Informal caregiving time and its cost in context of older Singaporeans receiving human assistance with their daily activities

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What about the Caregiver?
Findings from the baseline wave of a longitudinal study of family caregivers of older Singaporeans
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Background

• A strong preference for family-based or informal care over formal care in societies like Singapore\(^1\)
  • Cultural norms and values
  • Government policies and programmes
  • Lower financial costs
• With rapid population ageing in Singapore, informal caregivers’ importance will increase
• Informal caregivers contribute substantially to the social and health care system

Background

• In the informal caregivers’ absence, the need to substitute with formal care workers and services would overwhelm a country’s health care and social services budget.

• Informal caregiving hours and costs found to be of significant value in Western countries:
  • U.S., 2017: Approximately 41 million informal caregivers provided an estimated 34 billion hours of care, worth US$470 billion
  • UK, 2014: For people with dementia, the total cost of informal care is £11.6 billion
  • Highlights the importance of having informal caregivers that are well-supported

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Background ...

- Little is known about the monetary value of informal caregiving in Singapore
- Findings from existing research in Singapore
  - Focused on older adults with specific health conditions
    - Cost of informal caregiving increased with severity of dementia\(^4\)-\(^6\)
    - Costs were higher for older adults who did not receive care from a foreign domestic worker irrespective of severity\(^4\)-\(^5\)

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Aims

1. Quantify the amount of caregiving time provided by primary and secondary informal caregivers of Singaporeans aged ≥75 years receiving human assistance with their daily activities

2. Calculate the monetary value of the informal caregiving time
Method: Proxy Good Method (PGM) ...

- Data from the baseline wave of the TraCE study on 278 care-recipient/caregiver (CR/CG) dyads were used.

- Definition: PGM values time spent on caregiving at the labour market price of a close substitute.
Method: Proxy Good Method (PGM) ...

1) Time spent on caregiving activities was ascertained (self-reported):
   • Helping care-recipient (CR) perform basic activities of daily living (ADLs)
   • Helping CR perform instrumental ADLs (IADLs)
   • Supporting the CR’s healthcare-services use
   • Other caregiving-related activities

   • Recall method used – caregiver was asked to specify the time spent for specific care activities and tasks during a specific timeframe
     • E.g. for ADLs - “How many hours in a typical week do you spend helping (CR) perform the activities we have just discussed: take a bath/shower; dress up; walk around the house; stand up from or sit down on a bed/chair; use the sitting toilet; eat?”
Method: Proxy Good Method (PGM) ...3

2) Time spent on each caregiving activity was added up to arrive at the total time spent on caregiving per (typical) week

- Weekly number of caregiving hours was limited to a maximum of 112 hours a week (16 hours/day), assuming 8 hours/day for the caregiver to rest and for other non-caregiving related activities\(^7\)-\(^8\)


3) The price of a suitable market substitute was ascertained

- 2019 median gross monthly income of a full-time worker in the Health & Social Services industry\(^9\) used as the middle-range estimate
  - Middle estimate: $22.02/hour

- Sensitivity analyses for conservative and generous cost estimates
  - Conservative estimate: $20.71/hour
  - Generous estimate: $27.61/hour

\(^9\)Comprehensive Labour Force Survey, Manpower Research & Statistics Department, MOM
4) The annual cost of informal caregiving time was calculated
   
   • Assumes that informal care is provided throughout the year

Annual cost of caregiving time =

Mean caregiving hours per week $\times$ (hourly cost of the median gross income of a full-time Health and Social Services worker in Singapore $\times$ 52 weeks)
Defining “Caregivers”

**PRIMARY**
Main caregivers providing care

- **Informal**
  - Unpaid caregivers
  - E.g. Children of CR

- **Formal**
  - Paid caregivers
  - E.g. Nursing home staff

**SECONDARY**
Caregivers playing a supporting role

- **Informal**
  - Unpaid caregivers
  - E.g. Family members or close friends supporting the primary informal caregiver

- **Formal**
  - Paid caregivers
  - E.g. Foreign Domestic Workers (FDWs)
Results: Caregiving time ...

Table 1. Caregiving hours per week, by caregiver type

<table>
<thead>
<tr>
<th>Caregiver Type</th>
<th>N (%)</th>
<th>Mean (SD)</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Median (IQR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary informal CG</td>
<td>278 (100%)</td>
<td>29.3 (28.3)</td>
<td>0</td>
<td>112</td>
<td>19.7 (31)</td>
</tr>
<tr>
<td>Secondary informal CGs</td>
<td>140 (50.4%)</td>
<td>13.3 (19.9)</td>
<td>0.1</td>
<td>112</td>
<td>8 (11)</td>
</tr>
<tr>
<td>All informal CGs</td>
<td>278 (100%)</td>
<td>36.0 (34.7)</td>
<td>0</td>
<td>224</td>
<td>27.3 (30)</td>
</tr>
<tr>
<td>FDWs</td>
<td>134 (48.2%)</td>
<td>42.1 (32.7)</td>
<td>0.5</td>
<td>112</td>
<td>32.8 (40.5)</td>
</tr>
<tr>
<td>All informal CGs and FDWs</td>
<td>278 (100%)</td>
<td>56.7 (49.5)</td>
<td>0.5</td>
<td>308.6</td>
<td>40 (53)</td>
</tr>
</tbody>
</table>

Note. CG = Caregiver; FDW = foreign domestic worker; IQR = interquartile range; SD = standard deviation.

a The number and proportion of care-recipients receiving care from the specified type of caregiver.
Results: Caregiving time ...2

Table 2. Caregiving hours per week for each caregiving activity, by caregiver type

<table>
<thead>
<tr>
<th>CG Type a</th>
<th>Helping CR with ADLs (SD)</th>
<th>Helping CR with IADLs (SD)</th>
<th>Supporting CR’s healthcare service use (SD)</th>
<th>Other caregiving-related activities (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary informal CG (N = 278)</td>
<td>5.2 (11.0)</td>
<td>10.3 (13.3)</td>
<td>2.5 (3.8)</td>
<td>11.3 (14.6)</td>
</tr>
<tr>
<td>Secondary informal CGs (N = 140)</td>
<td>0.8 (3.9)</td>
<td>2.1 (5.7)</td>
<td>1.1 (3.8)</td>
<td>2.7 (6.0)</td>
</tr>
<tr>
<td>All informal CGs (N = 278)</td>
<td>6.0 (12.6)</td>
<td>12.4 (14.9)</td>
<td>3.6 (5.4)</td>
<td>14.0 (16.7)</td>
</tr>
<tr>
<td>FDWs (N = 134)</td>
<td>15.7 (20.2)</td>
<td>19.1 (18.5)</td>
<td>3.2 (5.9)</td>
<td>10.8 (17.6)</td>
</tr>
<tr>
<td>All informal CGs and FDWs (N = 278)</td>
<td>13.3 (21.8)</td>
<td>20.8 (19.4)</td>
<td>4.8 (6.7)</td>
<td>17.8 (21.9)</td>
</tr>
</tbody>
</table>

Note. CG = Caregiver; CR = Care-recipient; FDW = foreign domestic worker; SD = standard deviation.

a Number in parenthesis indicates the number of care-recipients receiving care from the specified type of caregiver.
## Results: Cost of informal caregiving time

Table 3. Annual cost of informal caregiving time, by caregiver type

<table>
<thead>
<tr>
<th>CG Type</th>
<th>N</th>
<th>Mean caregiving hours per week (SD)</th>
<th>Annual cost (^b) – Middle estimate ($)</th>
<th>Annual cost (^b) – Conservative estimate ($)</th>
<th>Annual cost (^b) – Generous estimate ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary informal CG</td>
<td>278</td>
<td>29.3 (28.3)</td>
<td>33,550</td>
<td>31,554</td>
<td>42,067</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2,796/month</td>
<td>2,629/month</td>
<td>3,506/month</td>
</tr>
<tr>
<td>Secondary informal CGs</td>
<td>140</td>
<td>13.3 (19.9)</td>
<td>15,229</td>
<td>14,323</td>
<td>19,095</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>1,269/month</td>
<td>1,194/month</td>
<td>1,591/month</td>
</tr>
<tr>
<td>All informal CGs</td>
<td>278</td>
<td>36.0 (34.7)</td>
<td>41,221</td>
<td>38,769</td>
<td>51,686</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3,435/month</td>
<td>3,231/month</td>
<td>4,307/month</td>
</tr>
</tbody>
</table>

Note. CG = Caregiver; FDW = foreign domestic worker; SD = standard deviation.

\(^a\) The number of care-recipients receiving care from the specified type of caregiver

\(^b\) Annual cost of caregiving time = Mean caregiving hours per week \(X\) (hourly cost of the median gross income of a full-time Health and Social Services worker in Singapore \(x\) 52 weeks)
### Results: Cost of informal caregiving time ...

Table 4. National-level projection of the annual cost of informal caregiving time for older Singaporeans

<table>
<thead>
<tr>
<th>Age of care-recipients</th>
<th>Elderly resident population in the age range requiring human assistance with daily activities</th>
<th>CG Type</th>
<th>Middle estimate ($, billion)</th>
<th>Conservative estimate ($, billion)</th>
<th>Generous estimate ($, billion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 75 years</td>
<td>30.9% (^a) : 66,424 persons</td>
<td>Primary informal CGs</td>
<td>2.23</td>
<td>2.10</td>
<td>2.79</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Secondary informal CGs</td>
<td>0.51</td>
<td>0.48</td>
<td>0.64</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All informal CGs</td>
<td>2.74</td>
<td>2.58</td>
<td>3.43</td>
</tr>
<tr>
<td>≥ 60 years</td>
<td>13.7% (^a) : 123,162 persons</td>
<td>Primary informal CGs</td>
<td>4.13</td>
<td>3.89</td>
<td>5.18</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Secondary informal CGs</td>
<td>0.95</td>
<td>0.89</td>
<td>1.19</td>
</tr>
<tr>
<td></td>
<td></td>
<td>All informal CGs</td>
<td>5.08</td>
<td>4.78</td>
<td>6.37</td>
</tr>
</tbody>
</table>

Note. CG = Caregiver; FDW = foreign domestic worker.

Results: Cost of informal caregiving time ...

Table 5. Informal caregiving hours (from primary and secondary informal caregivers) and their annual cost, by care-recipient health status

<table>
<thead>
<tr>
<th>Care-recipient health status</th>
<th>N (%) a</th>
<th>Mean caregiving hours per week (SD)</th>
<th>Annual cost – Middle estimate ($)</th>
<th>Annual cost – Conservative estimate ($)</th>
<th>Annual cost – Generous estimate ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ADL limitations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>106 (38.1%)</td>
<td>28.6 (30.5)</td>
<td>32,748</td>
<td>30,800</td>
<td>41,062</td>
</tr>
<tr>
<td>1-2</td>
<td>53 (19.1%)</td>
<td>27.3 (23.1)</td>
<td>31,260</td>
<td>29,400</td>
<td>39,195</td>
</tr>
<tr>
<td>3 or more</td>
<td>119 (42.8%)</td>
<td>46.5 (39.7)</td>
<td>53,244</td>
<td>50,077</td>
<td>66,761</td>
</tr>
<tr>
<td>IADL limitations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>8 (2.9%)</td>
<td>15.9 (14.6)</td>
<td>18,206</td>
<td>17,123</td>
<td>22,828</td>
</tr>
<tr>
<td>1-2</td>
<td>79 (28.4%)</td>
<td>26.0 (24.3)</td>
<td>29,771</td>
<td>28,000</td>
<td>37,329</td>
</tr>
<tr>
<td>3 or more</td>
<td>191 (68.7%)</td>
<td>41.0 (37.8)</td>
<td>46,947</td>
<td>44,154</td>
<td>58,865</td>
</tr>
<tr>
<td>Dementia status</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not diagnosed</td>
<td>197 (70.9%)</td>
<td>33.5 (33.9)</td>
<td>38,359</td>
<td>36,077</td>
<td>48,097</td>
</tr>
<tr>
<td>Diagnosed</td>
<td>74 (26.6%)</td>
<td>41.9 (36.1)</td>
<td>47,977</td>
<td>45,123</td>
<td>60,157</td>
</tr>
</tbody>
</table>

Note. SD = standard deviation.

a Number in parenthesis indicates the number of care-recipients receiving care from the specified type of caregiver.
Discussion

• This analysis highlights the substantial time commitment towards care provision by informal caregivers and its monetary value

• Our findings are supported by existing research in Singapore and other countries
  • 36 hours of informal care (our analysis) versus 38 hours of informal care (The Survey On Informal Caregiving, 2011\textsuperscript{10})
  • National level estimates of the annual cost of informal caregiving comparable to other countries similar to Singapore

Discussion...

• Regardless of how the time and costs are expressed and calculated, the contribution of informal caregivers is significant.

• Estimated informal caregiving time and its cost will be helpful in informing social policy measures that aim to enhance caregiver support.

• Economic evaluations of models of care for older adults should include informal caregiving time and its cost.
Discussion ...

• Strengths
  1. Quantified the cost of informal caregiving time based on older adults who require human assistance with their daily activities rather than a specific health condition

• Limitations
  1. Initial estimates of median gross monthly income of a full-time worker in the Health & Social Services industry were used and are in the process of getting more specific estimates
  2. PGM has its own limitations e.g. overestimation of the caregiving time also known as problem of “joint production”

• Costs of formal care can be considered to better understand the overall cost of caregiving in Singapore

• Consider different factors that may affect or lead to variations in the cost of informal caregiving
Thank you!

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