

Preferences of People Living with HIV for Injectable Versus Oral Antiretroviral Therapy (ART) in China: A Discrete Choice Experiment (DCE)

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Key Takeaways

- In China, treatment preferences were driven primarily by mode of treatment administration, general side effects, and longer dosing intervals.
- Preference for injectable treatment exceeded that for oral therapies.
- These findings provide practical implications for healthcare providers and policymakers, highlighting the treatment attributes that are most important to people living with HIV and informing the development of patient-centered treatment strategies.

Introduction

- Ongoing ART advancements have diversified available HIV treatment modalities beyond daily oral treatments, incorporating long-acting injectable (LAI) options.¹
- LAIs offer an alternative treatment option that addresses diverse needs of people with HIV, such as adherence challenges associated with oral therapy.²
- Regulators, Health Technology Assessment (HTA) bodies and payers increasingly seek to align HIV treatment access and reimbursement with patient preferences,^{3,4} thus understanding what drives preference for HIV therapies is critical.
- This DCE quantified and compared different treatment modalities in China to understand preference drivers.

Methods

- Following a pilot experiment in the United States, a two-step DCE-based survey was developed with the following characteristics:
 - Step 1:** Participants were presented with three hypothetical ART options (two LAIs, one oral) with varying attributes and asked to choose their preferred treatment option for HIV management (**Figure 1**).
 - Attributes assessed included oral treatment frequency (daily or weekly), injection frequency (every 2, 4, or 6 months), mode and setting of administration (subcutaneous [SC], intravenous [IV], or intramuscular [IM] injection, either self-administered at home or by a healthcare professional in a healthcare setting), general side effects (SEs), injection-related nodules, skin discoloration and/or swelling, and pain.

Methods cont.

Figure 1. DCE Choice Card Example

Attribute	Treatment 1	Treatment 2	Treatment 3
Mode of treatment administration	One (1) intramuscular injection and one (1) intravenous injection 	Two (2) subcutaneous injections 	Oral
Frequency of treatment administration	Once every 2 months	Once every 6 months	Weekly
Who administers the treatment	Administered by a healthcare practitioner in a healthcare setting	Administered by yourself or a trained caregiver at home	Administered by yourself or a trained caregiver at home
Pain	Mild pain at the site of injection	Moderate pain at the site of injection	No pain
Redness and/or swelling at the site of the injection	Injection can result in skin color changes (like redness, darkening, or a purple patch) and/or swelling lasting up to 10 days, roughly the size of a credit card 	Injection can result in skin color changes (like redness darkening or a purple patch) and/or swelling lasting 1–3 days, roughly the size of a credit card 	No redness and/or swelling
Nodule at the site of injection	50% experience nodules for 2–3 months 	20% experience nodules for 6 months 	No nodules
General side effects	5% chance	0% chance	0% chance

- Select restrictions were imposed to the design to ensure clinically realistic treatment profiles (e.g., IV could not be combined with “Administered by yourself” and when injections were selected “No redness and/or swelling” and “No nodules” were also part of choice cards).
- Step 2:** Participants who initially chose the oral option were subsequently asked to choose between the two LAI alternatives.
- The final survey included 16 choice tasks generated using a D-efficient fractional factorial experimental design to ensure statistical efficiency.
- A standardized vignette asked participants to assume they were currently receiving daily oral ART, ensuring a consistent baseline for all choices.
- Participants (≥18 years), diagnosed with HIV, on ART were recruited online and via healthcare practitioner (HCP) referrals.
- Demographic, socioeconomic, and clinical (e.g., fear of needles) information was collected during screening; participants completed the survey online.

Analysis

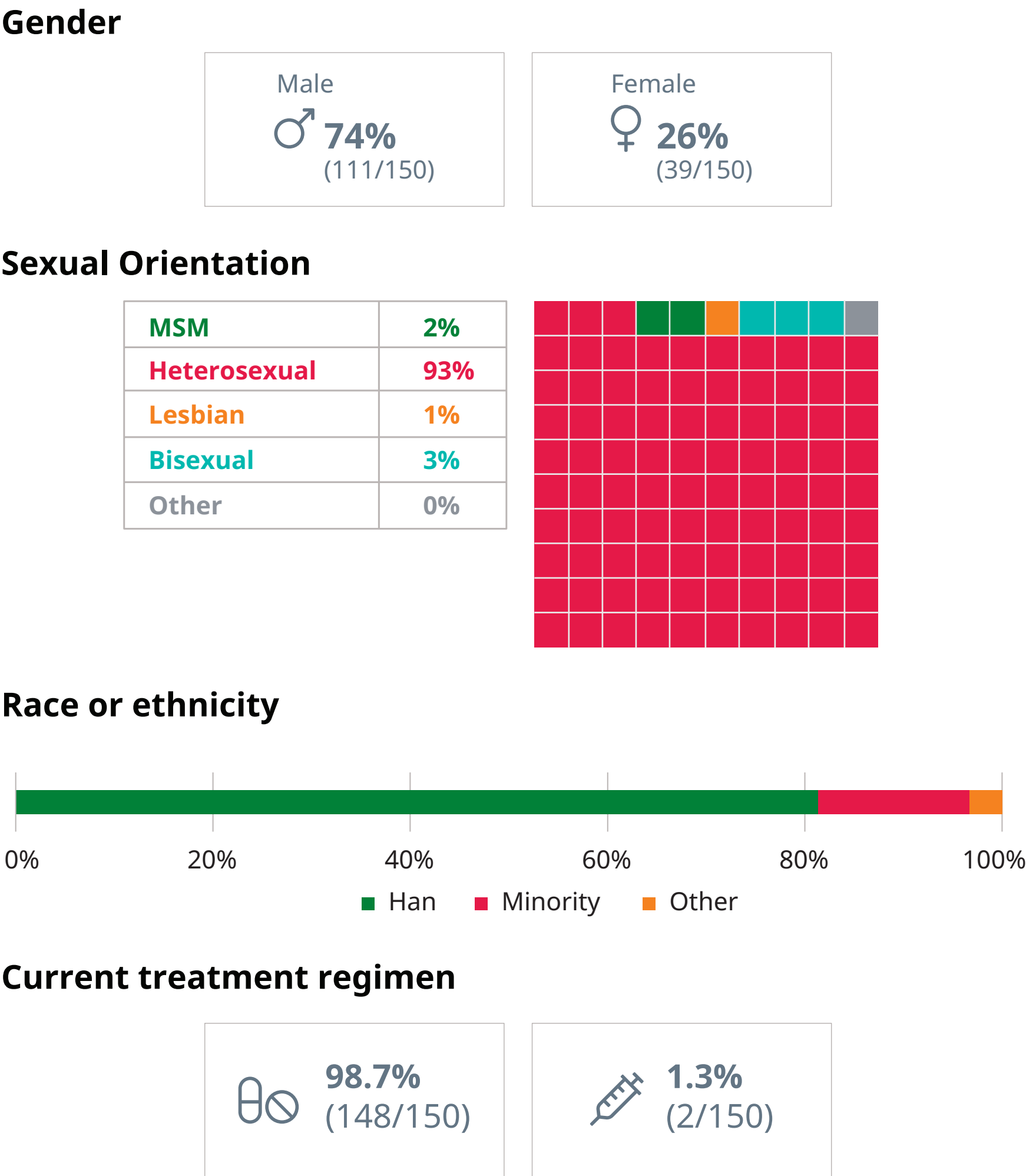
- Preference weights were estimated using a random parameter logit model.
- Effects coding was applied, where positive or negative coefficients indicated greater or lesser preference relative to the attributes mean level.
- Attribute importance scores were calculated to determine the relative contribution of each attribute to treatment choice.
- Demographic data and subgroup analyses explored heterogeneity by age and gender.

Results

Sociodemographic & Clinical Characteristics

- A total of 150 people with HIV participated (**Figure 2**).
 - The sample was mainly men (74%) with little diversity in sexual orientation, as most participants were heterosexual (93%).
 - 81.3% of the respondents were of Han background.
- Majority of participants were receiving daily oral pills/tablets for their HIV treatment (98.7%).
 - 62% of participants had never switched treatment in the past.
 - On a scale of 0–10, the most frequently reported level of needle fear was 0 (not at all afraid), selected by 27% of participants.

Figure 2. Sociodemographic & Clinical Characteristics



DCE Analysis Results

- The three most influential attributes were general SE, frequency of treatment administration, and mode of administration, collectively accounting for ~two-thirds of decision-making importance (**Figure 3**).
- When 0%, 5%, or 10% SE probability was matched between LAI and oral ART, LAI was preferred in 94.0%, 96.7%, and 97.2% of cases, respectively.
- Participants strongly preferred: Two SC injections, 6-month injection-interval, mild injection site pain, skin color changes and/or less severe swelling (coin-sized) lasting 1–3 days, nodules with 20% chance but lasting only 2–4 weeks or 2–3 months, and 0% SE probability (**Table 1**).

Figure 3. Relative Attribute Importance

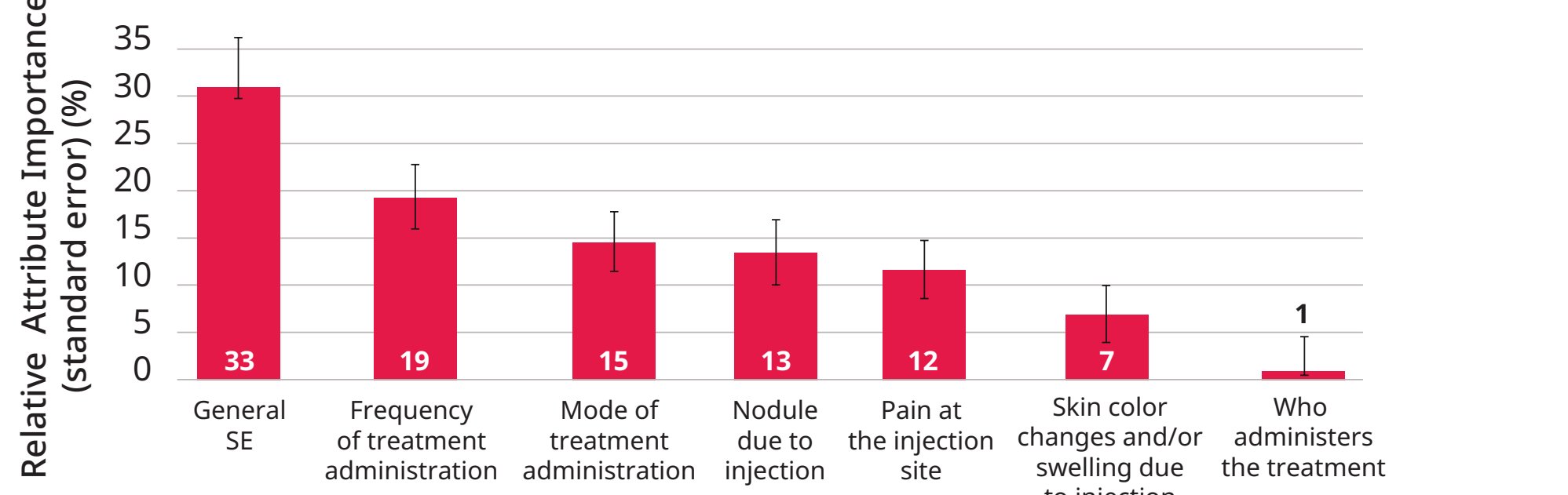
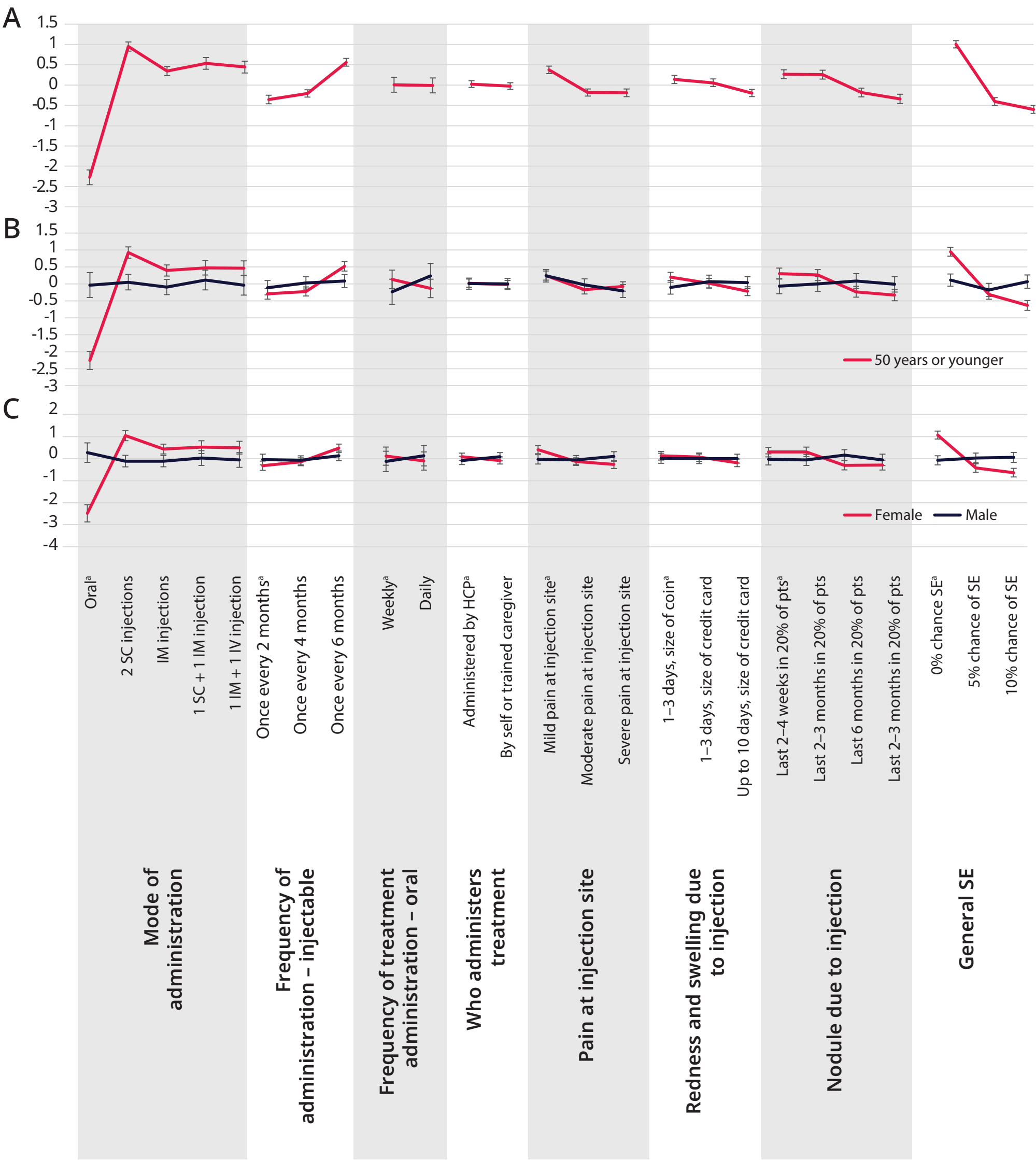


Table 1. Regression Coefficients from the Step 1 DCE Analyses

Attributes	Levels	Coefficient (standard error)
Mode of treatment administration	Oral (omitted level)	-2.272 (0.093)
	Two SC injections	0.949 (0.058)
	Two IM injections	0.345 (0.057)
	One SC and one IM injections	0.534 (0.074)
	One IM and one IV injections	0.444 (0.074)
Frequency of treatment administration – injection	Once every 2 months (omitted level)	-0.356 (0.054)
	Once every 4 months	-0.206 (0.046)
	Once every 6 months	0.562 (0.049)
Frequency of treatment administration – oral	Weekly (omitted level)	0.008 (0.094)
	Daily	-0.008 (0.094)
Who administers the treatment	Administered by an HCP (omitted level)	0.024 (0.042)
	Administered by yourself or a trained caregiver	-0.024 (0.042)
Pain at the injection site	Mild pain at the site of injection (omitted level)	0.375 (0.047)
	Moderate pain at the site of injection	-0.184 (0.045)
	Severe pain at the site of injection	-0.191 (0.048)
Redness and swelling due to injection	Redness and/or swelling lasting 1–3 days about the size of a coin (omitted level)	0.138 (0.051)
	Redness and/or swelling lasting 1–3 days about the size of a credit card	0.057 (0.049)
	Redness and/or swelling lasting up to 10 days about the size of a credit card	-0.195 (0.045)
Nodule due to injection	20% of patient experience nodules lasting 2–4 weeks (omitted level)	0.266 (0.056)
	20% of patient experience nodules lasting 2–3 months	0.257 (0.056)
	20% of patient experience nodules lasting 6 months	-0.183 (0.055)
	50% of patient experience nodules lasting 2–3 months	-0.340 (0.058)
General side effects	0% chance that you might experience SE (omitted level)	1.005 (0.046)
	5% chance that you might experience SE	-0.406 (0.049)
	10% chance that you might experience SE	-0.599 (0.050)

HCP, healthcare practitioner; IM, intramuscular; IV, intravenous; SC, subcutaneous; SE, side effects. Values shown in bold indicate statistical significance of P<0.05. Positive coefficients and green shaded boxes indicate higher preference relative to the attribute mean; negative coefficients and orange shaded boxes indicate dispreference.

Figure 4. Regression Coefficients From the DCE in Analyses of (A) Respondents Overall and Among Subgroups Based on (B) Age and (C) Gender



HCP, healthcare practitioner; IM, intramuscular; IV, intravenous; pts, patients; SC, subcutaneous; SE, side effects.
*Omitted level.

- In subgroup analyses, women and participants aged <50 years were more likely to prefer LAI options and 0% chance of SE. Overall, preference patterns remained consistent across subgroups (**Figure 4**).

Limitations

- The study sample may not be fully representative of the general population in China with HIV.
- The sample included a higher proportion of straight men than expected, consistent with underreporting of homosexuality in China⁵ and HIV transmission increasing more rapidly among the heterosexual population.⁶

Conclusions

- People living with HIV in China demonstrated a strong preference for LAI over oral ART, particularly when associated with lower SE burden and longer dosing intervals.
- These findings reinforce the importance of treatment choice and show that patients value innovative administration modalities beyond traditional oral therapy.
- Incorporating patient preference into clinical, regulatory, and reimbursement decision-making may help ensure access to treatment options that better reflect the diverse needs of people living with HIV and support broader adoption of person-centered HIV care.