Predicting professional resource input in home care: the ONI survey

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Abstract

Objective: To assess the use of the ONI (On-going Needs Identification) survey to predict resource requirements in the home care sector.

Methods: Data from an urban community-based services provider was used to test whether certain indicators captured in the ONI survey may also predict professional service time.

Results: The data revealed a link between several ONI indicators and professional service time. This explained 30% and 40% of the variance in nursing and allied health time, respectively. Both functional profile and gender impacted on nursing time. There was also an inverse relationship between allied health and nursing service time. The overall needs priority rating (OPR) score, derived from the ONI survey, was found to be less effective as a predictor.

Conclusion: ONI variables impacted differently on nursing and allied health hours. It is therefore important to consider variables based on profession when planning for resources in the community sector. As labour costs are the largest component of home-based service provision, the ONI survey has the potential to become a cost predictor which is integrated into the processes of clinical care, and hence acceptable to clinicians.

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What is known about the topic?

As non-acute care becomes the preferred option for both patients and governments, community health services need to be able to measure and predict their resource requirements more easily and accurately.

What does this paper add?

This paper reports on the use of the On-going Needs Identification Survey (ONI) that is completed during the in-home care process, to predict nursing and allied health resource requirements for home care services. The survey indicators explained 30% of the nursing and 40% of the allied health service time variance.

What are the implications for practitioners?

Although the authors recommend further study, the ONI may provide useful information to assist in human resource planning for in-home care.

SINCE THE 1980S, the Australian Government has shifted its focus in the provision of care from institutionally-based to home and community-based. Designed to delay the institutionalisation of frail and disabled people, the popularity of the Home and Community Care (HACC) program is driven by its cost effectiveness to government[1,2] and the preference of individuals to be cared for at home rather than in institutions. Jointly funded by the Commonwealth and state governments, the program provides eligible clients and their carers with a range of services at home, including meals on wheels, allied health, home nursing, respite care, transport, housekeeping and other domestic assistance.[3]

Services provided through HACC play an increasingly critical role in the health maintenance of an ageing population. About 20% of Australians aged 65 years and over received HACC services at home during 2002–2003, and this proportion is expected to rise.[4] Increased utilisation of in-home care services highlights the need for effective strategies in the planning of human resource requirements to improve allocative and productive efficiencies. Of critical importance to policy makers is the identification of objective indicators that assist in the estimation of the level of home care service needed today and in the future.

Attempts to apply casemix formula funding to the home care service sector have so far met with

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moderate success. Donnelly et al's major Australian study in 1995 examined the application of diagnosis related groups modelling to the nursing component of home-based care with a sample of 95 737 visits.[5] One of Donnelly's conclusions was that it may be less useful to focus on clinical factors alone in the home care sector because of the wide range of resources involved in providing care in this context, including the presence of informal care. Lewin and Eager's discussion paper on community care also acknowledged this issue.[6] Allied health service provision was outside the scope of Donnelly's study which, in itself, indicates the complexity and difficulty of attempting to develop a system to encompass the wide dimensions of community health services. Hindle[7,8] evaluated several models which attempted to do this, including Donnelly's[5] study, and concludes that, at best, casemix modelling is only able to predict 23% of cost variation in this sector compared with 45% prediction in the acute care sector.

The construction of objective indicators to estimate home care services requires an understanding of how consumer health conditions and disability impact on an individual's ability to function independently. Consideration of living arrangements, carer availability, health issues, social and community support is also required. For instance, the success of the HACC programme fundamentally depends upon informal care.[3,9-12] Older people living alone tend to have less access to informal care,[13-18]and this impacts on the level of services they require to remain living at home. It may be argued at the policy level that service provision should not take account of informal care in the home since this is offered on a voluntary basis. The fact remains, however, that the concept of deinstitutionalisation is predicated on the availability of unpaid, informal care.

While it is well accepted that social, health and economic factors impact upon the planning of in-home care services, professionals and government departments continue to be challenged by the lack of available micro data.[9,19] Health service purchasers make predictions for resource requirements based on broad demographic data. They rely on service providers to tender for contracts based on their experience of resource utilisation for their service group. The industry is fragmented and standardised information is difficult for the sector to develop. Queensland Health currently uses two major sources to access information required for planning: the Australian Bureau of Statistics (ABS) and Home and Community Care data. Although the Minimum Data Set (MDS version 1) provided by the ABS and Queensland Health contracted periodic performance reports cannot be accurately compared, they continue to be used to capture further information.[9] The identification of predictive indictors of resources that can be used in a cost effective manner would assist both purchasers and providers in planning future staff requirements.

Kipp and colleagues comprehensively reported the links between client characteristics within the home setting and care services.[20] This study examined and demonstrated the relationship between the professional in-home time and aggregate indicators measuring the client's functional abilities, their home environment and their informal support system. The case management intensity score was found to be the best predictor of in-home time, followed by the client homebound score and client priority visit score. Their study, based on previous work in New Zealand and the United States,[21,22] found that the rehabilitation status scale, functional independence measure and diagnosis predicted the amount of professional in-home care.

Diwan's study undertook a more focused research approach, evaluating the role of client characteristics, informal caregiver characteristics and provider/service system characteristics to predict case management time.[23] In this study, client behaviours, functional ability in performing primary ADLs (activities of daily living), informal care and professional service support were found to be significant predictors of higher use of case manager time. High-end users of case management time tended to have a higher prevalence of dementia and mental illness and problematic client, caregiver and service provider situations. Case management costs were also highest in the initial month of consultation. Snell's research supported the findings that the costs of community care were significantly explained by both physical and mental

characteristics of the older clients.[24] Gender and area of residence were also important factors.

Research involving a sample of older Australians living in the community identified the determinants of service use. Measures of disease and disability, detailed network support data and factors that may influence client service use were collected and examined. The study found that informal care and community service use were predicted predominantly by disability, with disease providing little additional prediction.[25] Further study of the same sample by Edelbrock and colleagues concluded a compensatory relationship existed between professional community services and informal care.[26]

In Australia, the HACC Minimum Data Set, Version 2, 2005 formally captures each consumer's functional profile but continues to omit other variables important for planning — for instance carer needs, carer sustainability, psychosocial issues, cognitive and decision-making problems, cooperation with health professionals and issues of mistrust. Previous research identifies these items as significant in the prediction of service requirements.[20,24,27]

The On-going Needs Identification (ONI) Survey was developed by the Centre for Health Service Development, University of Wollongong as a screening tool for use with home care clients to improve the referral process.[28] While not specifically designed for the purpose, the ONI has potential for improving prediction models and, ultimately, the planning of in-home care services.

The Ongoing-Needs Identification Survey

Queensland is the first Australian state to use the latest version of the ONI as a screening tool, and draws from the experiences of other states that have used previous versions and also pilot project site evaluations conducted across Queensland in 2003. The ONI survey has multiple functions designed to prompt timely and appropriate service delivery, referral and/or further assessment based on the issues and needs identified for each consumer. The tool comprises several sections — the core ONI, functional profile, HACC MDS supplementary item, the living arrangements profile, the carer profile, health conditions profile, the psychosocial profile, health behaviours profile and the ONI priority rating. At the first home visit professional staff complete the survey with the client.

Staff are also expected to use the client information captured in the ONI survey to derive the ONI priority rating score (OPR). Using the flow chart approach, the OPR measures the client needs, risk and priority for community care. In devising the rating, assessors take into consideration the functional profile, the carer profile, psychosocial profile and other issues. Clients are assigned an OPR of 1 through 9 — 1 indicating the highest risk/priority and 9 the lowest risk/priority. For instance a client with no carer receives a higher risk/priority with a score closer to 1.[16]

The ONI survey is designed to measure both functional ability and functional burden by capturing the social, health and home-setting characteristics of each client. It may be possible to use the ONI more broadly as a professional resource predictor instrument. In this case, there is a need to test the variables captured in the survey so as to determine their importance in enhancing planning outcomes and efficiencies. If these variables prove significant in predicting in-home care services a case exists for their inclusion into the planning database. A study of objective indicators derived from the ONI survey may improve strategic planning that currently relies on limited client information. Improved workforce development and budget planning by government and service providers may be a possible outcome.

The study reported here investigates the usefulness of the variables captured in the ONI survey as a professional services resource predictor in the setting of a community care home services provider. The service provider itself implemented the ONI survey as a record keeping and referral mechanism, rather than as a predictor of resource usage.

Methods

This research was approved by the Griffith University Human Research Ethics Committee, and writ-

ten consent for the release of the de-identified data was obtained from the home care service provider's Project Committee. The 3-month study, conducted in April, May and June 2005 gathered data on clients who received services from a branch of a community-based non-government national home care services provider. The branch was based in an area with a high proportion of older residents and was chosen as the research site for three reasons:

- the staff had received extensive training in the use of the ONI survey by Queensland Health;
- the staff were already completing the survey for their organisation;
- the branch offered a comprehensive set of professional in-home services such as nursing and allied health. The nursing duties of a registered or enrolled nurse included assessment, palliative care, wound management, stomal therapy, and diabetes management. Allied health services included occupational therapy, dietetics and nutrition, social work, group programs, podiatry, speech pathology, diversional therapy, physiotherapy and care-planning.

The branch administered the ONI survey to all of the 226 clients serviced during the 3-month period. The nursing and allied health staff, in consultation with the clients, completed the surveys. Nursing and allied health staff answered questions requiring clinical information, such as diagnostic category. If a client's condition restricted them from answering questions, their carer was consulted. The 3-month data collection period was appropriate for this study because every 3 months ONI details of existing clients were updated unless changing client circumstances required an earlier review; and similar studies, such as that of Kipp et al,[20] used this time frame.

The research assistant recorded the client information obtained from the ONI survey into a spreadsheet. The project manager, an employee of the organisation, supervised the process, ensuring consistency of data collection and entry, clarifying clinical terms and checking the data entry process. Data was later de-identified by the project manager and sent to the research team for analysis. Of the 226 surveys collected, the information of 218 clients was sufficiently complete for analysis.

To maintain data integrity, minimise misinterpretation of the information collected, and provide feedback on the data collection process, interviews were held with the manager of the organisation, the project manager, research assistant and leaders of the research team.

Data description

Box 1 presents the descriptive statistics. The sample comprised 43% men. The ages varied between 7 to 99 years with most clients clustered around the 60 to 91 years age group. The mean age was 74 years.

The descriptive statistics revealed that the majority of those receiving home services in this sample were able to make their own decisions (84%) and did not require further mental health assessment (89%). Also, 39% were new clients, 37% lived alone, 54% reported the need for a carer, and 64% reported the availability of a carer. Of the total sample, 96% spoke English as their main language and received a government pension. The main diagnostic conditions included: musculoskeletal system/connective tissue disorders (38%); circulatory system (26%); endocrine/nutritional/metabolic (25%); and wound (23%). Nursing, allied health and personal care services were provided to 72%, 41% and 31% of the total sample, respectively. Note that "personal care" refers to the formal care provided by the agency in the home and includes assistance with daily self-care tasks such as eating, bathing, grooming, and monitoring medication.

Model

This study tested the relationship between the indicators captured in the ONI survey and the quantity of professional in-home care services received. Linear regression was performed; Model 1 incorporates several individual variables captured in the ONI survey while Model 2 replaces these variables with the OPR score to determine if this score better predicts service time (Box 2). Similar to Kipp et al,[20] an additive rather than a branching model was used for the analysis.

Model 1 comprises a combination of indicators identified as important[20] to test their significance in predicting in-home care service requirements. The model includes variables that measure the

1 Descriptive statistics

Client characteristics (n=218)	No. (%)
Men	94 (43.1)
New client	85 (39.0)
Capable of making own decisions	184 (84.4)
Lives alone	81 (37.2)
Receives nursing services	156 (71.6)
Receives allied health services	89 (40.8)
Receives personal care — includes daily self-care tasks	67 (30.7)
Diagnostic category	
Cancer/lymphoma/leukaemia	24 (11.0)
Wound	51 (23.4)
Endocrine/nutritional/metabolic	54 (24.8)
Nervous system diseases	22 (10.1)
Eye, adnexa, ear, mastoid	25 (11.5)
Circulatory system	57 (26.1)
Respiratory system	46 (21.1)
Musculoskeletal/connective tissue	82 (37.6)
Renal/urinary	32 (14.7)
Other physical (injury, poison, external causes, digestive)	24 (11.0)
Mental and behavioural disorders	35 (16.1)
Primary care mental health assessment required	25 (11.5)
Cooperates with health professional	
always	171 (78.4)
usually	32 (14.7)
rarely/never	13 (6.0)
Requires a carer	117 (53.7)
Carer is available	139 (63.9)

2 The models

Model 1

$$NURS = \beta_0 + \beta_1 G_i + \beta_2 A_i + \beta_3 D_i + \beta_4 AH_i + \beta_5 PC_i + \beta_6 NE_i + \beta_7 FP_i + \beta_8 K_i + \beta_9 CN_i + \beta_{10} CA_i + \beta_{11} OD_i + \varepsilon_j$$

$$ALH = \beta_0 + \beta_1 G_i + \beta_2 A_i + \beta_3 D_i + \beta_4 N_i + \beta_5 PC_i + \beta_6 NE_i + \beta_7 FP_i + \beta_8 K_i + \beta_9 CN_i + \beta_{10} CA_i + \beta_{11} OD_i + \varepsilon_j$$

Model 2

$$NURS = \beta_0 + \beta_1 G_i + \beta_2 A_i + \beta_3 D_i + \beta_4 AH_i + \beta_5 PC_i + \beta_6 OPR_i + \varepsilon_j$$

$$ALH = \beta_0 + \beta_1 G_i + \beta_2 A_i + \beta_3 D_i + \beta_4 N_i + \beta_5 PC_i + \beta_6 OPR_i + \varepsilon_j$$

NURS = Minutes of nursing assistance received
ALH = Minutes of allied health assistance received
G = 1 if male; 0 if female
A = age (a continuous variable from 7 to 98 years of age)
D = 1 if diagnostic category (either cancer or wound or endocrine etc); 0 if other. Dichotomous variables represent each diagnostic category to allow clients to have more than one condition
N = 1 if client receives nursing services; 0 otherwise
AH = 1 if client receives allied health services; 0 otherwise
PC = 1 if client receives personal care; 0 otherwise
OPR measures needs, risks and priority for community care. Score ranges from 1 (highest priority) to 9 (lowest priority)
NE = 1 if new client; 0 if existing client
FP = functional profile (Activities of Daily Living) score. Includes domestic, self-care, cognition, behaviour. Score ranges from 0 (worst) to 18 (best)
K = 1 if primary care mental health assessment required; 0 if no mental health assessment required
CN = 1 if client needs a carer; 0 if no carer required
CA = 1 if a carer is available to the client; 0 otherwise
OD = 1 if the client is capable of making their own decisions; 0 otherwise

condition of the client — functional status, mental state, medical condition, client behaviour — and informal caregiver support.

For the models, the time of in-home service, measured in minutes, becomes the dependent variable and the ONI indicators (Model 1) and OPR score (Model 2) become the explanatory variables. Previous studies identified variables that may influence the time needed for care. To control for confounding variables, the model includes the diagnostic category of each client, the service disciplines used by the client (nursing, allied health, and personal care), their age and sex. Refer to Box 1 for variable details.

Results

The regression analysis was performed to investigate the relationship between professional service time (nursing and allied health) and client/carer profile while adjusting for age, sex, diagnostic category and other services received by each client (Box 3). Nursing and allied health time were recorded to the nearest minute. Model 1 included individual client characteristics. In Model 2, the individual client characteristics were replaced with the OPR score to test the score's importance as a predictor of professional time. It is an assumption

3 Regression analysis results

	Dependent variable			
	Nursing time (minutes)		Allied health time (minutes)	
	Model 1	Model 2	Model 1	Model 2
Number of observations	210	215	210	215
	Coefficient			
Intercept	257.958**	104.268	142.049**	150.801**
Independent variables				
Sex	78.912**	68.341**	–7.879	–5.654
Age	1.098	0.767	–0.539	–0.420**
Personal care	37.221	66.711*	–36.636**	–36.594
Diagnostic categories				
Cancer/lymphoma/leukaemia	8.716	12.554	2.631	11.252
Wound	59.133	36.755	–22.783	–24.311
Endocrine/nutritional/metabolic	–2.316	–6.262	41.750**	41.197**
Nervous system	–20.628	2.947	30.667	33.491
Eye, adnexa, ear, mastoid	26.210	28.603	22.459	28.525
Circulatory system	1.743	–7.751	8.394	1.515
Respiratory system	63.990*	72.109*	3.467	4.224
Musculoskeletal/connective	–79.421**	–76.709**	22.107	25.121*
Renal/urinary	–78.731*	–80.980*	9.412	3.378
Other physical	–15.340	–23.481	46.083**	40.820*
Mental/intellectual	–3.266	–7.694	26.009	30.111*
OPR		0.166		–3.710
New client	39.810		30.112**	
Functional profile	–9.969**		0.885	
Mental health assessment	28.468		–11.492	
Needs carer	–24.508		17.978	
Carer available	–0.199		–16.502	
Makes own decisions	–63.783		–26.157	
Nursing services			–79.922**	–79.773**
Allied health	–71.102*	–74.628**		
R^2 (F value)	0.301 (3.851)**	0.239 (3.897)**	0.404 (6.079)**	0.374 (7.395)**

** $P < 0.01$; * $P < 0.05$. OPR = On-going needs identification priority rating score.

of the study that there are no unmet-care needs within this group of clients.

Nursing models

Overall the independent variables of Models 1 and 2 explained 30% and 23% respectively of the variance in the nursing time. In predicting nursing time both Model 1 and 2 indicated that sex significantly impacted on the amount of nursing received by the client. Male clients received more nursing time when controlling for age, diagnostic category, home services and variables that indicated functional and carer profile. Of the diagnostic categories, respiratory system, musculoskeletal/connective tissue, and

4 Regression analysis results: stepwise

	Nursing time (minutes)		Allied health time (minutes)	
	Model 1	**Model 2**	**Model 1**	**Model 2**
Number of observations	210	215	210	215
			Coefficient	
Intercept	335.393**	180.782**	113.389**	128.298**
Independent variables				
Gender	67.343**	64.604**		
Age				
Personal care		61.251*		
Diagnostic categories				
Wound				–31.150*
Endocrine/nutritional/metabolic			36.113**	30.560**
Nervous system			37.296*	
Respiratory system	69.912**	64.431*		
Musculoskeletal/connect	–74.166**	–77.051**		
Renal/urinary	–89.028**	–85.143**		
New client			27.132**	
Functional profile	–10.470**			
Nursing services			–105.872**	–94.645**
Allied health	–98.746**	–91.916**		
R^2 (F value)	0.253 (11.433)**	0.226 (10.118)**	0.307 (22.657)**	0.288 (28.508)**

** $P < 0.01$; * $P < 0.05$.

renal/urinary conditions also impacted on nursing time. There was also a negative association between allied health and nursing; no allied health services implied an increase in nursing time.

Referring specifically to Model 1, decreasing functional profile (from a scale of 1 to 9) tended to increase the amount of nursing time. The OPR score that represents the priority rating score and captures carer profile and functional profile was not significant as indicated in the results of Model 2. The personal care variable, however, was significant in Model 2.

Allied health models

For allied health services, the independent variables of Models 1 and 2 explained 40% and 37%, respectively, of the variance. The endocrine/nutritional metabolic condition impacted on allied health. A negative relationship existed between the amount of allied health service time received by clients and nursing: no nursing services was associated with increasing allied health time.

Referring to Model 1, those reported as new clients and not in receipt of personal care services from the agency were associated with an increase in allied health time. Diagnostic category and service discipline variables also impacted on allied health. In Model 2, once again the OPR score did not explain allied health ($P = 0.1$). Age and the diagnostic categories musculoskeletal/connective tissue and mental conditions impacted on allied health time.

Results for selected variables within the model

To better understand the link between professional service time and the independent variables included in Models 1 and 2, a stepwise regression

was performed using SPSS version 14.1 (SPSS Inc, Chicago, Ill, USA). Here the order of entry of variables was based on statistical criteria. During this process variables were deleted if they did not contribute significantly to the model. All variables selected were significant at the 0.05 level. The results are presented in Box 4.

Nursing model

In Models 1 and 2 the variables selected from the stepwise procedure explained 25% and 23%, respectively, of the variance in the amount of nursing services. Male clients received more nursing time. Of the diagnostic categories, respiratory system, musculoskeletal/connective tissue and renal/urinary conditions impacted on nursing. No receipt of allied health services tended to raise the amount of nursing time received. Specifically, Model 1 also revealed that a lower functional profile increased the amount of nursing received. In Model 2, the receipt of personal care was associated with increased nursing.

Allied health model

The selected independent variables of the allied health Models 1 and 2 explained 30% and 29%, respectively, of the variance. The endocrine/nutritional/metabolic condition impacted on allied health. Clients who did not receive nursing services were more likely to receive a greater amount of allied health time. Model 1 also revealed that nervous system conditions and new client status impacted on allied health time. In Model 2, wound management was also important. The omission of the OPR score from the stepwise regression analysis of both Models 1 and 2 indicates that this variable is not as useful in the prediction of either nursing or allied health time.

Discussion

Independent variables impacted on nursing time differently to that of allied health. For instance, while functional profile and the ability of the client to make their own decisions significantly influenced the amount of nursing received by home care clients, new client status significantly predicted allied health time. The waiting lists for allied health services and staff turnover of this professional group within the centre explained the greater significance of the new/existing client variable in the allied health model compared with the nursing model. Also, as expected, different significance levels were reported for the same diagnostic category in the nursing and allied health models.

The significance of the sex variable in the nursing model should be noted. Male clients received greater amounts of nursing time compared with female clients after controlling for age, diagnostic category and service discipline. Possibly either male clients were more demanding of nursing time or nurses perceived that male clients needed more time. Snell's research[24] also found sex as significant in the prediction of the costs of community care. In contrast, no sex bias existed in the allied health model.

Interestingly, carer need and carer availability did not impact on nursing nor allied health service time. It is proposed (and is an assumption of this study) that either the household or the non-professional staff met the care needs of the clients. Thus professional staff members did not need to undertake extra service time associated with unmet carer needs. The organisation was diligent in formal monitoring of carer need, availability and sustainability each month through the Carer Strain Index (CSI).[29] Carer plans were implemented through separate services to this group and so were not captured by the ONI and not available to the research team before the study's commencement. This may explain the variance from other studies that found that carer availability impacted upon resource usage. Incorporating information presently captured via the CSI into the ONI survey may be a useful development if further study subsequently supports its adoption as a professional time resource prediction instrument.

The results of the analysis also highlighted an inverse relationship between allied health and nursing service time. Referring to the nursing model, no allied health service was associated with an increase in nursing. Conversely, the allied health model revealed that clients who did not receive any nursing services were more likely to record a

greater amount of allied health time. According to the administrators of the agency, the substitution effect between the two professions occurs because nursing services are usually followed by allied health professional support and vice-versa.

Conclusion

This study investigated the usefulness of the variables captured in the ONI survey in the prediction of in-home care professional service time. It did not examine the appropriateness of the resources or to what extent the amount received was adequate.

Similar to previous studies,[24,25] the analysis of the data revealed a strong relationship between diagnostic category and professional time required. The OPR score was ineffective as a predictive variable of professional time. Indeed informal interviews with staff revealed that the OPR score underestimated the priority rating of the client since it fails to take diagnostic category into consideration. For instance, wound management requires greater nursing time and a higher priority even though functional profile and carer status may remain robust. For this reason the pilot study centre abandoned the recording of the OPR score.

After controlling for diagnostic category, age and service discipline, analysis revealed that men received a greater amount of nursing time than women. Further investigation is required to explain the apparent sex bias in nursing services. Given the differences between nursing and allied health services in the prediction of service time, consideration of variables based on profession typology is required when planning resources in the home care sector. Presently this community care organisation's resource allocation is based on general demographics, boundary changes and availability of staff. Planning for home care services will benefit from consideration of variables based on profession. This score needs to reflect the different influences of diagnostic category, functional and carer profile upon nursing and allied health time.

Casemix modelling seeks to capture direct costs involved in episodes of care. The ONI survey, although not designed for this purpose, may have the potential to capture professional time expended, and hence costs indirectly, as professional time is the main cost component of home-based care provision. Predicting 30% of nursing time and 40% of allied health time variance may therefore predict overall costs substantially more successfully. The advantage of using the ONI survey for prediction and/or cost indication is that its completion by staff is integrated into the clinical care process, as opposed to clinical coding which is often perceived by clinicians as an extra task having no relation to clinical outcomes. It may therefore be more acceptable to clinicians, and hence better data collection might be possible.

The conclusions of this study, however, are limited to the one branch of an organisation that provides services to sick and disabled people within their homes. Their clients may not be representative of the national HACC clientele. Future investigation is required to widen the scope of the study to explore the applicability of the ONI survey to the circumstances of home care clients in other regions, particularly in the rural sector. An extension of this study using a larger sample would allow the analysis to be further segregated by diagnostic category.

Developing a cost-effective and clinician friendly instrument for use by community health practitioners will benefit both governments and service providers by enabling better forecasting of demand for services, an improved tendering process based on need and outcomes rather than historical funding arrangements, and ultimately a more effective and fairer distribution of health care resources within the community health sector.

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Competing interests

The authors declare that they have no competing interests.

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