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Title: Quality of care plans in long-term care facilities for the older persons–How well is information from RAI assessments utilized in care planning?

A short running title: Quality of care plans

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Author contributions

SK: Designing the study, performed the analysis, interpreted the data and drafted the manuscript at all stages.

KN: Designing the study, using the methods, review of the draft

PV: Designing the study, using the methods, review of the draft

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Data Availability Statement

Research data are not shared.

Quality of care plans in long-term care facilities for the older persons – How well is information from RAI assessments utilized in care planning?

Background: In Finland care plans at long-term care facilities (LTCF) for the older persons should be based on information from Resident Assessment Instrument (RAI) assessments and the principles of structured data. Hence, managers are responsible for ensuring that the RAI system is used to a satisfactory extent, the provided information is used in care planning, and that staff members are competent at composing high-quality care plans.

Aim: To explore the congruence between first-line managers' assessments of the extent to which care plans include RAI information and separately observed RAI-related contents of care plans.

Methods: The study was based on a descriptive, cross-sectional survey of first-line managers (n = 15) from three LTCF organizations and a randomly selected sample of care plans (n = 45) from two LTCF organizations in Finland. Managers responses and analysis of care plans were reviewed at a general level. The data were gathered in 2019 and analyzed using statistical methods and content analysis.

Results: First-line managers' assessments of the extent to which their units' care plans included RAI information did not match the observed care plan contents. The care plan analysis revealed that managers significantly overestimated the extent to which care plans included RAI-related content.

Conclusion: Managers at LTCF organizations need more training to be able to sufficiently support their staff in using RAI information to draft high-quality care plans.

Keywords: older persons, dementia, first-line managers, nurse manager, nursing staff, care plan, long-term care facilities, nursing home, resident assessment instrument, nursing assessment

SUMMARY STATEMENT OF IMPLICATIONS FOR PRACTICE

What does this research add to existing knowledge in gerontology?

- Analysis of 45 care plans and 15 managers unveils a very basic flaw in the long-term care: missing capacity to utilize individualized data of resident's needs.
- Managers' assessments of the extent to which care plans include RAI information did not match the actual RAI-related contents of these care plans.

What are the implications of this new knowledge for nursing care with older people?

- Care plans must include a higher level of information related to RAI assessments, and staff need to develop further competencies in drafting high-quality care plans.
- To develop competencies in drafting high-quality care plans, training related to RAI information utilization on all aspects of the care plan should be emphasized.
- Training related to RAI information utilization should be targeted to first-line managers and more broadly across the nursing staff.

How could the findings be used to influence policy or practice or research or education?

- The results show that the use of RAI information needs to be improved at each stage of the nursing process.
- Results of this study can be used in future RAI assessment utilization research

Introduction

Population aging is a global phenomenon (OECD 2015; WHO 2019). At present, an estimated 25-30% of people 85 years of age or older have dementia. Dementia patients are most often cared for in long-term care facilities (LTCFs), which has created a heavy economic and social burden (WHO 2011). This societal burden is expected to continue to increase across all of the Nordic countries (NOMESCO 2017). Among these countries, Finland had the highest proportion of people over 65 years of age in the population (20.2%) in 2015, and the Finnish population is aging faster in comparison to the rates observed for many other countries. For example in 2018, there were 43,100 customers in long-term care facility (LTCFs) in Finland (Government of Finland 2020).

In Finland, every patient must have an up-to-date care plan on which their care is based (Act on The Status and Rights of Patients 785/1992). These care plans must be based on Orlando's nursing process (Saranto et al. 2013; Wang et al., 2011) and structured data defined at the national level, which – in the context of nursing - covers nursing assessments, interventions and evaluations (Jokinen et al. 2013; Kinnunen et al. 2019). Nursing assessments, which include information about the client's functional ability, along with actual and potential health problems, are used to outline nursing interventions and guidance. The client's actual care and rehabilitation is documented as nursing interventions, which are linked to the care goals set forth based on assessments. The information in standardized documented care plans can be utilized to monitor the quality of care as well as evaluate the effectiveness of operations (Jokinen et al. 2018) and decision-making (Wang et al. 2011).

At long-term care facilities (LTCFs), care plans should be based on information from the Resident Assessment Instrument (RAI) and the principles of structured data (Act on Supporting the Functional Capacity of the Older Population and on Social and Health Services for Older Persons 980/2012; Foebel et al. 2013; RAI LTC Handbook 2018). The RAI assessment system is a standardised instrument for collecting information and making observations. RAI is intended for assessing the client's service need and creating a care plan (Finnish Institute for Health and Welfare 2021a). The Resident Assessment Instrument Minimum Data Set (RAI-MDS) is a comprehensive, standardized tool to assess residents in LCTF. The MDS-LTC instrument comprises core questions that give a wide overview of the client's situation, and complementary Instrument-specific questions that are used for example assessing the client's functioning in more detail. The main domains in the MDS are identification and background information, cognition, communication/hearing, vision, mood and

behavior, psychosocial well-being, physical functioning and structural problems, continence, disease diagnoses, health conditions, oral/nutritional status, oral/dental status, skin condition, activity, medications, special treatments and procedures (Hutchinson et al. 2010; InterRAI 2015).

Information provided by the RAI enables health care professionals to apply a structured and consistent approach to the nursing process (InterRAI 2015; InterRAI & University of Jyväskylä 2018). The Finnish government has passed legislation that the RAI system should be in use at all LTCFs at the latest by April 1st, 2023 (Act on Supporting the Functional Capacity of the Older Population and on Social and Health Services for Older Persons 980/2012). Several other countries already have legislation in place that requires the use of RAI systems, for example, in the United States, Canada, Iceland, and New Zealand (Finnish Institute for Health and Welfare 2019a; Government of Finland 2020).

RAI assessments are performed upon admission and either every six months thereafter or whenever the client's condition changes significantly (InterRAI & University of Jyväskylä 2018). RAI assessment data (provided by the assessment software) include RAI indicator summaries of physical functioning (ADL-H scale; Morris et al. 1999), cognition (CPS scale; Morris et al. 1994), health stability (CHESS scale; Hirdes et al. 2003), likelihood of depression (DRS depression rating scale; Burrows et al. 2000), level of pain (MDS-Pain scale; Fries et al. 2001), and social participation (SES scale; Mor et al. 1995). The data also include information about the patient's body mass index (BMI). Indicator data describing the quality of the care enable managers to ensure - and develop - the quality of care at their facility as well as monitor the allocation of resources (Government of Finland 2020).

Deficiencies in the quality of care plans and nursing staff skills in composing care plans have been identified from various health care settings (Niemelä et al. 2018; Tuinman et al. 2017; Turjanmaa et al. 2015). The results have generally shown care planning to be inefficient (Lee et al. 2009). Deficiencies have been identified in the definition of nursing diagnoses (Tuinman et al. 2017), recording across various nursing process stages (Tuinman et al. 2017; Turjanmaa et al. 2015; Wang et al. 2011), resident involvement (Bee et al. 2015; Turjanmaa et al. 2015), as well as the interpretation and verbal description of RAI indicators (Niemelä et al. 2018). Inadequate training, skills and time have been suggested as explanations for these shortcomings. These deficiencies in care plans are highly relevant because they hamper the exchange of information between health care professionals, impair the quality of care, and endanger client safety and well-being (Tuinman

et al. 2017). The use of RAI has been found to both increase the use of care plans and contribute to more comprehensive and effective care plans (Hawes et al. 1997).

The managers of LTCFs need reliable unit-level information to support decision-making (Choo 2002) and improve the quality and effectiveness of client care (Finnish Institute for Health and Welfare 2019b). The RAI system has been internationally proven to be a reliable and valid assessment system (Frijters et al. 2013; Hawes et al. 1997; Hogeveen et al. 2017) which improves the quality (Hawes et al. 1997; Hutchinson et al. 2010; Mofina et al. 2014) and cost-effectiveness of health care (Finnish Institute for Health and Welfare 2019c). In addition, applying information provided by the RAI system helps reduce hospital stays, as well as improves client's functional ability (Hawes et al. 1997; Stolle et al. 2015) and quality of life (Stolle et al. 2015). Managers are responsible for ensuring that care planning is based on data provided by the RAI system (Boorsma et al. 2013; Kyngäs et al. 2020; Patiraki et al. 2017). Only a few previous studies have investigated the documentation of nursing care at LTCFs. Thus, there is little knowledge about congruence between the managers' assessment and the observed RAI-related content of the care plans. This hampers the assessment and improvement the quality of care plans.

Aim and research questions

The aim of this study was to explore the congruence between managers' assessments of the extent to which care plans include RAI information and the observed RAI-related contents of care plans.

Research questions:

1. Do first-line managers feel that care plans include a satisfactory level of RAI information?
2. Is RAI information visible in the contents of care plans?
3. Is there congruence between how first-line managers perceive the involvement of RAI information in care plans and the actual RAI-related content in care plans?

Methods

This study included a descriptive, cross-sectional survey of managers and a retrospectively gathered, randomly selected sample of care plans. The study was conducted in certain Finnish LTCFs for older persons chosen by purposive sampling. Desired characteristics for target organizations were experience in using RAI assessment system and staff have had training in RAI information utilization in care plans. The target organizations (n = 3) consisted of private (19 units), public (7 units) and third sector (2 units) service providers. Private sector provider operates

throughout the Finland and offers care to more than a thousand residents, including older persons and mental health clients. Public service provider offers enhanced service housing for residents in Northern part of Finland. Third sector service provider's care units are located in southern part of Finland providing long-term care for circa 150 people.

Data collection

Quantitative data were gathered with a structured questionnaire. The sample consisted of 28 managers sent by email. The questionnaire included 18 items (Table 1). Participants responded to the items using a five-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree). The items were based on a tool that measures the extent to which care plans include RAI information (Vähäkangas et al. 2012). Tool was pretested in 2012, demonstrating a Cronbach's alpha value of 0.8. Values above 0.8 indicate good internal consistency (Polit & Beck 2017). The questionnaire also included demographic questions. A total of 15 managers in three organizations (private sector n = 11, public sector n = 3), third sector n = 1) responded to the survey, representing a response rate of 54%. The survey responses were collected anonymously so they are only traceable to respondent's organization not to unit, therefore comparison within units was not possible.

The qualitative data were gathered retrospectively by using a randomly selected sample of care plans (n = 45) from two organizations (private sector n = 36, public sector n = 9, third sector n = 0). Randomization was performed by selecting three care plans from each unit, for residents whose last names began with the letters A, K, and S. If no persons beginning with these letters were found in the unit, a care plan was taken for the study from a resident whose last name begins with the next letter in the alphabet.

Care plans were processed without identification data. Each care plan was given a numeric identification code. A structured analysis matrix was created for qualitatively analyze the data. The matrix was based on the same tool (Vähäkangas et al. 2012) used in the manager's questionnaire. Contents of the analysis matrix were similar with the contents of the survey. From care plans following information was in interest: are care plans updated accordingly, ability to interpret RAI indicator results, ability to set measurable and RAI indicator related goals, how well nursing interventions are aligned with the goals of the care and has care plan maker compared two different care plans when assessing the care plan.

Data analysis

The quantitative data were analyzed using IBM SPSS Statistics 26.0 software. Based on evidence from prior research, the use of RAI information requires a high level of RAI expertise (Vähäkangas et al. 2012). This corresponds to responses of either 4 (agree) or 5 (strongly agree) on the survey. For this reason, the survey responses were dichotomized by grouping responses of 4 and 5 on the original five-point Likert score as 1 (satisfactory level of RAI expertise) and responses of 1, 2 and 3 as 0 (insufficient level of RAI expertise). Frequencies and percentages were then calculated for each item based on these dichotomized responses (Polit & Beck 2017). For every survey response, average score of 18 items was calculated. If average was equal or higher than 4, survey response was categorized to represent a satisfactory level of RAI information (Table 1). This enabled to compare the level of supervisor questionnaire responses and treatment plans at the overall level.

Qualitative data were analyzed using deductive content analysis (Elo et al. 2014; Kyngäs et al. 2020). The main categories of the analysis matrix (Table 2) corresponded with items of a previously described tool that can be used to measure the extent to which RAI information is included in care plans (Table 1). The analysis matrix was pretested by first author (n = 5) and, based on the results, one item describing nursing interventions in relation to nursing goals was added to the analysis matrix. Items related to interpretation of RAI indicators and goal setting were separated into distinct items. The first author identified and documented information from care plans to the analysis matrix.

A sentence was chosen as the unit of analysis. Care plans were examined for sentences that matched the main categories of the analysis matrix, after which the identified sentences were grouped into subcategories (Kyngäs et al. 2020). The subcategories were formed to correspond to the contents of distinct RAI indicators. The analysis was based on structured data principles (Kinnunen et al. 2019). The results of the content analysis were quantified by subcategory (Kyngäs et al. 2020), i.e., the frequencies and percentages at which subcategories appeared in the material (Table 3).

Criteria for how RAI competence in each main category would be defined were also established. RAI competence was judged based on how many subcategories were represented in the underlying data. The expert members of the research group (Kyngäs et al. 2020) defined the criteria based on the RAI Indicator Manual (InterRAI & University of Jyväskylä 2018). For each care plan, data corresponding to the subcategories were reviewed according to the criteria, after which the care

plan was classified as either including a satisfactory (1) or insufficient (0) level of RAI information. Frequencies and percentages for main categories were then calculated based on the dichotomized data (Table 2).

Survey data were compared to the care plan analysis results both by main category and as a sum of items with values of 1 or 0 in the dichotomization using cross-tabulation and Fisher's exact test. The threshold for statistical significance was set as p-value <0.05. Due to a high volume of separately tested main categories (n = 18), p-values were recalculated with the Benjamini-Hochberg method to decrease the number of false positives (Benjamini & Hochberg 1995). Managers replies and care plans were not connectable at unit level. Manager's responses and analysis of care plans were reviewed at a general level.

Ethical considerations

Informed consent was collected from all of the participating managers. Survey responses were collected anonymously, and the care plans were processed without identification data. The data were treated confidentially (Finnish National Board on Research Integrity 2019).

Results

First-line manager assessments of the care plans

The participating managers had a mean age of 44.5 years (range 29-62) and an average of 8.9 years (range 0-20) of work experience. Approximately three in four (73.3%) managers had used the RAI in their work for less than five years. Nearly all respondents (93.3%) had participated in RAI training, with the same proportion (93.3%) indicating a need for further training.

Only one in three of the managers estimated that their units' care plans reflected RAI information to a satisfactory level. There was clear variation between the questionnaire items (Table 1). For four items (Care plans are always updated after RAI assessments, All nurses are able to interpret results from the pain scale, All nurses are able to interpret results from the BMI-indicator, BMI-indicator was used in setting the goals of care), more than one in two of the managers reported a satisfactory amount of RAI information in the care plans. However, more than one in two of the managers assessed that RAI information was being integrated into care plans at an insufficient level for the remaining items.

More than one in two of the managers assessed that staff interpretations of the BMI indicator and pain scale aspects of the RAI system were at a satisfactory level. The managers felt that the BMI indicator (73.3%) and pain scale (60.0%) were used to a satisfactory extent when setting goals in the care plans and two of three of the managers felt that care plans were sufficiently updated after a RAI assessment.

The interpretation of other indicators than BMI indicator and pain scale was reported to be at an insufficient level. Staff interpretations of the health stability, mood and social participation indicators needed the most improvement, as none of the 15 managers felt that their staff could sufficiently interpret these indicators.

Approximately 90%, of the managers felt that the setting of measurable goals in care plans was at an insufficient level. According to the managers, information concerning other indicators was used to an insufficient level when setting care goals. This was particularly relevant for the depression rating scale, as only one of the managers felt that information from this RAI indicator was used to a satisfactory extent when setting care goals.

The managers felt that the chosen nursing interventions were not well aligned with care goals. Notably, less than one in two of the managers estimated this alignment to be at a satisfactory level. Around a quarter of the managers reported that their staff compare two separate RAI assessments when assessing the need to change a care plan.

Observed contents of care plans

The care plan analysis showed that there was an insufficient amount of RAI information in the care plans across several main categories. The main categories differed noticeably in terms of the extent of RAI information used in the care plan (Table 2). Only two main categories (All nurses are able to interpret results from the ADL indicator, all nurses are able to interpret results from the DRS indicator) contained a satisfactory level of RAI-information. In addition, subcategories linked to specific RAI indicators were documented in the care plans to varying degrees (Table 3).

When considering the interpretation of RAI indicators, more than half of the care plans included a satisfactory level of RAI information from the physical functioning indicator. Physical functioning was mostly described in the care plans as locomotion (93.3%) and eating (73.3%). Descriptions of bed mobility were rather uncommon, as these descriptions were found in about a quarter of the care

plans. Content related to the depression rating scale was identified from more than half of the care plans and was considered to satisfactory level.

Regarding the cognitive performance indicator, only about one in four of the care plans reflected the RAI information to a satisfactory extent. For the most part, cognitive performance was described only as making oneself understood, with these descriptions observed in more than half of the care plans. Slightly less than half of the care plans included content related to short-term memory, while daily decision-making was only described in about one in five of the care plans. A satisfactory level of information related to the health stability indicator was included in only two care plans. The following quotations describe the phrases that were picked from the care plans into the analysis matrix

”Walks independently with rollator.” Care plan 1

”ADL-functioning deteriorated.” Care plan 2

”Asks the same question(s) a few minutes after getting the answer.” Care plan 28

The results of the pain scale were only included to a satisfactory level in about one in six of the care plans. Pain frequency (24.4%) was described slightly more frequently than pain intensity (17.8%). Furthermore, less than one in five of the care plans included a satisfactory level of content related to the social participation indicator. The social participation content of the care plans was mostly linked to the pursuing participation in activities at the facility (37.8%) and at ease socializing with others (35.6%) subcategories. Only two of the care plans included content related to the at ease going to planned or structured group activities subcategory, while descriptions of how the patients established their own goals were completely missing from the care plans. Content related to the BMI indicator or measurable goals of care was almost non-existent in the care plans.

”Nutritional status is improving.” Care plan 5

”Short-term memory unchanged.” Care plan 4

”Painlessness will continue.” Care plan 11

Results from the physical functioning indicator were used in goal setting in only one in five of the care plans. Most of the goals were based on results linked to locomotion (64.4%). In this way, Finnish LTCF must improve the extent to which information from the physical functioning RAI indicator is used when setting goals. An area that needs extensive development is goals related to

bed mobility, which were only included in about one in ten of the care plans. Results from the cognitive performance indicator were applied to a satisfactory level in the setting of care goals in six care plans. Most of the goals related to this indicator were about making oneself understood, with these types of goals identified from about a quarter of the care plans. Results from the health stability indicator were sufficiently used when setting goals in only three of the care plans, while almost half of the plans included goals that applied the results of the depression rating scale to a satisfactory level.

”Can continue to express himself clearly.” Care plan 6

”Stable health” Care plan 1

”The mood has been stable.” Care plan 12

Approximately one in four of the care plans had used the results of the pain scale to a satisfactory level when setting care goals. The care goals were most commonly linked to pain frequency (24.4%) and pain intensity (24.4%). Only two of the care plans included goals that applied the results of the social participation indicator to a satisfactory extent. Goals related to pursuing involvement in activities at the facility were identified from one in four of the care plans, while no goals related to participation in planned or structured activities - or establishing own goals - could be identified from the care plans. Results related to the BMI indicator were used to set goals in one in five of the care plans.

”Alleviate pain and malaise.” Care plan 25

”BMI will not rise while respecting resident sovereignty.” Care plan 10

The care interventions agreed with the set goals in about one in ten of the care plans. Only approximately one in five of the care plans were updated to a satisfactory extent after the RAI assessment. Only one care plan included clear evidence that two separate RAI assessments had been compared during the drafting of the client care plan.

Congruence between managers’ assessments and observed care plan contents

Managers’ replies and care plans were not compatible, so the relationship between them was examined at a general level. Managers’ assessments of how well their units’ care plans included RAI information differed significantly from observations of how care plan contents reflected the RAI assessments. According to manager responses, about one in three of the items reflected the

satisfactory use of RAI information, while the care plan analysis revealed that only one in five of the main categories represented satisfactory use of RAI information. Statistically significant differences between manager assessments and the results of the care plan analysis were noted for half of the items and main categories (Table 4).

Statistically significant differences between the survey responses and observed care plan contents were found for the depression rating scale, pain indicator, and BMI. The managers overestimated the frequency at which care plans included a satisfactory level of content related to the BMI and pain indicators. About three in four of the managers assessed that the care plans included a satisfactory level of BMI content, while the care plan analysis revealed that only a few care plans included a satisfactory level of BMI-related information. More than half of the managers assessed that the care plans included a satisfactory level of content related to the pain scale, while the care plan analysis showed that less than one in five of the plans covered this indicator to a satisfactory level. None of the managers felt that the care plans included a satisfactory level of information related to the depression rating scale, whereas more than half of the care plans had taken this indicator into account to a satisfactory level according to the care plan analysis.

Regarding setting goals that are measurable, there was no significant difference between the manager responses and the results of the care plan analysis. Manager responses and care plan analysis results concerning the use of indicators in setting care goals differed significantly for the BMI, pain scale, and depression rating scale. Two in three of the managers felt that the care plans applied the BMI results when setting goals, while the care plan analysis showed that one in fifth of the care plans included goals that were based on BMI results. Similarly, more than half of the managers felt that the care goals reflected the pain scale results to a satisfactory level, whereas only one in four of the plans included goals that were linked to this indicator. Only three managers reported that the care goals reflected the depression rating scale results to a satisfactory level, while the care plan analysis revealed that almost half of the care plans included goals that were based on the depression indicator to a satisfactory level.

Manager assessments and observed care plan contents differed significantly in terms of how well the care goals were aligned with care interventions. Nearly half of the managers felt that the chosen care interventions were aligned with the care goals. However, according to the care plan analysis, the care interventions were aligned with the care goals in only one in ten of the care plans.

There were statistically significant differences between manager responses and the results of the care plan analysis concerning the updating of care plans after RAI assessment. Notably, two in three of the managers responded that the care plans were updated to a satisfactory level after RAI assessments. However, the care plan analysis revealed that only one in five care plans was updated to a satisfactory extent after RAI assessment. There were also stark differences between manager evaluations and the care plan analysis regarding the extent to which two RAI assessments were compared when assessing care plans. One in four of managers estimated that their employees compared two RAI assessments when drafting care plans, yet the care plan analysis showed that only one (2.2%) of the care plans had compared two RAI assessments.

Discussion

Based solely on the manager assessments, the care plans of older people need improvement in terms of how much RAI information they contain. A similar conclusion was reached by Niemelä et al. (2018). Results from the present study showed that managers assessed both interpretation and goal setting related to the BMI and pain scale indicators to be at a satisfactory level. The managers felt that interpretation and goal setting related to the remaining RAI indicators needs more work. Managers have also previously assessed that the interpretation and verbal description of RAI indicators is lacking in the context of older persons care (Vähäkangas et al. 2012). The results show that both nursing interventions and the ways that care goals are set at LTCF should be improved.

The nurses need to improve how often they compare two RAI assessments when drafting a care plan. A conflicting finding was presented earlier (Vähäkangas et al. 2012) The participating managers felt that the care plans were updated to a satisfactory extent based on RAI assessment results, which agrees with what has been reported before, yet is not in line with the content analysis findings (e.g., there was evidence that only one in five of the care plans were updated following RAI assessment) (Niemelä et al. 2018).

In general, the contents of the care plans reflected RAI information to an insufficient level. This result is consistent with what has been reported in previous studies (Niemelä et al. 2018). Unit managers are responsible for the extent to which employees use the RAI system (Vähäkangas et al. 2012), as well as ensuring that nurses have adequate competence to draft high-quality care plans (Boorsma et al. 2013; Patiraki et al. 2017; Tuinman et al. 2017). For these reasons, it seems that all

participating managers are not aware about how influential they are to the use of the RAI system in their unit.

The results show that the use of RAI information needs to be improved at each stage of the nursing process. Previous studies have also identified weaknesses in the recording of patient data at different stages of the nursing process (Tuinman et al. 2017; Turjanmaa et al. 2015; Wang et al. 2011). Deficiencies in care plans degrade the quality of care and jeopardize client safety and wellbeing (Tuinman et al. 2017). In this study, only information from the physical functioning and depression rating scale indicators were used to a satisfactory level in the care plans. The indicators could be used more extensively when setting care goals; at present, none of the indicators were used to a satisfactory extent during goal setting. Aligning care interventions with care goals, updating care plans, and comparing two separate RAI assessments when drafting care plans are all important aspects of LTC. A high-quality care plan requires the documentation of care assessments, the corresponding care interventions, and nursing outcomes (9, 10). The findings of the present study revealed that care plans at studied Finnish LTCF organizations must include a higher level of information related to RAI assessments, and that staff need to develop further competencies in drafting high-quality care plans. Both findings agree with what has been previously reported in the literature (Niemelä et al. 2018; Tuinman et al. 2017; Turjanmaa et al. 2015).

The care plans described client needs and goals at a general level, and no comprehensive descriptions were found. This will make it challenging for staff to set specific individual goals and determine appropriate nursing interventions. Individual care plans should be based on information from RAI assessments and created with the principles of structured data (Foebel et al. 2013; InterRAI & University of Jyväskylä 2018) the Finnish LTCFs investigated in the current study did not fulfill this requirement. In this study, manager assessments of the extent to which RAI information was included in care plans did not match what was observed in the care plans. More specifically, the managers overestimated the extent to which care plan contents reflected RAI information. This is an important finding because the congruence between manager perceptions of the amount of RAI information included in care plans and the actual RAI contents of care plans has not been previously studied.

Both the manager assessments and the results of the care plan analysis showed that there was room for improvement in the alignment of nursing interventions and care goals, although it should be

stated that the managers underestimated how rarely the nursing interventions were aligned with the care goals. According to the principles of nursing process theory and structured data, individual care goals should be met by individual interventions (Kinnunen et al. 2019). The care plans analyzed in this study revealed a clear lack of individual care goals, which explains why the interventions were not well aligned with the care goals.

Both the manager assessments and results of the care plan analysis demonstrated that nurses should compare two separate RAI assessments to identify changes in client's functional ability when composing care plans. The participating managers underestimated how rarely their staff performed this task, as only one analyzed care plan provided evidence that two RAI assessments had been considered. With regards to care outcomes, it is important to periodically evaluate changes in the client's condition and compare these changes in relation to the nursing assessments, goals and realized interventions (Kinnunen et al. 2019). The presented results revealed that this is not the case in Finnish LTCFs and agree with previously reported shortcomings in the reporting of care outcomes (Tuinman et al. 2017; Turjanmaa et al. 2015).

The updating of care plans based on RAI assessments was at a satisfactory level. A similar result was obtained by Niemelä et al. (2018). The care plan analysis showed that there was room for improvement in this aspect of RAI utilization. In Finland, every client should have an up-to-date care plan (Act on The Status and Rights of Patients 785/1992). However, the presented results provide worrying evidence that the legal obligation of up-to-date care plans is not being fulfilled.

Managers are responsible for ensuring that the RAI system is being applied in their units, and need the provided information, including consistently documented care plans, for decision-making (Choo 2002, Wang et al. 2011) and quality development (Vähäkangas et al. 2012). However, the results revealed that managers' assessments of how well the care plan contents reflect RAI information require substantial improvement. A previous study also identified shortcomings in managers' RAI skills (Niemelä et al. 2018), which may explain the presented results.

Strengths and limitations

A strength of the study was the use of a questionnaire, which provided reliable information about managers' assessments of the use of RAI information in care plans (Vähäkangas et al. 2012). Another strength was that the same researcher performed the entire care plan analysis. To increase authenticity, original expressions were presented to demonstrate the relationship between the

results and underlying data. The researchers ensured that an appropriate degree of data saturation was reached before performing the care plan analysis (Kyngäs et al. 2020).

The main limitation of the study was the low number of managers (n = 15) who responded to the survey and a low number of organizations included in the study. As such, the results are not widely generalizable and need validation through further research (Kyngäs et al. 2020). There may have been also variations between organizations in the content and amount of RAI training, RAI user experience, staff-to-patient ratio or in other characteristics. Due to anonymously collected survey responses, comparisons within units were not possible, therefore variability among organizations and units may possibly influence results of this study. The target organizations were selected by purposive sampling, so it is not possible to determine how the characteristics of the participating organizations compare to other Finnish LTCFs for older persons.

Conclusions

Managers' assessments of the extent to which care plans include RAI information did not match the actual RAI-related contents of these care plans. Furthermore, the managers generally felt that the care plans include an insufficient amount of information from RAI assessments. Even with these negative assessments of RAI utilization, the managers' perceptions of the amount of RAI information contained in care plans were overestimates based on content analysis findings. The research suggests that managers need more training to be able to support their staff in using RAI information to compose high-quality care plans for their clients.

Future research

The reasons for the differences between manager assessments of RAI use in care plans and the observed RAI-related contents of care plans should be examined separately. Further research should aim to determine whether the inability of managers to correctly determine the extent of RAI-related information in care plans is linked to broader difficulties in assessing staff expertise.

Conflict of interest

None.

Ethical approval

Written research permits were obtained from the directors of the target organizations. The study was conducted under the guidance of the Declaration of Helsinki.

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References

- Act on Supporting the Functional Capacity of the Older Population and on Social and Health Services for Older Persons* (2012/980). <https://finlex.fi/fi/laki/alkup/2012/20120980>. (last accessed 7 January 2021).
- Act on The Status and Rights of Patients* (1992/785) <https://www.finlex.fi/fi/laki/ajantasa/1992/19920785> (last accessed 7 January 2021).
- Bee, P., Brooks, H., Fraser, C., & Lovell, K. (2015). Professional perspectives on service user and carer involvement in mental health care planning: a qualitative study. *International Journal of Nursing Studies*, 52, 1834–1845.
- Benjamini, Y & Hochberg, Y. (1995). Controlling the false discovery rate: a practical and powerful approach to multiple testing. *Journal of the Royal Statistical Society Series B*, 57, 289-300.
- Boorsma, M., Langedijk, E., Frijters, D., Nijpels, G., Elfring, T., & Van, Hout, H. (2013). Implementation of geriatric assessment and decision support in residential care homes: facilitating and impeding factors during initial and maintenance phase. *BMC Health Service Research*, 13, 1-9.
- Burrows, A. B., Morris, J. N., Simon, S. E., Hirdes, J. P., & Phillips, C. (2000). Development of a minimum data set-based depression rating scale for use in nursing homes. *Age and Ageing*, 29, 165–172.
- Choo, W. (2002). *Information Management for the Intelligent Organization: the Art of Scanning the Environment* (3rd ed.). ASIS&T, Medford, New Jersey.
- Finnish Institute for Health and Welfare. (2019a). *RAI and Care Plan* [In Finnish: RAI ja palvelu- ja hoitosuunnitelma]. THL, 2019a, <https://thl.fi/fi/web/ikaantyminen/palvelutarpeiden-arviointi-rai-jarjestelmalla/rain-kaytto-asiakastyossa#Palvelu-%20ja%20hoitosuunnitelma>. (last accessed 7 January 2021).

Finnish Institute for Health and Welfare. (2019b). Management with RAI-information [In Finnish: RAI tiedolla johtaminen]. THL, <https://thl.fi/fi/web/ikaantyminen/palvelutarpeiden-arviointi-rai-jarjestelmalla/rai-tiedolla-johtaminen>. (last accessed 7 January 2021).

Finnish Institute for Health and Welfare. (2019c). Use of RAI in Nursing [In Finnish: RAI:n käyttö hoitotyössä]. THL, 2019c, <https://thl.fi/fi/web/ikaantyminen/palvelutarpeiden-arviointi-rai-jarjestelmalla/rai-kaytto-asiakastyossa>. (last accessed 7 January 2021).

Finnish Institute for Health and Welfare. (2021). Information on the RAI assessment system. THL, 2021, <https://thl.fi/en/web/ageing/assessment-of-service-needs-with-the-rai-system/information-on-the-rai-assessment-system>. (last accessed 25 May 2021).

Finnish National Board on Research Integrity. (2019). *The Ethical Principles of Research with Human Participants and Ethical Review in the Human Sciences in Finland*. TENK, https://tenk.fi/sites/tenk.fi/files/Ihmistieteiden_eettisen_ennakkoarvioinnin_ohje_2019.pdf. (last accessed 7 January 2021).

Foebel, A. D., Hirdes, J. P., Heckman, G. A., Kergoat, M-J., Patten, S., & Ruth, A. M. (2013). Diagnostic data for neurological conditions in interRAI assessments in home care, nursing home and mental health care settings: a validity study. *BMC Health Service Research*, 13, 457-468.

Fries, B. E., Simon, S. E., Morris, J. N., Flodstrom, C., & Bookstein F. L. (2001). Pain in U.S. nursing homes: validating a pain scale for the minimum data set. *Gerontologist*, 41, 173–179.

Frijters, D., Van der Roest, H., Carpenter, I., Finne-Soveri, H., Henrard, J-C., Chetrit, A., Gindin, J., & Bernabei, R. (2013). The calculation of quality indicators for long term care facilities in 8 countries (SHELTER project). *BMC Health Service Research*, 13, 1-10.

Government of Finland. *Government Proposal (4/2020)*. Government of Finland, https://www.eduskunta.fi/FI/vaski/HallituksenEsitys/Documents/HE_4+2020.pdf (last accessed 7 January 2021).

Hawes, C., Morris, J. N., Phillips, C. D., Fries, B. E., Murphy, K., & Mor V. (1997) Development of the Nursing Home Resident Assessment Instrument in the USA. *Age and Ageing*, 26, 19-25.

Hirdes, J. P., Frijters, D. H., & Teare, G. F. (2003). The MDS-CHESS Scale: a new measure to predict mortality in institutionalized older people. *Journal of the American Geriatrics Society*, 51, 96-100.

Hogeveen, S. E., Chen, J., & Hirdes, J.P. (2017) Evaluation of data quality of interRAI assessments in home and community care. *BMC Med Inform Decis Mak*, 17, 3-15.

Hutchinson, A. M., Milke, D. L., Maisey, S., Johnson, C., Squires, J. E., Teare, G., & Estabrooks, C. A. (2010). The Resident Assessment Instrument-Minimum Data Set 2.0 quality indicators: a systematic review. *BMC Health Serv Res*, 10, 1-14.

InterRAI. *Care Planning. Using the Care Plan Template on the National Interrai Software System*. InterRAI, 2015, <https://www.interrai.co.nz/assets/Documents/ESS-Care-Planning/2cebb224e4/Using-the-Care-Plan-Template.pdf>. (last accessed 7 January 2021).

InterRAI & University of Jyväskylä. *RAI Long-term Care (RAI LTC) Handbook*. (2018). Finnish Institute for Health and Welfare, Helsinki.

Jokinen, T., & Virkkunen, H. (2018) *Guide to Structured Recording of Patient Data Part 1* [In Finnish: Potilastiedon rakenteisen kirjaamisen opas]. Finnish Institute for Health and Welfare. https://thl.fi/documents/920442/2902744/Kirjaamisopas+osa+1++final+2018__.pdf/5395585e-324f-4ac5-86d6-106e27979e77 (last accessed 7 January 2021).

Kinnunen, U. M., Liljamo, P., Härkönen, M., Ukkola, T., Kuusisto, A., Hassinen, T., & Moilanen, K. (2019) *FinCC Classification User Guide 4.0*. [In Finnish: FinCC-luokituskokonaisuuden käyttöopas FinCC 4.0]. Finnish Institute for Health and Welfare, <http://urn.fi/URN:NBN:fi-fe202002246350> (last accessed 7 January 2021).

Kyngäs, H., Mikkonen, K., & Kääriäinen, M. (2020) *The Application of Content Analysis in Nursing Science Research*. Springer International Publishing, Cham, Switzerland.

- Lee, R. H., Bott, M. J., Gajewski, B., & Taunton, R. L. (2009) Modeling efficiency at the process level: an examination of the care planning process in nursing homes. *BMC Health Serv Res*, 44, 15-32.
- Mofina, A. M., Guthrie, & D. M. (2014) A comparison of home care quality indicator rates in two Canadian provinces. *BMC Health Serv Res*, 14, 1-11.
- Mor, V., Branco, K., Fleishman, J., Hawes, C., Phillips, C Morris., & Fries, B. (1995) The structure of social engagement among nursing home residents. *J Gerontol*, 50, 1–8.
- Morris, J. N., Fries, B. E., Mehr, D. R., Hawes, C., Phillips, C., Mor, V., & Lipsitz, A. (1994) The MDS cognitive performance scale. *J Gerontol*, 49, 174–82.
- Morris, J. N., Fries, B. E., & Morris, S. A. (1999) Scaling ADLs within the MDS. *J Gerontol*, 54, 546–53.
- Nordic Medico Statistical Committee (NOMESCO). (2017). *Health and Health Care of the Elderly in the Nordic Countries – From a Statistical Perspective*. 106:2017. NOMESCO, <https://norden.diva-portal.org/smash/get/diva2:1158392/FULLTEXT01.pdf> (last accessed 7 January 2021).
- Niemelä, K., Taskinen, R., Vähäkangas, P., Elo, S., Turkki, L., & Nieminen, P. (2018). The RAIHYJ measure used as a tool for first-line management in elderly care [In Finnish: RAIHYJ-mittari lähijohtajan työvälineenä ikäihmisten koti- ja ympärivuorokautisessa hoidossa]. *Gerontologia*, 1, 53-64.
- Organisation for Economic Co-operation and Development (OECD). (2015). *Health Status: Life Expectancy*. <https://stats.oecd.org/> (last accessed 7 January 2021).
- Patiraki, E., Katsaragakis, S., Dreliozzi, A., & Prezerakos, P. (2017). Nursing care plans based on NANDA, nursing interventions classification, and nursing outcomes classification: the investigation of the effectiveness of an educational intervention in Greece. *Int J Nurs Knowl*, 28, 88-93.

Polit, D. F., & Beck, C. T. (2017). *Nursing Research. Generating and Assessing Evidence for Nursing Practice (10th ed.)*. Wolters Kluwer Health, Philadelphia, Pennsylvania.

Saranto, K., Kinnunen, U. M., Kivekäs, E., Lappalainen, A. M., Liljamo, P., Rajalahti, E., & Hyppönen, H. (2013). Impacts of structuring nursing records: a systematic review. *Scand J Caring Sci*, 28, 629-647.

Stolle, C., Wolter, A., Roth, G., & Rothgang, H. (2015). Improving health status and reduction of institutionalization in long-term care - effects of the Resident Assessment Instrument-Home Care by degree of implementation. *Int J Nurs Pract*, 21, 612–621.

Tuinman, A., de Greef, M. H. G., Krijnen, W. P., Paans, W., & Roodbol, P. F. (2017). Accuracy of documentation in the nursing care plan in long-term institutional care. *Geriatr Nurs*, 38, 578-583.

Turjanmaa, R., Hartikainen, S., Kangasniemi, M., Pietilä, A-M. (2015). Is it time for a comprehensive approach in older home care client's care planning in Finland? *Scand J Caring Sci*, 29, 317-324.

Vähäkangas, P., Niemelä, K., & Noro, A. (2012). *First-line Management in Rehabilitation Nursing for Older Persons. Quality of Care and Development in Home and Long-term Care* [In Finnish: Ikäihmisten kuntoutumista edistävän toiminnan lähijohtaminen – Koti- ja ympärivuorokautisen hoidon laadun kehittäminen]. National Institute for Health and Welfare, <http://urn.fi/URN:ISBN:978-952-245-688-5>, (last accessed 7 January 2021).

Wang, N., Hailey, D., & Yu, P. (2011) Quality of nursing documentation and approaches to its evaluation: a mixed method systematic review. *J Adv Nurs*, 67, 1858-1875.

World Health Organization (WHO). (2011). *Global Health and Aging*. NIH Publication no. 11-7737. 2011, National Institutes of Health, Bethesda, Maryland.

World Health Organization (WHO). (2019). *10 Facts on Ageing and Health*. <https://www.who.int/features/factfiles/ageing/en/> (last accessed 7 January 2021).