Statistical underpinning of a standardized home care assessment tool for the elderly in Hong Kong

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Summary of the Impact

- A comprehensive assessment tool to evaluate the health outcomes and care needs for Hong Kong Chinese elders, MDS-HC(HK), was developed and statistically validated. Optimal classification algorithms were derived for efficient service matching. It has been adopted by Hong Kong's Social Welfare Department since 2000 as the Standardized Assessment for Elderly Services to ascertain the care needs of elders and match them with timely, appropriate services.

- It facilitates prioritization of services to the neediest and effective allocation of public resources.

- As at June 30 2021, a total of 478,487 assessments were completed using the assessment tool MDS-HC(HK), with an estimated total savings over HKD 17 billion.

- More importantly, elders have had better health outcomes and improved quality of life.

Underpinning Research

Background

- People are living longer and the population is ageing.
- The Hong Kong elderly population reached 759,200 (11.2%) in 2000, accounting for a disproportionately high proportion of total health care spending: 60% of outpatient clinic services and 40% of hospital beds provided by the government were utilized by the elderly in that year.
- There were about 20,000 elderly persons on the waiting list for government-subsidized residential care services.
- Service provision is on a first-come-first serve basis.
- People with more care needs did not have priority over those with fewer needs.
- Elderly with fewer needs often rejected the allocation as they considered themselves too young for the residential care services leading to waste of resources.
- Applicants were required to be assessed by referring agents, health-care professionals and service providers using different tools to confirm their eligibility and suitability for the services.

Underpinning Research

Background

Major concerns were:

1. A standardized assessment tool was lacking.
2. There was no mechanism to deal with disagreements between referring agents and service providers.
3. The elderly-in-need became the victims of this uncoordinated service delivery system with its mismatched services and inappropriate allocation of public resources.

Underpinning Research

Objectives:

With a gate-keeping initiative for elderly services to ensure the best allocation of resources and prioritization of services to the neediest elderly, the objectives were to:

1. develop a unified standard assessment tool for elderly services;

2. carry out a statistical validation of MDS-HC(HK);

3. develop a screening algorithm for service-matching and prioritization models using discriminant analysis;

4. prepare a user manual for the instrument;

5. design a protocol for training and accrediting assessors;

6. digitalize the assessment tool for simple implementation;

7. facilitate further research to improve elderly services for the community.

Underpinning Research

Roles: Played a leading role in the followings, particularly in the questionnaire design, validation of the instrument, statistical analyses and the design of the screening algorithm

- MDS-HC was developed by Inter-RAI in 1994, an international group of academics and clinicians committed to improving and promoting care for the elderly.

- To suit the Chinese cultural setting in Hong Kong, we revised the questions in MDS-HC substantially in 2000 to make it suitable for local implementation, while maintaining the uniformity of the instrument to allow comparisons across countries, and called it MDS-HC(HK).

- Face, content and concurrent validity, inter-rater reliability of MDS-HC(HK) were statistically assessed.

- It was designed to permit service providers to identify and appropriately respond to 30 Client Assessment Protocols (CAPs). Together with the 14 clinical outcome measures, MDS-HC(HK) is a comprehensive assessment tool that helps the government to establish important objective guidelines for service-matching and prioritization.

Underpinning Research

Roles:

- Carried out a pilot study and performed a detailed statistical analysis of the data.

- Validation of the standardized instrument MDS-HC(HK) [Ref. 1] (Objectives-1,2).

- The validated instrument is able to help clinicians to develop individualized, comprehensive and effective care plan for each client.

- A robust and effective screening algorithm for setting access priorities for different services using innovative influence diagnostic methods with discriminant and factor analyses [Ref. 2-4] (Objectives-3,4&5). This step was particularly important as different countries had different services that experiences from other countries could not be borrowed.

- The instrument was digitalized which can be administered easily by tablet or laptop with low input errors (Objective-6). Data generated can be used for further research to improve services to elderly people in the community [Ref.5,6] (Objective-7).

Underpinning Research

Contextual information about this area of research

- MDS-HC was developed by inter-RAI in 1994.
- interRAI is a collaborative network of researchers and practitioners in over 35 countries committed to improving care for persons who are disabled or medically complex with an aim to promote evidence-informed clinical practice and policy decision-making.
- Data generated by the instruments will be shared with fellow members
- As it is a standardized tool, data generated from different countries and regions may lead to the next level of research.
- The interRAI bibliography contains over 1,400 research articles which employ data from interRAI assessment systems as they are used around the world.
- The articles date from 1978, come from a variety of disciplines and cover a wide range of topics, with implications for policy-makers and for individual health care providers alike.

Source: https://interrai.org/

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Underpinning Research

Innovativeness

- An efficient screening algorithm was developed for service matching and prioritization based on some innovative statistical methods inspired by this research work.

- The algorithm allows the service providers to formulate individualized effective care plans for the clients and prioritize the elderly-in-need of the service.

- A user manual was developed to provide detailed information to facilitate accurate and consistent assessment of community-based clients.

- Assessors are required to go through training and accreditation on the use of MDS-HC(HK).

- A training protocol was developed for accredited assessors, who should be experienced practitioners such as nurses, physiotherapists and social workers in the field of elderly services to minimize differences between the assessors and so maintain a high degree of consistency.

Underpinning Research

Significance

- The assessment tool facilitates effective allocation of public resources and prioritization of services to the neediest.

- By June 30, 2021, a total of 525,805 referrals had been received and 478,487 assessments had been completed by the five multi-disciplinary Standardised Care Need Assessment Management Offices of Social Welfare Department of the Hong Kong Special Administrative Region.

- There were only 1846 cases in which there was some disagreement about the assessment results, with only two appeal cases in the impairment level by service users in the past 20 years and both appeal results were not established.

- There was no appeal by the service providers ever.

- To cope with the demand for the service, assessors are trained using the protocol developed by HKU. There are a total of 3,471 trained and accredited assessors.

Engagement

Engagement process

- Given the rapidly aging population, one challenge faced by the Hong Kong government was to improve the health-care delivery system to respond to the needs of the growing elderly population in a fiscally and clinically responsible manner (see LegCo meeting notes attached).

- We statistically validated MDS-HC(HK) for use in the Hong Kong context, adapted its robustness and fitness to Chinese culture, and strengthened its ability to identify clients' needs and problems [Ref. 1].

- An agreement/contract was signed confirming that the whole digitalized assessment tool was adopted by the Social Welfare Department of the HKSAR as a Standardized Care Need Assessment Mechanism for Elderly Services (SCNAMES) to ascertain the care needs of elders and match them with appropriate services.

- These included admission to homes for the aged, care-and-attention homes, nursing homes, day-care centres for the elderly, enhanced home and community care services, and integrated home care services (for disabled and frail cases).

Source: https://www.swd.gov.hk/en/index/site_pubsvc/page_elderly/sub_standardis/

Engagement

Engagement process

- Due to the uniformity, comprehensiveness, robustness and reliability of the tool, the Social Welfare Department introduced a Central Waiting List for Subsidized Long Term Care Services (CWL) to facilitate service allocation in 2003.

- Since then, the SCNAMES Offices have been providing one-stop services for elders who apply for subsidized long-term care services, assessing their care needs with MDS-HC(HK), matching them with appropriate services and placing them on the CWL accordingly.

- The Mechanism covers applications for admission to care-and-attention homes, nursing homes, day care centres for the elderly, enhanced home and community care services, and integrated home care services (frail cases).

- Assessors under the Mechanism are professionals from various disciplines such as social workers, nurses, occupational therapists and physiotherapists.

Underpinning Research

Impact Achieved

- The implementation of MDS-HC(HK) can speed up the matching of a suitable applicant to a vacant place in a subvented care-and-attention home two months faster on average.

- Whilst each place costs around HKD15,000 per month, it is estimated that at least HKD 15 billion has been saved since its implementation in 2000.

- Independent research concluded that MDS-HC provided a cost-saving approach to reducing institutionalization and functional decline in older people living in the community.

- Assuming that demand for health services remains constant, the total cost of care can be reduced by 21% and yet health outcomes can be improved. If the health service costs HKD 20,000 for each elderly person on average, a further HKD 2 billion would have been saved.

- A more important impact is that the 478,487 assessed elderly received the most appropriate, timely service to achieve better health outcomes and improved quality of life.

- The Chairman of the Elderly Commission considered MDS-HC(HK) as an important contribution to the betterment of the elderly community with great impacts that not only does it allow the government resources to be better utilized, it also helps tailor subject-specific care plans for the elders [see submitted document].

Impacts Achieved

Beneficiaries

- Hong Kong elderly-in-need would have received the most appropriate, timely service to achieve better health outcomes and improved quality of life.

- Services available to the elders on a matched basis under the Mechanism are as follows: -

Community Support Services
- day care centres for the elderly
- home help/home care services
- enhanced home and community care services

Residential Care Services
- homes for the aged
- care-and-attention homes
- nursing homes

Impacts Achieved

Nature and extent of the impact

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- The Standardised Care Need Assessment Mechanism for Elderly Services has just been updated in July 2, 2021 to meet the changes over the past two decades so as to better assess and identify the various long term care needs of the elderly, and to enhance the service matching system (that we are not involved).

Impacts Achieved

Evidence

- **Support Letter from the Assistant Director of the Social Welfare Department**

- **Support Letter from the Dr Ching-Choi LAM, Chairman of Elderly Commission**

- **Legislative Council Meeting Notes on January 8, 2001**

References

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