

Cost Savings in Type 2 Diabetes Mellitus With Mid Mixture Insulin Analog Compared to Basal Insulin Analog Under Real-world Conditions in China



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BACKGROUND AND OBJECTIVE

- Chinese guideline recommends basal insulin or premixed insulin as insulin starters after failed oral antihyperglycemic medication (OAM) for the treatment of type 2 diabetes mellitus (T2DM).¹
- CLASSIC trial (NCT03018938) was a multicenter, open-label, randomized, parallel, pragmatic trial, which compared effectiveness and safety of add-on basal insulin analog (BI) and mid-mixture insulin analog (MMI) in Chinese patients with T2DM in a real-world setting.²
- At 48 weeks, MMI resulted in greater decrease in HbA1c from baseline compared to BI in CLASSIC trial.³
- This study aimed to compare the average daily cost of antidiabetic treatments in T2DM patients treated with MMI or BI in combination with OAMs in China.

METHODS

Study design

- Cost analysis was conducted based on clinical data from CLASSIC pragmatic trial and drug price in China.
- Clinical data included drug name, daily dose and treatment duration.
- Daily total medication cost (OAM & insulin), OAM cost, and insulin cost were calculated in Chinese Yuan (CNY), from the healthcare system perspective based on the retail price as of 2019.

Study population

- Patients randomized in the CLASSIC trial with complete records on antidiabetic medication during 48 weeks were included.
- Subgroup analysis included antidiabetic patients who continued planned insulin treatment till 48 weeks.

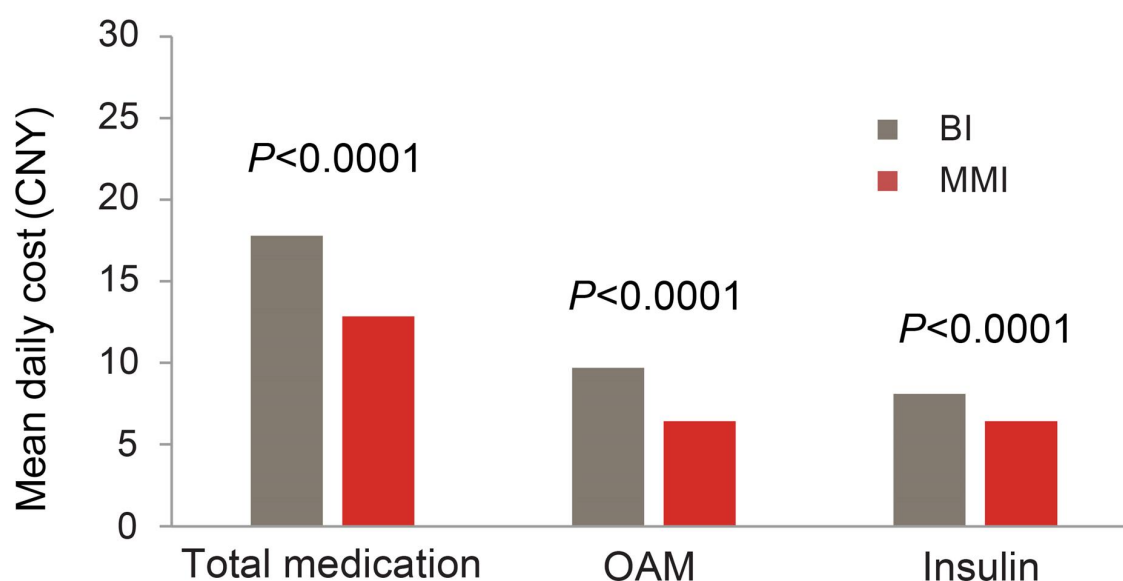
Statistical analysis

- Cost of medication per patient per day in BI and MI groups was compared by student's t-test with a two-tailed level of significance set at 0.05.

KEY RESULTS

Cost analysis in all eligible patients

Figure 1 The mean daily cost for all eligible patients during 48 weeks of treatment



Abbreviations: BI=basal insulin ; CNY = Chinese Yuan; MMI=mid-mixture insulin ; OAM=oral antihyperglycemic medication

Table 1 Average daily cost per patient per day for all eligible patients during 48 weeks

	Basal Insulin (N = 289)	Insulin mid mixture (N = 301)	P value
Cost of total medication (CNY)			
Mean ± SD	17.81 ± 7.07	12.86 ± 5.73	<.0001
Median (IQR)	16.58 (9.20)	11.66 (7.17)	
Cost of OAM (CNY)			
Mean ± SD	9.71 ± 6.32	6.43 ± 5.12	<.0001
Median (IQR)	9.20 (8.12)	5.46 (6.66)	
Cost of insulin (CNY)			
Mean ± SD	8.10 ± 2.95	6.44 ± 2.46	<.0001
Median (IQR)	7.83 (3.80)	6.22 (3.13)	

Abbreviations: SD = standard deviation; CNY = Chinese Yuan; IQR = interquartile range

Note : P-value was for differences between means

KEY RESULTS

- A total of 590 patients were included (289 BI [glargine or detemir, QD]; 301 MMI [lispro 50 or aspart 50, BID]).
- During 48 weeks of treatment, the mean daily cost of total medications, OAMs and insulin was 17.81 ± 7.07 CNY, 9.71 ± 6.32 CNY, 8.10 ± 2.95 CNY respectively in basal insulin group and 12.86 ± 5.73 CNY, 6.43 ± 5.16 CNY and 6.44 ± 2.46 CNY respectively in MMI ($P < 0.0001$) (Figure 1, Table 1).
- The mean daily cost of total medications, OAMs and insulin for patients on BI were 38.5%, 51.0% and 25.8% higher, respectively compared with patients on MMI.

Table 2 Average daily cost per patient per day for subgroup of patients during 48 weeks

	Basal Insulin (N = 254)	Insulin mid mixture (N = 250)	P value
Cost of total medication (CNY)			
Mean $\pm$ SD	18.15 ± 7.18	12.81 ± 5.61	$<.0001$
Median (IQR)	16.85 (9.09)	11.64 (6.99)	
Cost of OAM (CNY)			
Mean $\pm$ SD	9.92 ± 6.40	6.47 ± 5.12	$<.0001$
Median (IQR)	9.20 (7.67)	5.45 (6.38)	
Cost of insulin (CNY)			
Mean $\pm$ SD	8.23 ± 2.99	6.33 ± 2.14	$<.0001$
Median (IQR)	7.94 (3.96)	6.33 (3.08)	

Abbreviations: SD = standard deviation; CNY = Chinese Yuan; IQR = interquartile range.

Note : P-value was for differences between means

Cost analysis in subgroup of patients staying on planned insulin treatment during 48 weeks

- A total of 504 patients were included in subgroup analysis (254 BI; 250 MMI). Those patients were treated with planned insulin treatment continuously during 48 weeks, without insulin treatment change or discontinuation.
- In subgroup, the mean daily cost of total medications, OAMs and insulin were 18.15 ± 7.18 CNY, 9.92 ± 6.40 CNY, 8.23 ± 2.99 CNY respectively in basal insulin group and 12.81 ± 5.60 CNY, 6.47 ± 5.12 CNY and 6.33 ± 2.14 CNY respectively in MMI during 48 weeks of treatment ($P < 0.0001$) (Table 2).
- The mean daily cost of total medications, OAMs and insulin were 41.7% , 53.3%, and 30.0% higher for patients on BI than MMI respectively.

CONCLUSION AND REFERENCES

Conclusions

- Patients treated with MMI regimen had lower average daily cost compared to patients treated with BI regimen in real-world settings in China, regardless of treatment change.
- Hence, for the treatment of patients with T2DM in real-world settings, MMI provides better glycemic control with lower cost than BI.

References

- 1.Chinese Diabetes Society. Chinese guideline for the prevention and treatment of type 2 diabetes mellitus (2017 edition). Chin J Diabetes Mellitus. 2018;10(1):4–67.
- 2.Zhang X, Ma Y, Chen H, et al: A pragmatic study of mid-mixture insulin and basal insulin treatment in patients with type 2 diabetes uncontrolled with oral antihyperglycaemic medications: A lesson from real-world experience. Diabetes Obes Metab 2020; 22: 1436–1442.
- 3.Chen L, Chen H, Du L, et al: 2190-PUB: A Pragmatic Study of Basal and Mid-Mixture Insulins as Insulin Starters in Chinese Patients with T2DM. Diabetes 2020; 69.

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