2021	2022	2023	Average	Average annual growth rate
HDI Region	Total	Very-high HDI	35.61%	36.23%	36.31%	40.40%	39.38%	39.29%	37.87%	2.09%
		High HDI	31.44%	32.59%	34.28%	34.87%	36.24%	35.36%	34.13%	2.41%
		Upper middle HDI	29.07%	30.56%	31.45%	32.34%	33.57%	33.80%	31.80%	3.07%
		Low middle HDI	21.58%	22.35%	24.20%	24.10%	26.03%	24.38%	23.77%	2.63%
		P	0.339	0.319	0.351	0.189	0.429	0.429	/	/
	Secondary hospitals	Very-high HDI	23.06%	23.51%	23.77%	30.66%	28.66%	28.37%	26.15%	4.90%
		High HDI	18.75%	19.26%	21.94%	21.95%	22.82%	21.92%	21.03%	3.34%
		Upper middle HDI	16.38%	18.08%	20.46%	20.82%	23.19%	23.11%	20.09%	7.28%
		Low middle HDI	9.43%	9.57%	13.67%	12.21%	13.80%	11.71%	11.73%	6.31%
		P	0.235	0.365	0.243	0.164	0.345	0.269	/	/
	Tertiary hospitals	Very-high HDI	45.92%	46.68%	46.61%	48.40%	48.18%	48.26%	47.26%	1.01%
		High HDI	41.56%	43.22%	44.12%	45.17%	46.95%	46.08%	44.37%	2.11%
		Upper middle HDI	39.02%	40.33%	40.06%	41.37%	41.69%	42.17%	40.64%	1.58%
		Low middle HDI	27.35%	28.42%	29.20%	29.75%	31.84%	30.40%	29.41%	2.21%
		P	0.202	0.206	0.246	0.234	0.334	0.335	/	/

◆ Drug price, the rate of children healthcare management below 7 years old, the number of public hospitals, physicians' average inpatient bed-days, basic medical insurance fund revenue, and the proportion of total health expenditure in gross domestic product were found to be significantly associated with drug availability (P<0.05).

- The annual average availability of essential anticancer medicines for children in China increased from 27.72% in 2018 to 31.38% in 2023.
- The annual availability in very-high HDI regions (37.87%) was significantly higher compared to that in other regions (P<0.001).
- Injectable medicines showed significantly higher average availability than oral medicines (36.16% vs. 15.65%).
- Cytotoxic medicines had greater availability compared to targeted therapies (34.29% vs. 23.29%).

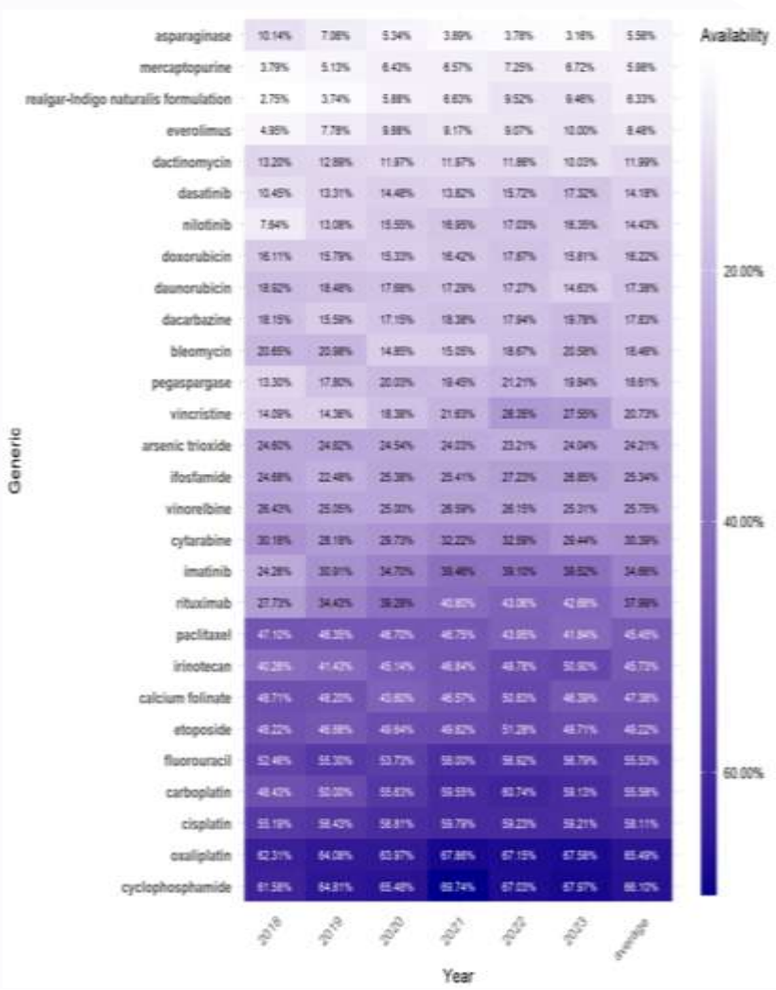

Figure 1 Availability of essential anticancer medicines for children from 2018 to 2023.

◆ The concentration index decreased from 0.124 in 2018 to 0.040 in 2023, with a fluctuating downward trend from 2019 to 2023. In particular for tertiary hospitals, the concentration index decreased from 0.1316 in 2018 to 0.0425 in 2023.

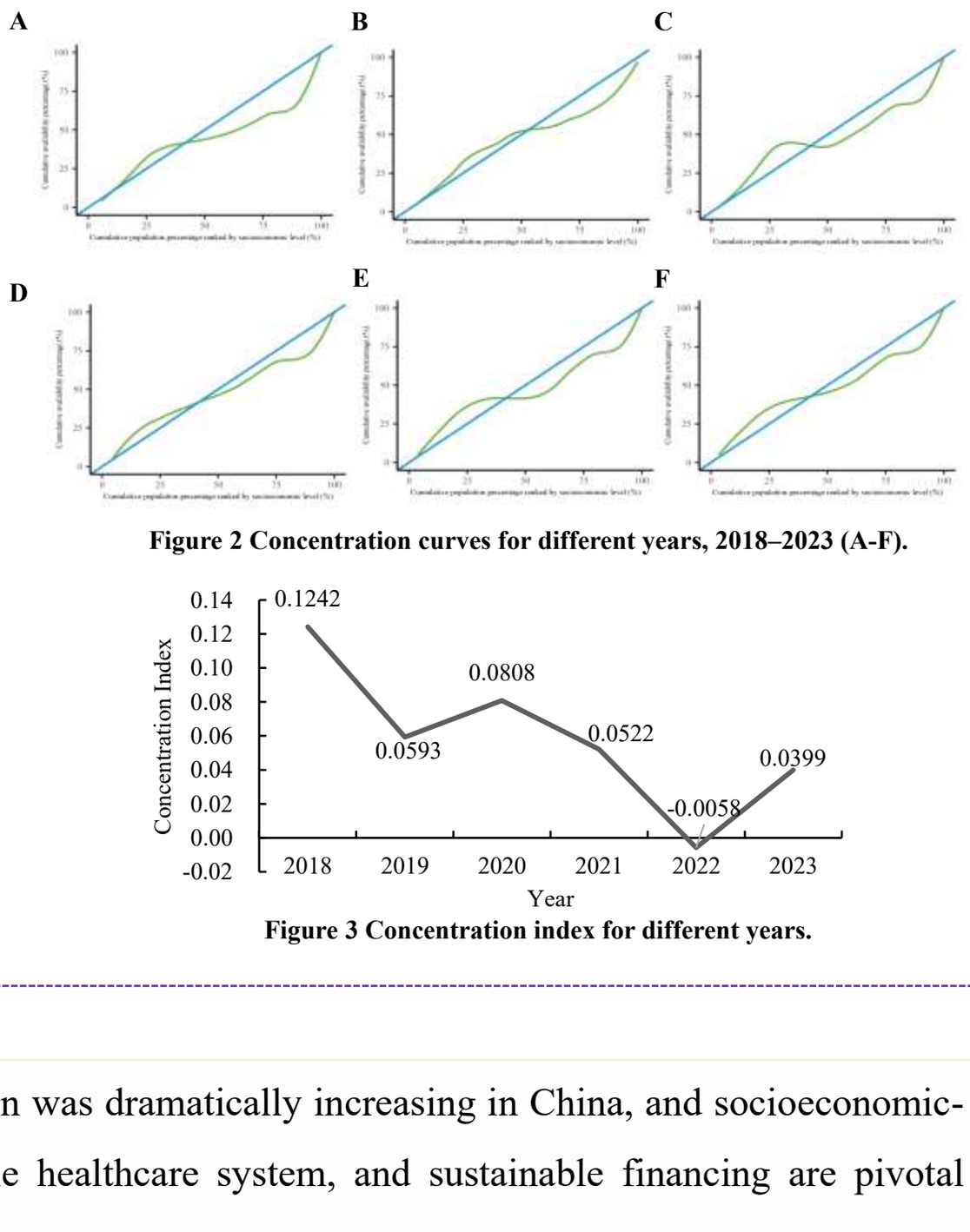

Figure 2 Concentration curves for different years, 2018–2023 (A-F).

Figure 3 Concentration index for different years.

CONCLUSIONS

- The annual availability of essential anticancer medicines for children was dramatically increasing in China, and socioeconomic-related inequalities exist with declining trend. Drug price, reliable healthcare system, and sustainable financing are pivotal factors influencing the drug availability