

A Comparison Of Self-reported Hearing Aid Ratings Between Patients Who Have Received Hearing Aids Through Seniors' Mobility Fund Funding And Those Who Have Self-paid For Hearing Aids

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Background

- Benefits of hearing aid use in the elderly are well documented
- Benefits seen in
 - **Cognitive performance** (Wingfield *et al.*, 2005).
 - **Dementia prevention** (Lin *et al.*, 2011)
 - **Depression prevention** (Cacciatore *et al.*, 1999)
 - **Increase in quality of life** (Kochkin & Rogin, 2000)
- In the 2007 MarkeTrak VII survey, 76% of respondents mentioned **financial constraints** as a barrier to hearing aid adoption (Kochkin, 2007)
 - Similar situation in Singapore?



- **Seniors' Mobility Fund (SMF)** provides a subsidy of up to S\$2700 for the purchase of a pair of hearing aids
- With the SMF being funded by public money, it has to be cost effective to be justified
- Evaluation and improvement of the SMF funding scheme is important, especially with Singapore's ageing population
- Good ratings from subsidised patients would be a sign that the subsidy scheme is working well



Aims

- Determine outcome ratings for the first time hearing aid users
- Investigate if outcome ratings differ between subsidised and self-paying hearing aid users
- Examine the relationship between subsidy status and different socio-demographic factors



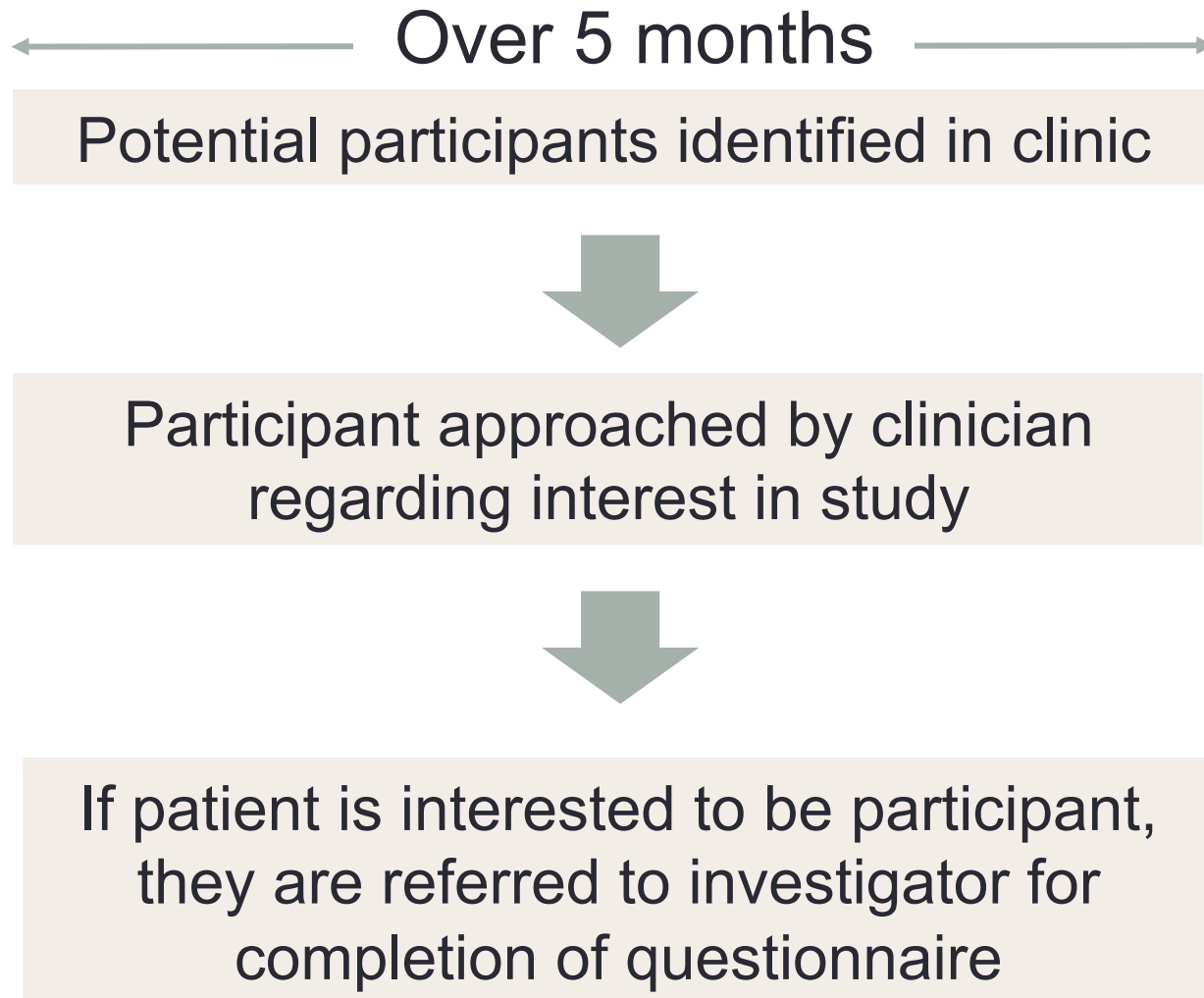
Hypothesis

- Patients who have self-paid for hearing aids will have a more positive outcome than patients who were subsidised
- Overall outcome ratings in the Singaporean population will be similar to other populations



METHODS & MATERIALS

Procedure



Recruitment Criteria

- First time hearing aid user
- Aged 60 years and above
- Within one to three months of hearing aid fitting

- Exclusion criteria
 - Patients who are unable to communicate their intent to the investigator or caretaker
 - Eg. Patients with dementia

International Outcome Inventory for Hearing Aids (IOI-HA)

- 5 point questionnaire covering 7 outcome domains of hearing aid fitting.
- Outcomes measured:
 1. Daily use
 2. Benefit
 3. Residual Activity Limitations
 4. Satisfaction
 5. Residual Participation Restrictions
 6. Impact on Others
 7. Quality of Life



Procedure

← Over 5 months →

Participants recruited from National University Hospital (NUH) audiology clinic

- First time hearing aid users
- Aged 60 years and older

Participants selected were **within 1 -3 months** of hearing aid fitting

- 5 point questionnaire covering 7 outcome domains of hearing aid fitting

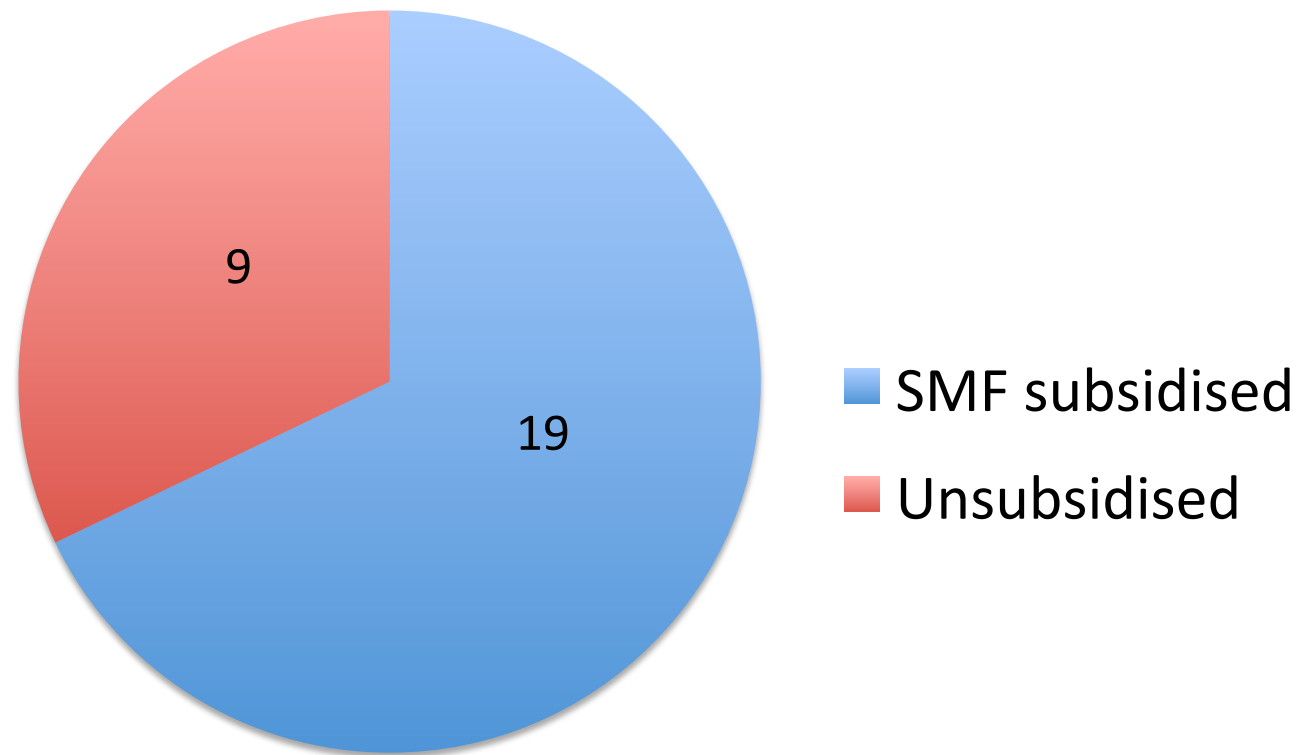
Outcomes measured:

Completion of International Outcome Inventory for Hearing Aids (**IOI-HA**) questionnaire by participant or investigator

1. Daily use
2. Benefit
3. Residual Activity Limitations
4. Satisfaction
5. Residual Participation Restrictions
6. Impact on Others
7. Quality of Life

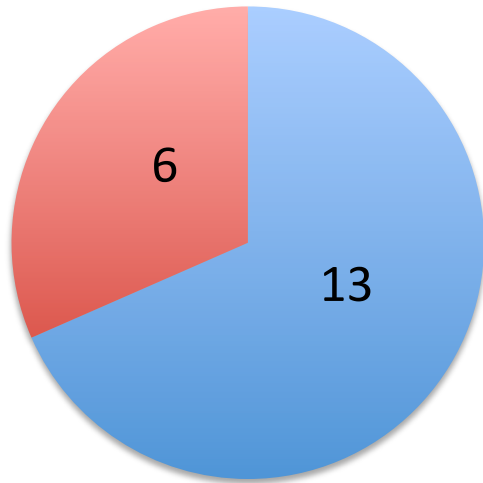
RESULTS AND DISCUSSION

Breakdown of subsidy status of participants



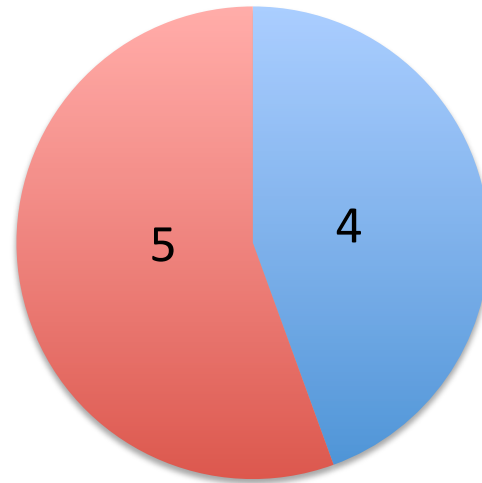
Gender

Subsidised



■ Male
■ Female

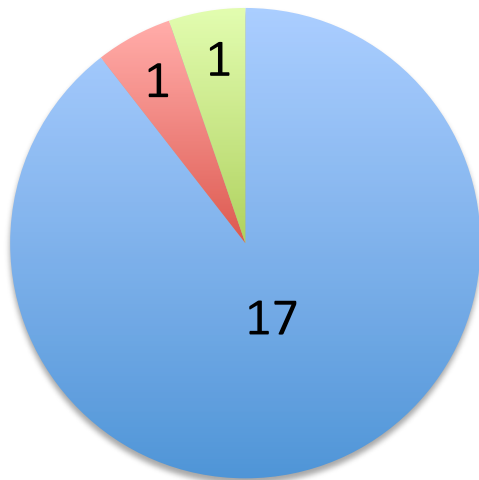
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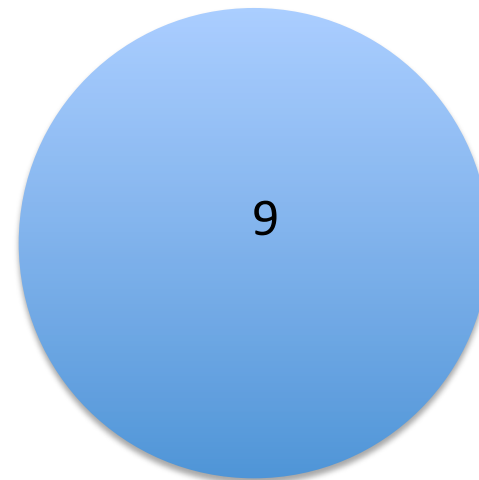
■ Male
■ Female

Race

Subsidised



Unsubsidised

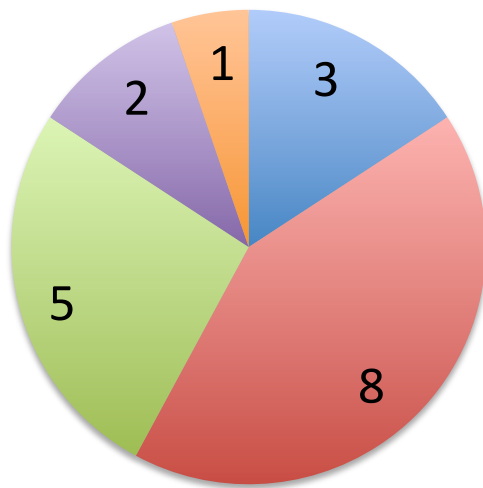


- Chinese
- Malay
- Indian

- Chinese

Education level

Subsidised



No formal education

PSLE

GCE O Level

GCE A Level

Diploma

University graduate

Unsubsidised



No formal education

PSLE

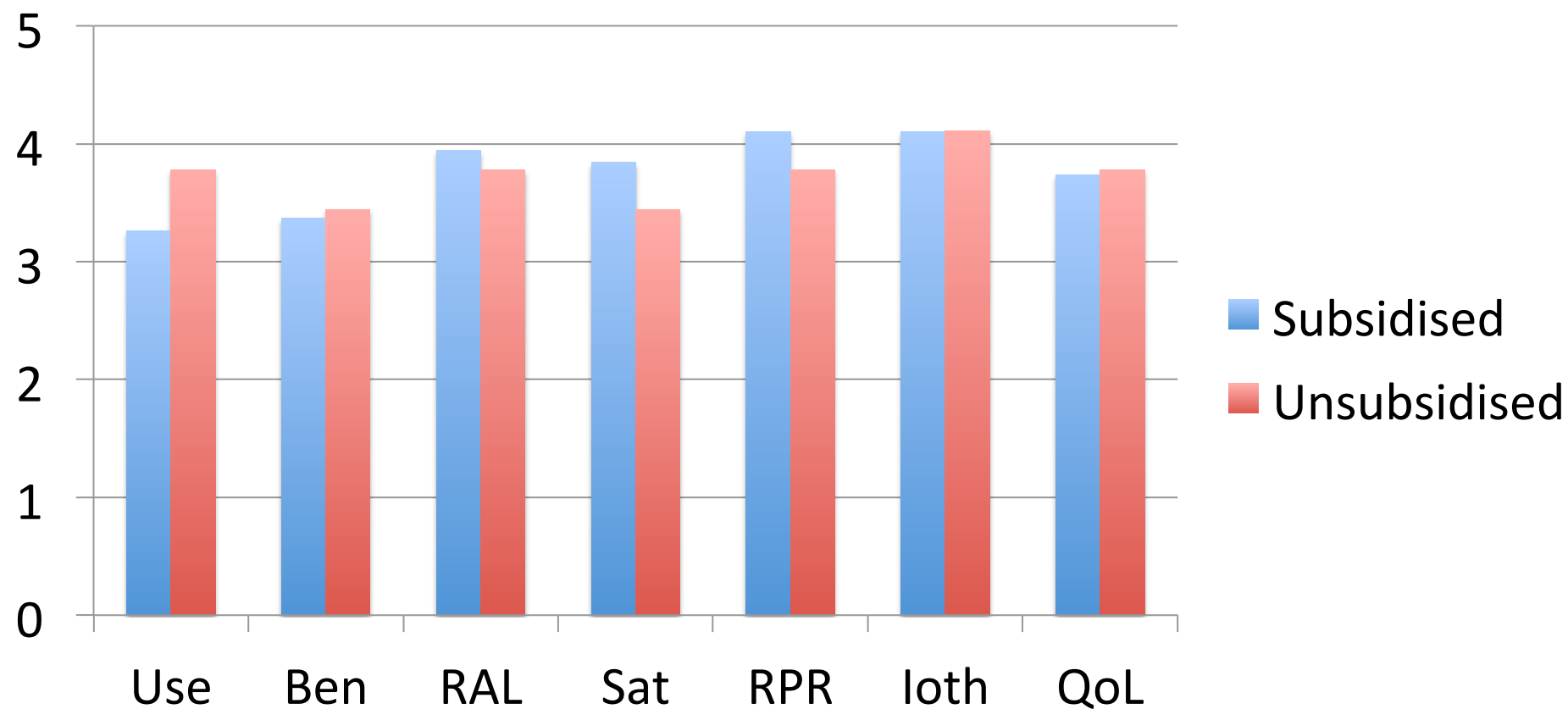
GCE O Level

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Diploma

University graduate

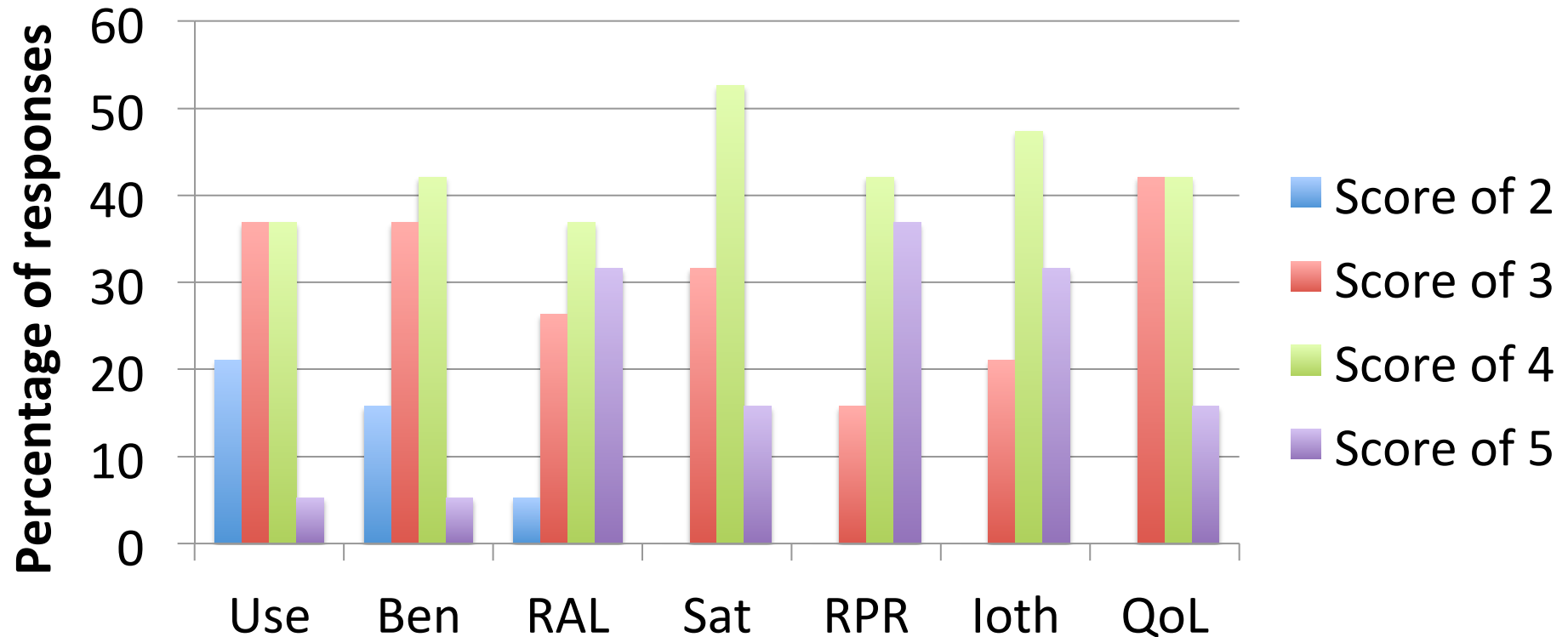
IOI-HA scores



- No statistically significant differences between subsidised and unsubsidised populations

Percentage of scores for each outcome

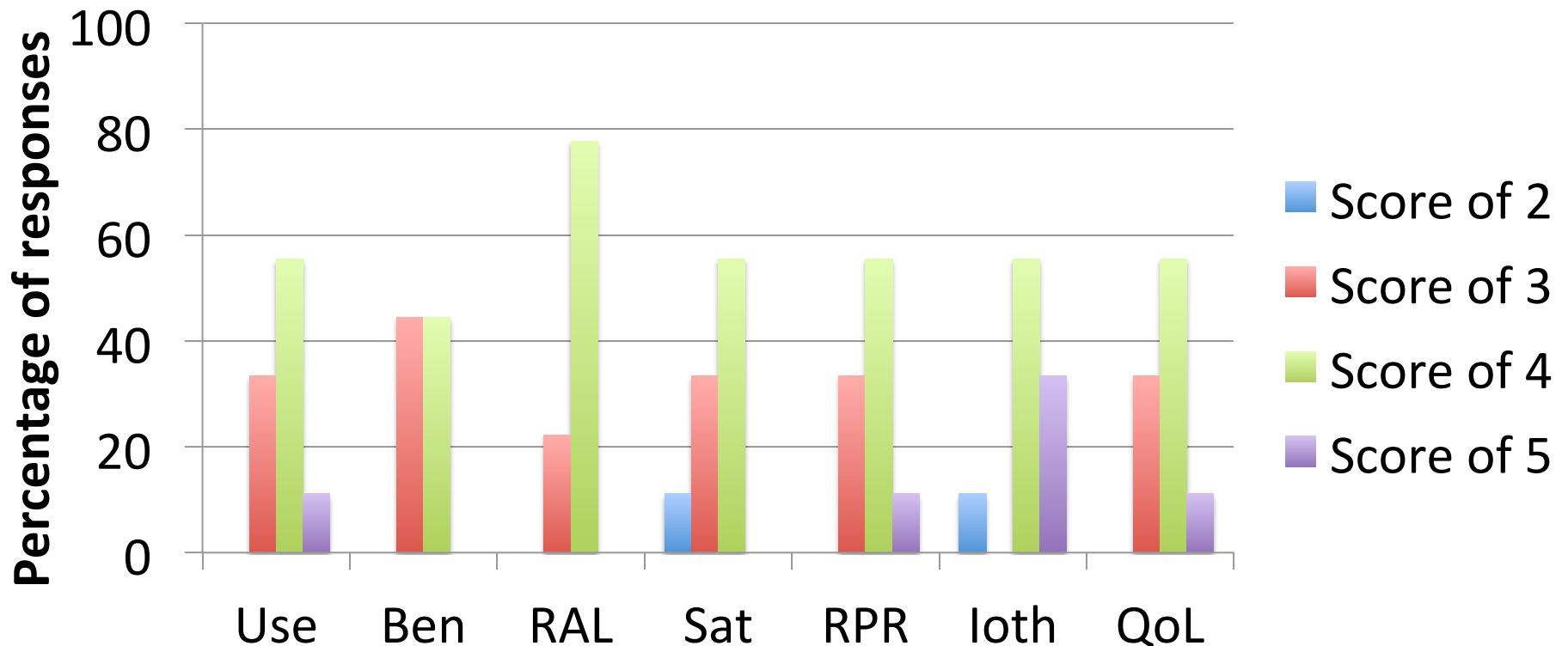
Subsidised



- Most common responses are 3 and 4

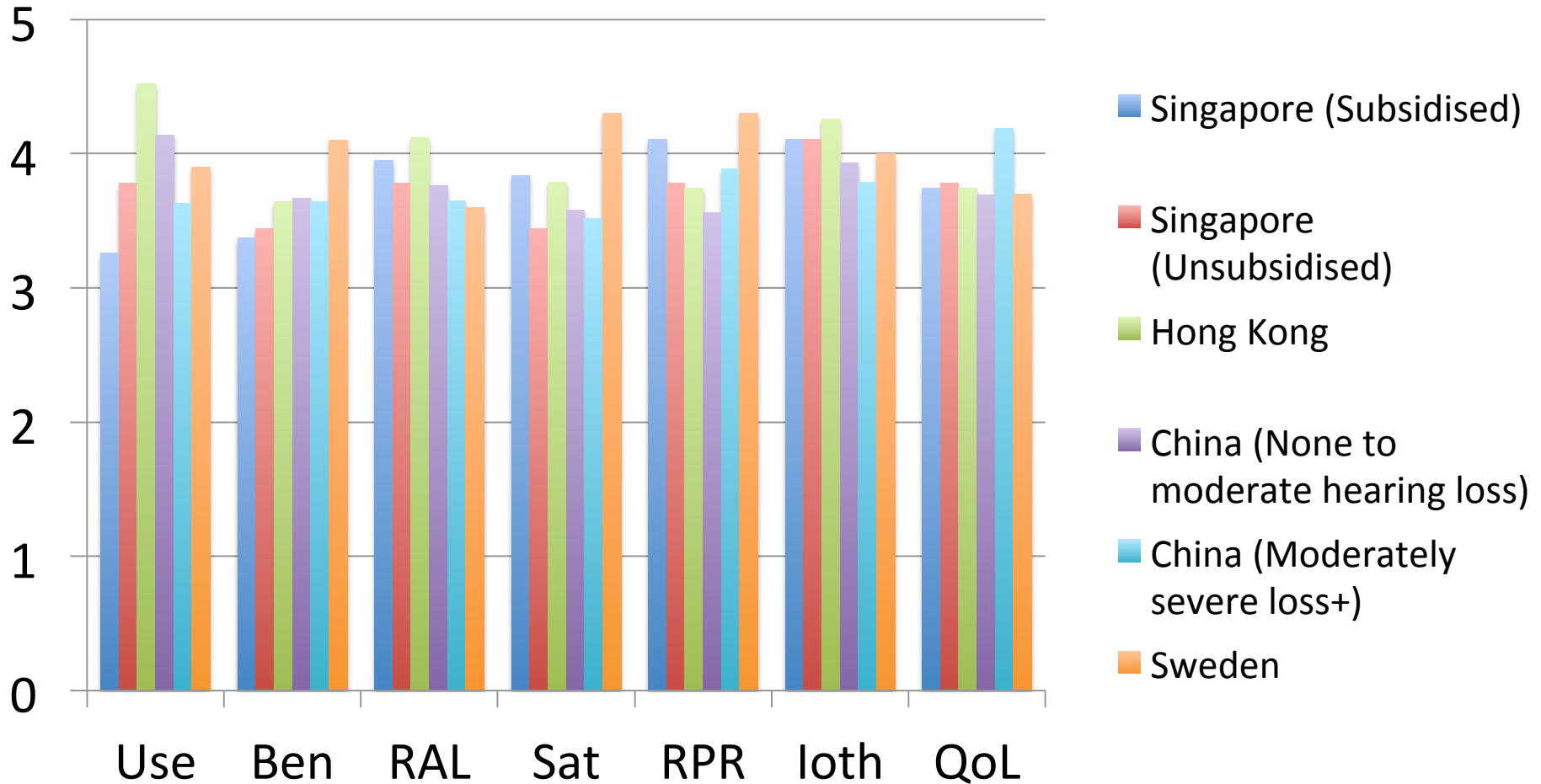
Percentage of scores for each outcome

Unsubsidised



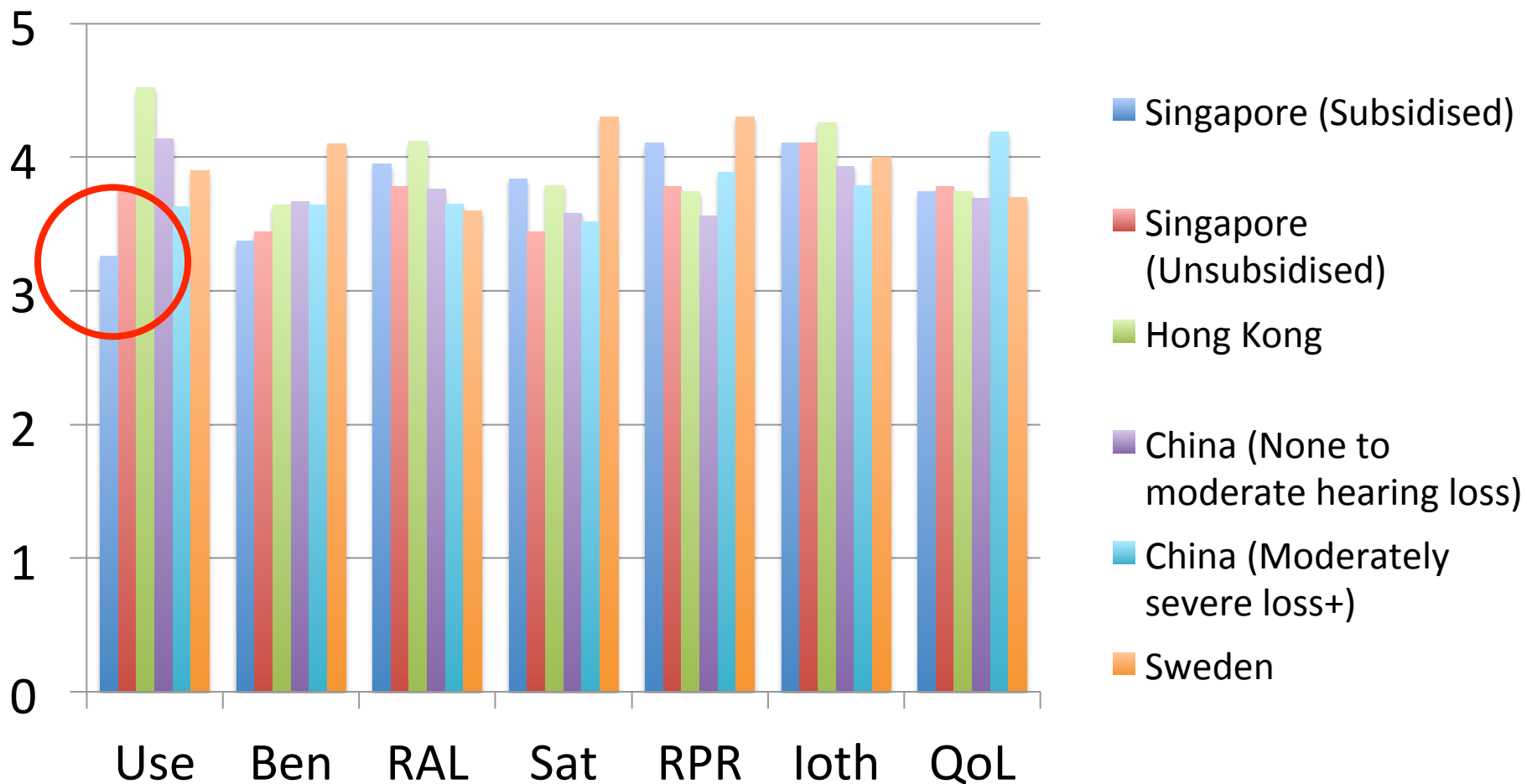
- Most common responses are 3 and 4

Comparison of scores from other studies



- Singapore has similar scores to populations from other countries.

Comparison of scores from other studies



- Of note is the “Use” category in the subsidised Singaporean population.
- 3.26 vs 4.52 when comparing Singapore to Hong Kong

Analysis of relationship between demographic factors and subsidy

Population Characteristic	p-value
Gender	0.81
Age	0.69
Ethnicity	0.60
Days after fitting	0.29
Education level	0.33
Number of hearing aids	0.12

- No statistically significant differences were found between the subsidised and unsubsidised group when any of the demographic factors were considered.

Summary of results and discussion

- Subsidised and unsubsidised participants have similar IOI-HA scores
- Score of three and four were found to be the most common
- Singapore has similar scores to other countries except for “Use” outcome
- No statistically significant changes were found when demographic factors were considered.



Implications

- No differences in hearing aid outcomes were observed when comparing between subsidised and unsubsidised participants.
- On the whole, most participants have relatively good outcomes, with scores of three and four being the most common.

Implications

- Comparisons with similar studies show that Singapore lags behind in certain areas, notably that of hearing aid use.
- There was no significant relationship between any of the demographic factors and subsidy status

Challenges

- Response bias
 - Phenomenon whereby “participants are often unwilling or unable to report accurately on sensitive topics for ego-defensive or impression management reasons.” (Fisher, 1993)
 - Do the reported ratings reflect the true ratings?
- Recruitment criteria resulted in a limited participant pool

Limitations

- Small sample size
 - Limits analysis and reduces statistical power
- Recruitment of one to three months post-fitting might not be representative of the final hearing aid outcome
 - Will outcome change over time? Will it improve or get worse?

Future directions

- Expansion of study to include more participants with more varied backgrounds
 - Including varied demographics, hearing aid use etc
- Expansion of study to other audiology clinics that SMF subsidy can be obtained
 - Comparison of outcomes can serve as a proxy to compare the hearing aid fitting protocols across clinics



Conclusions

- No differences in hearing aid outcomes were observed when comparing between subsidised and unsubsidised participants.
- Neither financial factors nor demographic factors were a determinant on the outcome ratings.

Conclusions

- A large scale, comprehensive study similar to MarkeTrak in the United States (Kochkin, 2003, 2007, 2010) and EuroTrak in Europe (Hougaard, Ruf, & Egger, 2013) should be conducted in Singapore, to obtain information on hearing aid motivation, acquisition, fitting and rehabilitation.

References

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