Assessing the financial impact of Cancer Drug List (CDL) implementation on patients receiving chemotherapy in Singapore

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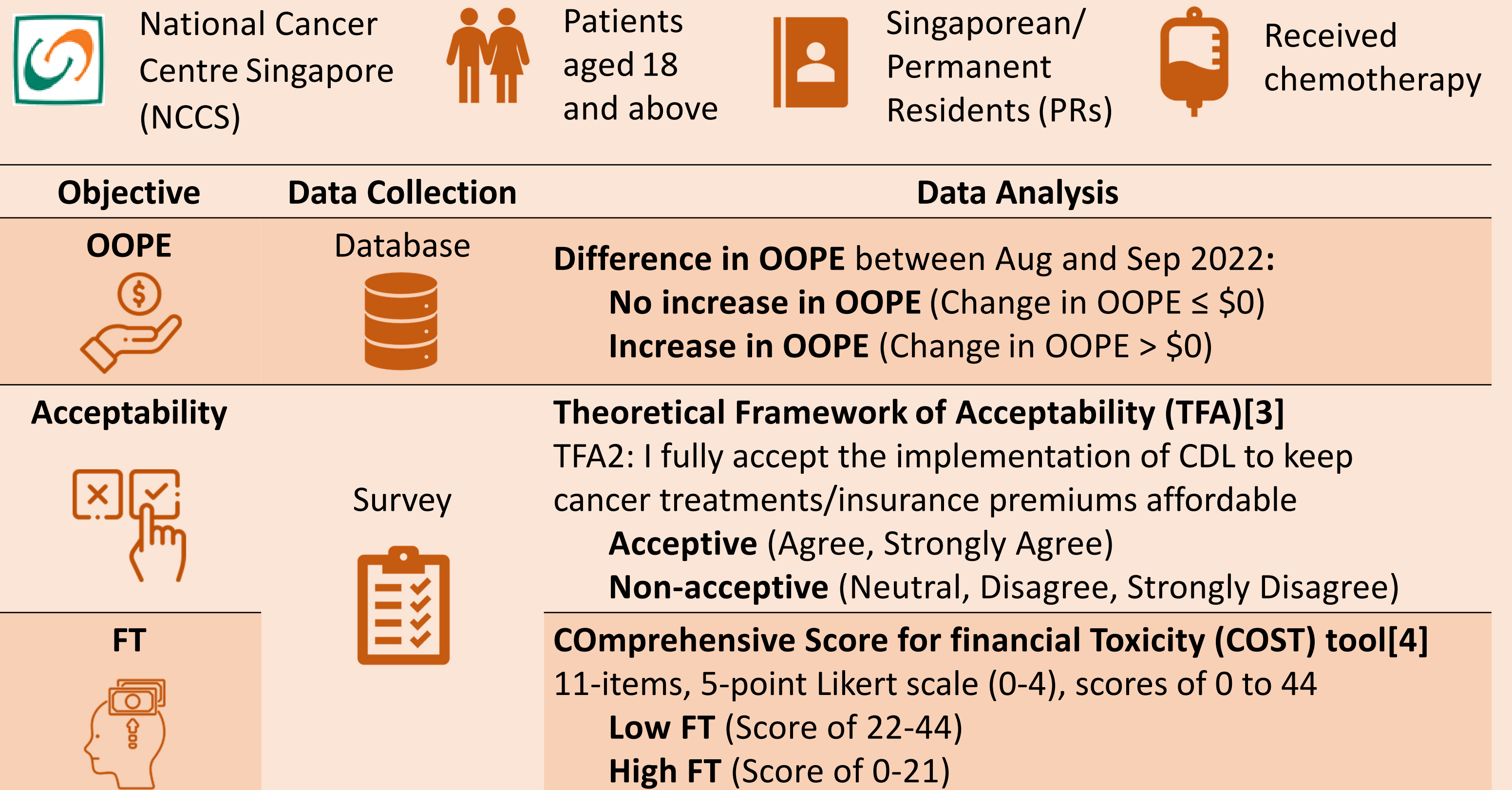
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INTRODUCTION

Cancer is a major burden of disease globally, with estimated global spending of USD$218 billion by 2023[1]
Since 1 September 2022, CDL was implemented to ensure long-term affordability of chemotherapy[2]

MOH ACE evaluates and recommends **cost-effective** cancer drugs into CDL → The government can **better negotiate for lower prices** from pharma companies → **Reduce patients' costs,** keep **insurance premiums affordable** in the long term

OBJECTIVES

1) Assess impact of CDL on patients' out-of-pocket expenses (OOPE)
2) Measure patients' acceptability and financial toxicity (FT) score post-implementation of CDL

METHODOLOGY

National Cancer Centre Singapore (NCCS) — Patients aged 18 and above — Singaporean/ Permanent Residents (PRs) — Received chemotherapy

Objective	Data Collection	Data Analysis
OOPE	Database	**Difference in OOPE** between Aug and Sep 2022: **No increase in OOPE** (Change in OOPE ≤ $0) **Increase in OOPE** (Change in OOPE > $0)
Acceptability	Survey	**Theoretical Framework of Acceptability (TFA)[3]** TFA2: I fully accept the implementation of CDL to keep cancer treatments/insurance premiums affordable **Acceptive** (Agree, Strongly Agree) **Non-acceptive** (Neutral, Disagree, Strongly Disagree)
FT		**COmprehensive Score for financial Toxicity (COST) tool[4]** 11-items, 5-point Likert scale (0-4), scores of 0 to 44 **Low FT** (Score of 22-44) **High FT** (Score of 0-21)

RESULTS & DISCUSSION

Patients analyzed = 314

Change in OOPE:
- **No increase** in OOPE: **249 (79.3%)**
  - **No change** in OOPE: 216 (68.8%)
  - **Decrease** in OOPE: 33 (10.5%)
    -$4540.64 — -$0.11
- **Increase** in OOPE: 65 (20.7%)
    +$0.01 — +$3663.49

OUT-OF-POCKET EXPENSES (OOPE)

CDL classification: Not on CDL (1.6%)
Reference: All drugs on CDL (98.4%)
OR: 17.1 (95%CI 2.26-130)

No. of chemotherapy used: > 1 agent (45.5%)
Reference: 1 agent (54.5%)
OR: 3.42 (95%CI:1.84-6.33)

Patient subsidy status: Subsidised (81.8%)
Reference: Private (18.2%)
OR: 3.33 (95%CI:1.21-9.14)

Patient citizenship: PRs (4.5%)
Reference: Singaporean (95.5%)
OR: 5.14 (95%CI:1.62-16.3)

Non-listed drugs are not subsidised, nor reimbursed by MediShield Life and MediSave[2]

MSHL and MSV claims limited to the drug with highest claim **when patient on multiple drugs**[2]

Subsidised patients more affected by alterations in public reimbursement (MSHL and MSV claim limits)
- Unlike private patients who are more likely insured with IP with additional coverage

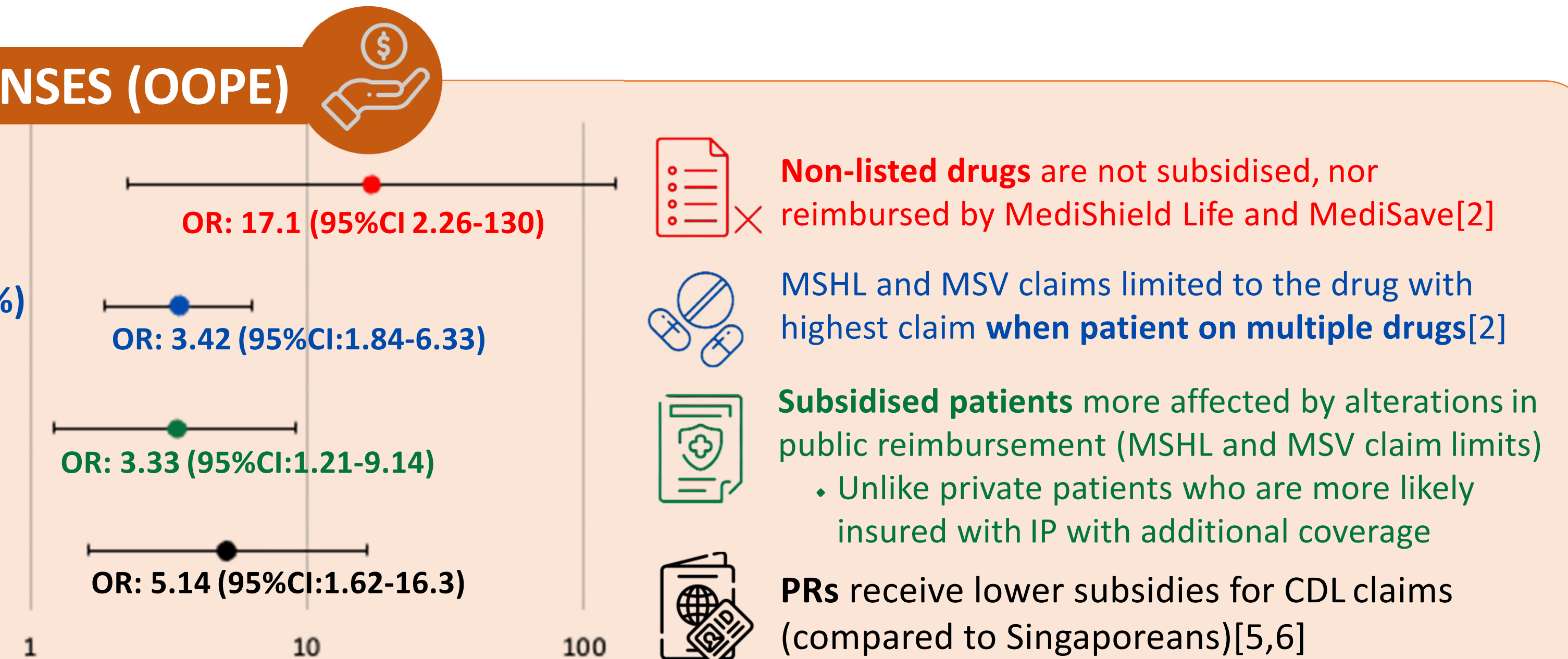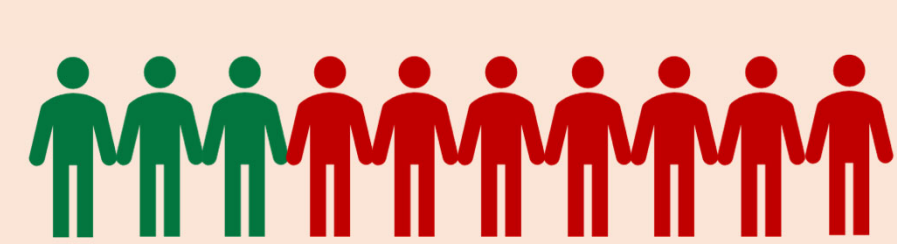PRs receive lower subsidies for CDL claims (compared to Singaporeans)[5,6]

Fig 1. Forest plot of adjusted odds ratio for factors associated with an increase in OOPE

AWARENESS OF CDL

Patients surveyed = 230

63 (27.4%) aware of CDL

Patients aware of CDL are more likely to be
- **< 65 years old** (74.6%)
- **Chinese** (93.7%)
- have at least **pre-university education** (57.1%)
- use **third-party reimbursement** for their bills (69.8%)

Third party reimbursement: integrated shield plans (IP), company insurance or, medical claims pro-ration system (MCPS)

ACCEPTABILITY

Acceptive: 39 (61.9%)   Non-acceptive: 24 (38.1%)

Patient FT category: low FT (38.1%)
Reference: high FT (61.9%)
OR: 9.42 (95%CI:2.16-41.0)

Patients experiencing **low FT likely to accept CDL's implementation**
- Patients **acceptive** of the scheme likely to have benefitted or find it beneficial

Fig 2.Plot of adjusted odds ratio for factors associated with acceptive of CDL
Adjusted for factors with p <0.1: age, marital status, employment and third-party reimbursement

FINANCIAL TOXICITY (FT)

Low FT: 109 (47.4%)   **High FT: 121 (52.6%)**

Education level: up to secondary (61.3%)
Reference: Pre-university and above (38.7%)
OR: 2.28 (95%CI:1.29-4.04)

Patient age: < 65 years old (55.7%)
Reference: ≥ 65 years old (44.3%)
OR: 2.03 (95%CI:1.16-3.55)

Lower education linked with poorer health and financial literacy → greater financial burden in cancer patients [7]

Younger patients may receive more chemotherapies[8], increasing their OOPE
- Older patients enjoy more subsidies: Merdeka & Pioneer Generation [9,10]

Fig 3. Forest plot of adjusted odds ratio for factors associated with high FT
Adjusted for factors with p <0.1: targeted therapy

CONCLUSION

This study has provided some headway for us to understand our population and may serve as a reference for policymakers to grasp patients' needs and aptly channel resources to ensure affordable treatment, acceptability and low FT

Targeted interventions can be considered to improve CDL's financial impact and awareness of CDL

- **Revise claim limits and safety net schemes for patients at risk of high OOPE** (e.g. patients who are younger, on multiple anti-cancer agents)
- **Enhance public education of CDL,** especially for the elderly and patients with lower education
- **Improve patient's health literacy,** to know where/when to seek financial assistance
  - Personalised financial counselling

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