Preference for Weight Gain Compared with other Antiretroviral Therapy Side Effects among People Living with HIV: a Discrete Choice Experiment

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Background

Antiretroviral (ARV) side effects are a critical determinant of adherence among people living with HIV (PLWH). Integrase Strand Transfer Inhibitors (INSTIs) are the most commonly used ARV but have recently been reported to cause weight gain. We aimed to determine the relative importance of weight gain compared to other ARV side effects for PLWH.

Methodology

We conducted a discrete choice experiment (DCE) survey to explore how PLWH trade-off between eight short-term side effects (i.e. weight gain, nausea, headache, dizziness, diarrhoea, depression, trouble sleeping and concentrating) and four long-term side effects (i.e. long-term weight gain, risks of heart attack, kidney problems and bone fracture). We sent a link to an anonymous survey through short message service (SMS) and postcards to PLWH attending Melbourne Sexual Health Centre (MSHC) and the Alfred Hospital in Victoria, Australia, between July and August 2021. The choice data were analysed using random parameter logit (RPL) and latent class (LCM) models.

Results

A total of 335 respondents were included: most were male (88.1%), and the mean age was 49.7 years. In the RPL analyses, PLWH ranked the relative importance of short-term ARV side effects as follows (from most important to least important): depression, weight gain, headache, diarrhoea, sleep, nausea, fatigue; and for long-term side effects as follows: risk of heart attack, kidney problem, weight gain and risk of bone fracture. In the LCM analyses, 23.9% were most sensitive to short-term weight gain (Figure 1), while 16.0% were most sensitive to long-term weight gain (Figure 2).

Conclusions

Weight gain was the second most important short-term side effect and the third most important long-term side effect in a cohort of Australian PLWH. However, weight gain was the most important side effect of ARV for a significant minority.

Figure 1. Relative importance of short-term side effects in three preference classes

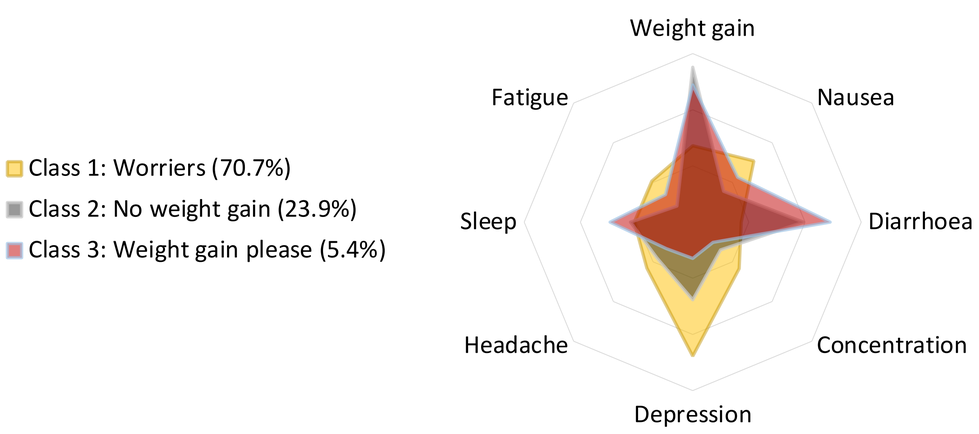
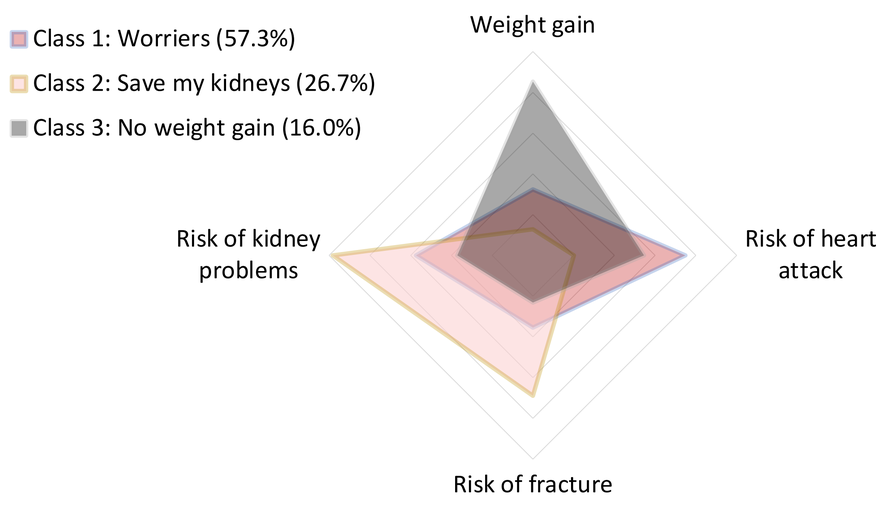


Figure 2. Relative importance of long-term side effects in three preference classes



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Example question: If you only had the choice between Medication A or Medication B with the following side effects, which would you prefer?

	Medication A	Medication B
Weight gain	You gain an extra ten kg in the next five years	You gain an extra five kg in the next five years
Risk of heart attack	You have a slightly higher risk compared to people your age	Same as people your age
Risk of a broken bone	You have a slightly higher risk compared to people your age	You have a much higher risk compared to people your age
Risk of kidneys not working normally	Same as people your age	You have a much higher risk compared to people your age

Table 1. Relative importance of short-term side effects for PLWH (RPL)

Short-term side effect	Relative importance	Severity level	Coefficient	SE
Depression	0·17	Feel depressed 4-5 days weekly	-1·36***	0·30
		Feel depressed 1-2 days weekly	0·11	0·12
		No depression	1·25***	0·28
Weight gain	0·16	Extra 10 kg in 12 months	-1·21***	0·28
		Extra 5 kg in 12 months	-0·03	0·12
		No change	1·24***	0·29
Headache	0·13	Headache 3 hours daily	-1·12***	0·25
		Headache 1 hour daily	0·23*	0·13
		No headaches	0·89***	0·21
Diarrhoea	0·13	3 loose bowel movements per day	-1·07***	0·26
		1 loose bowel movement per day	0·16	0·14
		No diarrhoea	0·91***	0·21
Sleep	0·11	Trouble sleeping 4-5 nights weekly	-0·80***	0·20
		Trouble sleeping 1-2 nights weekly	-0·06	0·12
		No problem sleeping	0·86***	0·20
Nausea	0·10	Nausea 3 hours daily	-0·88***	0·21
		Nausea 1 hour daily	0·20	0·12
		No nausea	0·68***	0·19
Fatigue	0·10	Feel fatigued 4-5 days weekly	-0·71***	0·18
		Feel fatigued 1-2 days weekly	-0·09	0·11
		No fatigue	0·80***	0·20
Concentration	0·08	Trouble concentrating 3 hours daily	-0·66***	0·20
		Trouble concentrating 1 hour daily	0·12	0·14
		No trouble concentrating	0·54***	0·16

LL -924.20, AIC/N = 1.051. Positive coefficient indicates respondents were less concerned about using medications causing that side effect. Negative coefficient indicated respondents were more concerned about using medications causing that side effect. The higher relative importance value indicates the more importance of that side effect for respondents. SE; Standard error, SD; Standard deviation, Kg; kilogram. LL; Log-likelihood function, AIC; Akaike information criterion. *** p-value <0.01, ** p-value <0.05, * p-value <0.10.

Table 2. Relative importance of long-term side effects for PLWH (RPL)

Long-term side effect	Relative importance	Severity level	Coefficient	SE
Risk of heart attack	0.33	Much higher risk compared to people your age	-3·93*	2·17
		Slightly higher risk compared to people your age	0·96	0·61
		Same as people your age	2·97*	1·65
Risk of kidney problems	0.30	Much higher risk compared to people your age	-3·50*	1·91
		Slightly higher risk compared to people your age	0·69	0·46
		Same as people your age	2·81*	1·57
Weight gain	0.20	Gain extra 10 kg in 5 years	-2·31**	1·29
		Gain extra 5 kg in 5 years	0·40	0·37
		No weight change	1·91*	1·05
Risk of fracture	0.17	Much higher risk compared to people your age	-1·97*	1·11
		Slightly higher risk compared to people your age	0·49	0·41
		Same as people your age	1·48*	0·84

LL = -349·56. AIC/N = 0·928. Positive coefficient indicates respondents were less concerned about using medications causing that side effect. Negative coefficient indicated respondents were more concerned about using medications causing that side effect. The higher relative importance value indicates the more importance of that side effect. C; coefficient, SE; Standard error, SD; Standard deviation, Kg; kilogram. LL; Log-likelihood function, AIC; Akaike information criterion. *** p-value <0·01, ** p-value <0·05, * p-value <0·10.