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Original research article

Evaluation of a pilot study to introduce outcome based home care in the Czech Republic

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ABSTRACT

Objectives: To evaluate a pilot study to introduce the outcome-based home care as part of a comprehensive client assessment system in Czech home care agencies.
Methods: A prospective observational study was conducted with 13 home care agencies. Nurses were instructed to assess their home care clients with the Resident Assessment Instrument-Home Care (RAI-HC), an internationally developed comprehensive assessment instrument for home care clients. In addition, the perception of nurses regarding general acceptability and clinical and management relevance of the RAI-HC was evaluated using a questionnaire, which included certain items from a published Belgian study for general practitioners. Three quality indicators were calculated with proposed risk adjustment methods and the adjusted rates were compared with publicly available provincial averages in Canada.
Results: Thirty-five home care nurses assessed 125 clients with the RAI-HC in total. The average time to complete one RAI-HC was 68 min for the first time and 35 min for the second. Based on established scales for activity of daily living, cognitive function and depression embedded in the RAI-HC, substantial difference in clients' characteristics amongst agencies were observed. The nurse's perception of the RAI-HC was generally more positive compared to the Belgian general practitioners. The adjusted rates of quality indicators varied substantially amongst agencies and the average rates were almost identical with the provincial averages from Canada.
Conclusion: Despite the time consuming assessment, home care nurses perceived the benefit of using the RAI-HC in their daily practice. An outcome based home care using routinely collected comprehensive client assessment seems to be feasible in Czech home care agencies.

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Introduction

In ageing societies where increasing numbers of people live longer with disease and disability, monitoring the quality of home care delivery is important for sustainable health and social care [1]: a wide range of skills amongst home care nurses can prevent unnecessary hospitalization and emergency care, while appropriate nursing intervention and referrals can delay institutionalization. Quality of care is a complex, multi-dimensional concept [2]. One method of identifying potentially good and poor professional quality of care involves the use of quality indicators, which aims to define performance of individual care providers based on care outcome, i.e. changes in patient health status between two or more time points [3]. To produce such outcome based quality indicators, it is essential to obtain reliable data on client condition which are collected regularly. In the area of home care, quality indicators based on routinely collected client assessment data such as the Resident Assessment Instrument for Home Care (RAI-HC) have been developed [4, 5]. The RAI-HC is a comprehensive assessment instrument for home care agencies containing over 300 items which is widely used internationally [6]. Quality indicators based on the RAI-HC are now being used in public reports that can be used for best practice comparison between home care agencies in Canada [7].

As with other ageing societies, the Czech Republic is in need of improvement in quality of home care. Currently about 7% of the elderly population is using home care under health care insurance [8]. The elderly population is projected to dramatically increase to over 30% over the next 30 years [9] with a trend moving away from intergenerational cohabitation, an increase in employment levels particularly among women and stricter links between regular employment and social security [10], all of which challenge traditional modes of caregiving. Effective and efficient home health care is therefore crucial for sustainable health and social care in the near future, however it is still far from being possible to refer to a common set of assessment information at the national level. Rather a few international studies have indicated fairly poor quality for Czech home care [11, 12].

For the purpose of introducing outcome based home care in the Czech Republic in the future, a pilot study was conducted. We introduced the RAI-HC into interested home care agencies, demonstrated how quality indicators consider various risk profiles across agencies, and examined nurses' perception of added value of the RAI-HC in their daily practice.

Material and methods

Design

A prospective observational study was conducted without a control group.

Participants

Home care agencies were recruited to participate in the study at a conference in April 2013 (7th International Conference of Home Care Nurses, in Brno, the Czech Republic) on a voluntary basis. Among the three categories of home care clients under the Czech health insurance (i.e. long-term care clients, palliative care clients and acute care clients), long-term and palliative clients aged 18 years or older were included in the study. There was no further exclusion criteria.

Data collection

In the participating agencies, eligible clients were assessed twice with an interval of at least 60 days using the RAI-HC in May and July 2013. Two times assessment with a certain interval was needed to calculate quality indicators focusing on outcome (i.e. change in health status). Experienced home care nurses were trained in completing the RAI-HC in advance and all the participating agencies were instructed on how to use the RAI-HC prior to client enrollment. Filled RAI-HCs were sent to Palacký University without client identification at the end of the study period.

In addition to collecting the RAI-HC, a web-based survey was conducted at the end of the study period with those nurses who used the RAI-HC. The survey was anonymous and the nurses provided their consent to participate by starting the survey. The survey included 1) the time needed for completing a RAI-HC for their first use and the second use and 2) their perception of using RAI-HC. The question items regarding their perception of the RAI-HC were based on a published Belgium study for general practitioners (GPs) who used the RAI-HC in their practice [13]. It contains 21 items covering general acceptability and clinical and management relevance of the RAI-HC using a 5-point Likert scale. Since the Belgian study was meant for GPs in a web-based interface application, only 10 relevant questions for this study were asked.

All the necessary steps were taken to protect the privacy and confidentiality of the identification of both clients and agencies in order to have the study in full compliance with the Declaration of Helsinki.

Quality indicators and risk adjustment methods

Definitions of quality indicators used in the current study were described in Table 1. Three quality indicators of falls, incontinence and communication were chosen because they were part of scientifically developed indicators [5] and are being currently used in public reporting in Ontario, Canada [7].

Covariates were used to adjust for differences in client populations that may bias the rates of quality indicators, since home care agencies that provide care to more impaired clients will tend to have higher unadjusted rates, regardless of the quality of care they provide [4]. Covariates were developed based on an comprehensive evaluation of their distributional properties, strengths of association with the outcomes of interest, consistency of

findings across jurisdictions and potential for clinically inappropriate adjustment (e.g. benzodiazepine use was not considered a reasonable adjuster for falls) [5]. Calculation of adjusted quality indicators is similar to the concept of indirect standardization, in which the ratio of the observed to expected events is calculated then multiplied by the crude rate in the standard population [14]. In the current project, the standard population was the average of the participated agencies.

Table 1 –Definition of quality indicators

Quality indicator	Definition	Covariates for risk adjustment	Exclusion from the calculation
Communication	Clients with a new or existing communication problem which did not improve	ADL and cognitive function	–
Incontinence	Clients who have newly developed bladder incontinence or whose bladder functioning has not improved since their previous assessment	Difficulty with dressing, cognitive function and whether the client is post-acute, age 75 years or older	–
Falls	Clients who state that they have fallen in the last 90 days	Age 55 years or older, reduced physical activity, unsteady gait, arthritis, and cognitive function	Total dependent in bed mobility

Source: [7].

Analysis

Firstly, client characteristics of each agency were examined using some validated measures embedded in the RAI-HC. They were the ADL Self-Performance Hierarchy Scale for measuring the level of activity of daily living (ADL) [15], the Cognitive Performance Scale for measuring cognitive function [16], and the Depression Rating Scale for measuring depressive symptoms [17]. The estimated mean scores with 95% confidence intervals were calculated and compared across agencies. Secondly, the three quality indicators (*falls*, *incontinence*, and *communication*) were calculated along with the proposed risk adjustment methods, and the adjusted rates were compared with the provincial average rates in Ontario, Canada [7]. Thirdly, nurses responses to the questions about the perception of the RAI-HC were dichotomized as 'agree' (responses 4 and 5) or 'disagree' (responses 0–3), and was compared to Belgian GPs using Chi-squared tests. Statistical analyses were performed using STATISTICA® v 12.0.

Results

One hundred twenty-five clients in total 13 home care agencies across the nation were assessed using the RAI-HC by 35 home care nurses. The characteristics of the agencies and clients were presented in Table 2. Three agencies only had a few clients (i.e. agencies 6, 9, 12). The client characteristics varied substantially regarding ADL, cognitive function and depressive symptoms. The clients in agency 13 were more physically dependent than agencies 2 and 7 with a confidence interval of 95%. In the same way, clients in agency 2 were more intact in cognitive function than those in agency 4. Clients in agency 7 was less depressed than agencies 11 and 2.

The rates of the three quality indicators for each agency were displayed in Table 2. A higher rate of quality indicator indicates poorer quality. The three agencies with a few clients (i.e. agencies 6, 9 and 12) were included in the calculation, but their agency rates were not interpreted due to their poor reliability. Each quality indicator had wide ranges (0–64% for *falls*, 30–74% for *incontinence*, 18–74% for *communication*). As a higher rate indicates poorer quality, particular poor quality was seen in agency 5 for *falls*, in agencies 4, 8 and 10 for *incontinence*, and in agency 2 for *communication*. The averages rates of the 13 agencies in this study were more less the same as the publicly available provincial average for the fiscal year April 2011 – March 2012 in Ontario, Canada (*falls:* 23% in this study vs. 29% in Ontario, *incontinence:* 53% vs. 57%, *communication:* 33% vs. 26% respectively) [17].

Chart 1 demonstrated how the risk adjustment process changed the rate of *incontinence*. The risk adjustment of *incontinence* includes dependency in dressing and cognitive function as shown in Table 1. The unadjusted rate increased substantially with the risk adjustment in agency 7 where the clients were more independent than other agencies, while the opposite direction was seen in agency 13 where there were more dependent clients.

Twenty one nurses completed the questionnaire about the RAI-HC. The response rate for the questionnaire was 60%. The average assessment length for the first time was 68 min (range: 30–90 min) and 35 minutes (range: 20–60 min) for the second time.

Table 3 demonstrated a comparison of the perception of the RAI-HC between Czech home care nurses (n = 21) and Belgian GPs (n = 37). The higher values generally indicate a positive perception, while a smaller value indicates a positive perception for the question number 7. The results indicated that Czech home care nurses were generally more positive about using the RAI-HC, particularly as for the questions number 2 and 8. Czech nurses were however significantly more negative about the last question concerning the benefit in care planning (the question number 10).

Table 2 – Clients characteristics and quality indicators across home care agencies (*n* = 13, Czech Republic, 2013)

Agency	*N*	ADL (0–6)[a]	Cognition (0–6)[a]	Depression (0–14)[a]	Adjusted rate of quality indicators		
					Fall	*Incontinence*	*Communication*
		Mean (95% Cl)	Mean (95% Cl)	Mean (95% Cl)	%	%	%
Total	125	2.3 (1.9–2.7)	1.6 (1.3–1.9)	1.8 (1.4–2.1)	23	53	33
Agency 1	10	1.5 (–0.2 to 3.2)	0.7 (–0.7 to 2.1)	1.1 (–0.1 to 2.3)	23	35	28
Agency 2	10	1.6 (0.3–2.8)	0.8 (0.2–1.4)	2.4 (1.3–3.6)	10	50	74
Agency 3	8	3.3 (1.4–5.1)	1.0 (0.4–1.6)	1.9 (0.3–3.5)	0	66	22
Agency 4	10	2.7 (1.4–4.0)	2.8 (1.4–4.2)	1.8 (0.3–3.3)	18	62	30
Agency 5	20	2.6 (1.6–3.7)	1.8 (0.8–2.7)	2.0 (0.9–3.1)	64	39	18
Agency 6[b]	2	4.0	1.5	2.5	56	100	100
Agency 7	13	0.3 (–0.3 to 0.8)	1.0 (0.4–1.6)	0.8 (0.2–1.4)	17	48	43
Agency 8	10	3.0 (1.3–4.7)	2.4 (0.8–4.0)	2.6 (1.1–4.1)	13	74	43
Agency 9[b]	3	3.0	2.7	0.3	0	46	0
Agency 10	9	2.0 (0.6–3.4)	1.9 (0.7–3.1)	2.1 (0.6–3.6)	0	74	34
Agency 11	10	1.2 (–0.1 to 2.5)	1.1 (0.2–2.0)	2.6 (1.4–3.8)	21	30	35
Agency 12[b]	5	1.4	0.0	0.6	23	50	0
Agency 13	15	4.4 (3.8–5.0)	2.4 (1.2–3.6)	1.4 (0.5–2.3)	33	59	27

Cl: confidence interval.
[a] Higher score indicate severer condition.
[b] Agencies with a few clients.

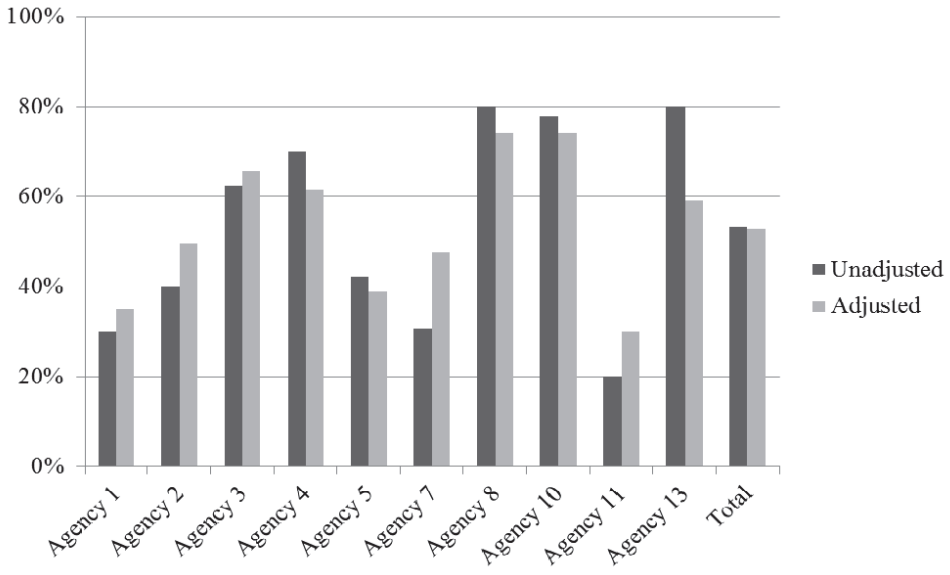

Chart 1 – Unadjusted and adjusted quality indicators of incontinence

Discussion

This study introduced an internationally used standardized and validated assessment system for home care, the RAI-HC, into Czech home care agencies and demonstrated outcome based quality indicators. What we found in this study can be summarized into four points.

Firstly, using the RAI-HC enabled us to describe different characteristics across agencies by established scales on ADL, cognitive function and depression, which could be practically useful. Secondly, despite the time consuming assessment, the RAI-HC was perceived as beneficial by home care nurses regarding its additional value. Although the Minimum Data Set-Home Care (MDS-HC), which is a former version of the RAI-HC, was once used in some

Table 3 – Comparison of perception of RAI-HC between Czech nurses and Belgian GPs

	Czech nurses (n = 21) %	Belgian GPs (n = 37) %	p-Value
Acceptability			
1. The different items are clearly presented	66.7	54.1	0.256
2. This tool is easy to use in my daily practice	57.1	8.1	0.000
3. The encoding of a new patient is easy	52.4	32.4	0.113
4. The various items/questions are presented in a logical and coherent order	66.7	67.6	0.584
Clinical and diagnostic relevance			
5. The tool used enables to modify the hierarchy in the list of problems that I perceive in these patients	47.6	29.7	0.141
6. The tool enables me to get a better sense of all the overall problems of my patient	61.9	43.2	0.137
7. The tool does not bring me any new information concerning this patient	19.0	37.8	0.116
8. The tool enables me to discover problems which I did not know anything about or which I underestimated for my patient	61.9	40.5	0.098
9. All the information which I have about this patient is shown by this tool	71.4	54.1	0.154
Management relevance			
10. This tool helps me to structure a 'care plan' for my elderly patients	14.3	37.8	0.052

Czech home care agencies for a research purpose [18], it was carried out by research nurses, not by agency nurses. Agency nurses did not involve using the MDS-HC due to time limitations. This study indicates that it seems to be feasible for home care agency nurses to use the RAI-HC in their daily practice, with moreover an added value being perceived. Thirdly, the quality indicators based on the RAI-HC showed a reasonable risk adjustment process, having different client characteristics across agencies minimized. Agencies with more dependent clients had an decreased rate of quality indicator, which means better quality. Fourthly, the adjusted rates of quality indicators in appear to be reasonable based on the following three points: 1) the rates varied widely across agencies, which is essential for evaluation purposes; 2) no single agency always had poor quality in all three indicators, which is in concordance with previous findings [3, 11]; and 3) the averages rates of the 13 agencies were more less the same as the provincial average for Ontario, despite the fact that we had only 13 non-representative samples.

There was only one negative finding concerning the perception of benefits of the RAI-HC; Czech nurses did not find the RAI-HC beneficial for care planning as compared with Belgian GPs. This was not surprising, in light of the fact that we used the RAI-HC in a paper form in our study, while the Belgian GPs used it in their web-based interface, which immediately generates care planning protocols per patient based on the assessment information. This finding rather implies that further benefit could be possibly perceived if the RAI-HC is used in an electronic form in the Czech Republic. The overall findings thus imply a possibility of introducing outcome based home care practice in Czech home care agencies in the future.

Limitation of this study is its small convenient sample. Considering the participated agencies were recruited on a voluntary basis, it is possible that they were particularly motivated and the findings of this study would not apply to other home care agencies. The two comparisons made in this study (i.e. the comparison of rate of quality indicators with the Canadian provincial average and the comparison with the Belgian study concerning the perception of the RAI-HC) does not give any idea that the participated agencies were biased in terms of client and nurses characteristics, however, the possibility of selection bias cannot be fully eliminated. Further studies with a large sample of home care agencies would strengthen the findings.

Conclusion

Despite the time consuming assessment, home care nurses perceived the benefit of using the RAI-HC in their daily practice. An outcome based home care using routinely collected comprehensive client assessment seems to be feasible in Czech home care agencies.

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Conflict of interest

The authors have no conflict of interest to disclose.

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